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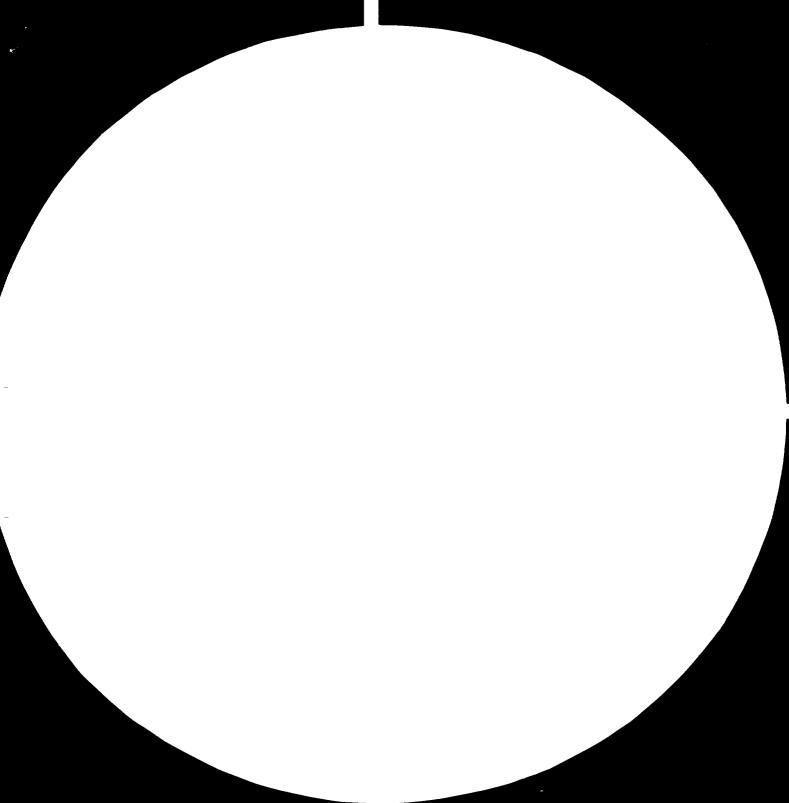
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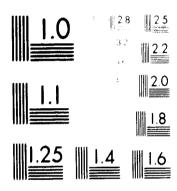
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STUDY OF THE PRESENT AND PREPARATION OF THE FUTURE DEVELOPMENT PLANS FOR THE TEXTILE INDUSTRY IN THE SUDAN - PHASE I

RP/SUD/80/003

SUDAN!

Final Report *

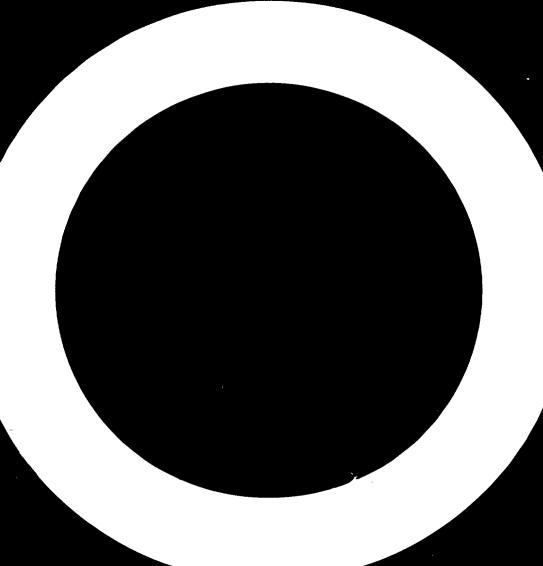
Prepared for the Government of Sudan by the United Nations Industrial Development Organization

Based on the work of The Shirley Institute

B.A. Taylor T.H. Govier

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SYNOPSIS

This document reports on Phase I of a project whose ultimate objective is to assist the Government of the Sudan in preparing a 'master plan' for textile industry development. It presents an analysis of the present situation of the industry, and a draft of detailed terms of reference and work programme for the main Phase II of the project.

It is concluded that Sudanese textile industry development since 1972 has undoubtedly been rapid, though it falls short of the previous plans in a number of respects, and substantial future effort will be required if it is to return to a development path similar to that originally envisaged. Central to the success of future development planning will be:

- reconciliation of disparate objectives relating to markets, economic/
 financial assessment, and socio-political values
- the integration of textile industry planning with that for other sectors of the economy, so as to reduce problems of infra-structure, inter-industry linkages and resource supply
- improvement of management structures and systems, so as to improve the utilisation of existing assets and provide feedback so that plans can be changed and action taken to respond to the industry's inevitably changing environment.

To this end a basis of approach to textile industry planning is suggested which rests on: exploration of the values and objectives to be considered relevant; generation of feasible policies and plans; their assessment in terms of the relative values identified; and finally selection of the plans to be followed. On this basis, terms of reference are developed for Phase II, and an appropriate work programme presented, largely by means of a network diagram. Principal consultancy resource requirements for the work of Phase II are estimated at approximately 24 man/months and the duration of the work at 7 to $8\frac{1}{2}$ months.

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1. Introduction and Summary Record of Work

- 1.1 This report is the outcome of work performed by Shirley Institute staff on behalf of UNIDO under Contract 80/94, Project No. The overall aim of the project is to assist the RP/SUD/80/003. Government of the Sudan in preparing a 'master plan' for the textile industry, projected to the year 2000, but subject to continual Within this, the aim of the Contract was to "carry out updating. an analysis of the present situation and to prepare the draft of the detailed terms of reference and the work programme for the main Our analysis of the current situation Phase 11 of the Project ". is presented in Sections 2 to 6 below, and is followed by draft Terms of Reference and our proposed work programme for the preparation of a development plan for the Sudanese textile industry.
- 1.2 The contract required 26 man/days of service by the contractor, Shirley Institute, in the Sudan (the Project Area) and a further 40 man/days of service at the contractor's home office.
- The team arrived in Khartoum on 15th July 1980, and returned to the 1.3 U.K. on 31st July 1980. During this time interviews were held with 32 people representing 15 organisations in Government, and in the public and private sectors of the textile industry. discussions were held with a further 9 persons (representing 6 organisations) who could offer additional insights into the situation of the textile processing industry in the Sudan. A complete list appears as In addition, a number of reports and other documents, Appendix 1. published and unpublished, were identified as sources of relevant information, and copies of most of these were obtained for the team's A full list appears as Appendix 2. use.

- 1.4 Two Sudanese counterpart staff were nominated for the mission by the Spinning and Weaving Corporation, though in practice only one of these, Mr. Fathi El Rahmen Fargabi, was available to assist us. In addition to effecting introductions, securing appointments and participating in most of the interviews, he was instrumental in supplying some more detailed and up to date statistical information concerning the operations of the textile industry (particularly within the public sector).
- Towards the end of the period in the Sudan, two schedules of 1.5 information requirements were developed. The first was designed as the instrument with which Sudanese counterparts could conduct a more detailed general mill survey than was feasible in the two weeks Shirley staff could spend in the Sudan. The second was designed to yield information for a case study of a selected textile processing establishment. Two additional counterpart staff were provided by the Industrial Research and Consultancy Institute, at the instigation of the Under-Secretary, Ministry of Industry, and a meeting was held at which counterparts were briefed on the use of these schedules, the selection of the mill for the case study was finalised and the time schedule and deadlines for the work were agreed.
- 1.6 Close liaison was maintained with Mr. P.M. Quennell, UNDP

 Asst. Res. Rep. (Prog.), Khartoum, and several briefing and progress meetings were held with him during the course of the mission. He also attended a meeting at which the team and representatives of the Spinning and Weaving Corporation discussed the study and mission with the Under-Secretary, Ministry of Industry, and some of his colleagues.

- 1.7 Upon return to the U.K. the team prepared a fieldwork progress report, which was despatched to UNIDO on 14th August 1980.

 Because of holiday commitments on both sides, the visit, specified in the contract, by the Project Leader to UNIDO, Vienna, for 'debriefing' could not take place until 12th September 1980. By the time of this meeting it had become apparent that the deadlines for despatch of material by Sudanese counterpart staff would not be met, and it was agreed that the submission of this final report should be delayed by approximately one month to allow time for receipt and analysis of the case study and mill survey material.
- 1.8 In the event, the final batch of material from the Sudan was not despatched until 15th October 1980 and received in Manchester on the 27th. Analysis of the information obtained by the counterparts was then incorporated with the analysis of the documentary and interview information gathered during the mission in the Sudan, and used as a basis for the formulation of the draft Terms of Reference and work programme for Phase 11 of the project.

2. Textile industry plans and their achievements

- 2.1 Objectives of the 15-year Tentative Plan and the amended 6-year Plan
- 2.1.1 The 15-year Tentative Plan for the Sudanese textile industry was published in 1972. The plan's objectives (1) were to take advantage of:
 - (i) the availability of locally grown cotton,
 - (ii) the availability of relatively cheap labour,
 - (iii) the availability of power,
 - (iv) a large local market for cotton 'finished' fabrics,
 - (v) the potentially much larger markets in neighbouring and other overseas countries,

and thereby to

- (i) satisfy local market demand for finished popular cotton fabrics,
- (ii) produce exportable cotton yarns and grey fabrics for foreign markets, thus increasing the value added to raw cotton, and the value of the nation's exports,
- (iii) increase the number of employment opportunities and hence the standard of living in rural areas,
- (iv) substitute locally produced goods for imported goods,
- (v) reduce raw cotton exports as a proportion of total exports.
- A team under the leadership of UNIDO consultant, Eng. Marzouk Abdel Hameed and comprising chemical and mechanical engineers, and economists from the then Ministry of Industry and Mining, and the Sudanese Industrial Research Institute drew up the plan which was to be completed in three overlapping phases, each concentrating on a particular market sector for locally produced textiles. At the time the plan was published no public sector of the Sudanese textile industry existed, and consequently the plan concentrated on demonstrating the potential for private investment.
 - A 15-Year Tentative Plan for Sudan Cotton Textile Industries,
 Ministry of Industry & Mining, Government Printing Press, Khartoum,
 1972, p(ii).

- 2.1.3 Though the 15-year Tentative Plan was published two years after the commencement of the relevant period of the 1970-1975 Five Year Plan for the economy as a whole, we can find no reference to any serious attempt to integrate objectives or to co-ordinate investment and other policies. Nonetheless it will be seen from the detailed examination of the present situation in the Sudanese textile industry (below), that some progress towards achieving the above mentioned objectives has been made, and that in some respects the 15-year Plan has provided a useful guide in rapidly expanding one of the most important industrial sectors in the Sudan.
- 2.1.4 In 1977 The Six Year Plan of Economic and Social Development was published. The 16 specific objectives of this plan are stated in Chapter 111, p. 31 and 32, as;
 - (i) Achievement of a substantial increase in per capita income in real terms through development of both the modern and the traditional sectors. The plan aims at an annual growth rate of 7.5% in constant prices, with agriculture continuing to be the pivot of development and the leading sector of the economy. Development in other sectors would be interlinked with agricultural expansion.
 - (ii) Conservation of the country's natural resources.
 - (iii) Development and modernisation of the traditional agricultural sector.
 - (iv) Increasing productivity of all sectors of the national economy and improving the rate of implementation.
 - (v) Expanding productive employment opportunities and limiting unemployment as a first step towards its eradication.

- (vi) Developing industry as a complementary sector to agriculture, giving priority to agro-industries and import-substitution. Additional investment opportunities would be tapped, particularly in the field of mineral prospecting, to broaden the base of economy.
- (vii) Attaining self-sufficienty in selected food and other agricultural commodities and inputs.
- (viii) Consolidation and expansion of basic infrastructure particularly in the field of transport and communications, power resources, marketing and storage facilities.
- (ix) Improving the balance of payments position through expansion of exports and production of import-substitutes.
- (x) Encouraging the private sector both foreign and local, to play its role fully and effectively in development.
- (xi) Developing the co-operative movement and intensifying its activities to enable it to make its full contribution towards mobilising all available financial and human resources for development.
- (xii) Providing more social services and up-grading their standards particularly in the fields of health and education. Attention would also be given to youth, social welfare, culture, religion and training.
- (xiii) Devoting more attention to rural development and advancement of various retarded areas, encouraging local population to contribute more actively towards raising living standards in such areas.

- (xiv) Increasing and mobilising public and private savings.
- (xv) Devoting greater attention to development administration and raising standards of organisational and administrative cadres so as to facilitate achievement by all public agencies of their targets according to prescribed time schedules and to overcome problems in the way of implementation at the least cost.
- (xvi) Basing central development planning firmly on regional planning so as to ensure that development programmes and projects reflect the potentialities and needs of every region. This would, at the same time, engender balanced development within and between regions within a framework of regional specialisation and complementarity.
- In his introduction to the Six Year Plan, the Minister of National 2.1.5 Planning when comparing the preparation of the latest plan with that of earlier plans, draws attention to the expanded participation of all qualified personnel from Sudanese universities, higher educational institutes, research centres, ministries, departments, public and private sector corporations, as well as some international experts. However, this expanded participation in the Plan's preparation has not produced any major change in long-term objectives for the textile industry. Of the 16 specific objectives identified above, 9 can be seen to be directly applicable to the textile industry, as it is presently structured. They are: (i), (iv), (v), (vi), (ix), (x), (xiii), (xv), (xvi). Of these nine, only three; (iv), (x), and (xv), can be seen to be unrelated to the objectives stated in the 15-year Tentative Plan; (iv) because no conception existed of the loss to the economy arising from low productivity, and inadequate experience of project implementation had been gained at the time of the preparation of the 15-year Tentative Plan, (x) because essentially the plan was aimed at an industry with no public sector with which to compete, and (xv) simply because of the combined effect of (iv) and (x).

- 2.1.6 Given then the different structures and experience of the textile industry at the time at which the two plans were prepared, it is clear that in terms of broad overall objectives the situation had changed little in the five years between their publication. The approach to any future textile industry plan, must however take full cognizance of the practice established during the preparation of the Six Year Plan of developing a plan consistent with the aims and objectives of other sectors of the economy which are also competing for a share of available resources.
- This practice, allied to the fact that a public sector textile industry now exists the two most important differences in the situations pertaining at the time of the plans' preparation, requires a fundamental examination of the roles of the different sectors (public and private), and the methods which can be employed controlling each sector's future development. In order to illustrate the nature of past developments, particularly in relation to the two plans overall objectives, the recent and forecast developments in the Sudanese textile industry are analysed below under the following headings; markets, capacity and productivity, employment, and investment, profitability and other economic considerations.

2.2 Recent Developments in the Sudanese Textile Industry

2.2.1 Markets

2.2.1.1

fabrics has increased steadily throughout the 1970's at a similar rate to that anticipated by the 15-Year Tentative Plan.

Between 1965 and 1970 unnual per capita consumption of popular cotton fabric - the bulk of textile consumption -

throughout that period, increased from 10 metres to 13.3 metres;⁽²⁾ an annual percentage growth rate of approximately 5.6%.

In broad terms Sudanese consumption of cotton based textile

on dividur percentage grown rate or approximatory

2.2.1.2

If an average weight /metre of fabric of 0.139 kg. is used to calculate the average weight of textiles consumed per capita over the 1965/70 period, then the calculation yields an average per capita consumption of 1.8 kg. (This calculation ignores the imports of non-cotton textiles). Using the same weight/metre and making the further assumption that the average width of fabric woven is approximately I metre wide, then the average weight of all textiles (not just cotton textiles) consumed between 1974/79 is 2.9 kg./ capita, of which a declining proportion averaging 0.7 kg./ Thus the average annual capita is non-cotton textiles. growth in per capita consumption of cotton textiles throughout the period 1965/79 is calculated to be 2.23%, but if noncotton textile consumption is brought into the picture and the assumption made on the not unreasonable grounds that noncotton textile imports in the 1965/70 period were only a very small proportion of the cotton quantity, (3) then the average annual increase in per capita textile consumption between 1965 and 1979 is increased to 5.5%. This latter figure is believed to most accurately reflect the rate of increase in demand for textiles in Sudan.

2.2.1.3

Table 2.1 compares the growth rates in textiles and other economic indicators in the period 1970/77 and the planned rates and indicators for the period of The Six Year Plan, 1977/82. It is clear from this table that the authors of the Plan expect a much more rapid increase in general consumption than hitherto. Yet the calculated cotton textiles consumption elasticity is expected to decline sharply. Whilst it is common knowledge that the rate of increase in the consumption of textiles diminishes as the absolute level of GDP or GNP increases, the reduction anticipated by the Plan suggests either a marked reduction in the propensity to consume textiles, or some form of restriction on textile

consumption generally. No reference to any such change or restriction can be found in the Plan however, and we are left with the feeling that it substantially under-estimates the true level of demand but if textile demand is to be confined to these forecast levels then some form of market restriction and control is necessary.

TABLE 2.1

Textile and Economic Indicators - 1970/77 and 1977/82

(Per Capita percentage annual increases)

Periods	1970-1977	1977/8 - 1982/3
Sudanese population	2.6	2.55
GNP *	2.5	-
GDP	-	4.83
Private consumption	- ·	4.05
Government consumption	-	3.85
Cotton textiles	2.23	3.00
All textiles	5.5	-

^{*}Source: UN.

2.2.1.4

Some evidence exists that this is already happening.

Most imported goods are subjected to quota restrictions; only yarns, grey fabrics, bleached fabric, sewing threads and ready made garments are currently (the time of the visit) on open general licence. With prices controlled not by demand but by supply considerations (that is, the cost of manufacture as fixed by the Ministry of Industry, and distribution margins set by the Ministry of Commerce up to the point of retail sale), then it is hardly surprising that the team encountered much talk of smuggling throughout its visit. If the availability of foreign exchange were to improve before the end of the plan, then it is likely

^{*} Ministry of Co-operation, Commerce and Supply.

that imported textiles of all categories would increase rapidly above present levels, thereby jeopardising the 'notable substitution of cotton textiles' forecast in The Six Year Plan. (4) It is interesting to note that the table entitled Projected Values of Major Imports, contains a forecast for Cotton Textiles, whilst the text refers simply to textiles. It is important to avoid confusing both categories for the reasons illustrated in Table 1 above.

2.2.1.5

Preparation of the 15 - Year Tentative Plan included a market survey and analysis of Sudanese textile consumption. Availability of data however, limited the detailed analysis to cotton fabrics. This approach was not a wrong one. At the time imported cotton fabrics met a high prepartion of Sudanese consumption, and given the declared objectives of the Plan to satisfy local market demand for finished popular cotton fabrics, it is not surprising that the Plan made a strong case in favour of investment in the spinning and weaving of yarns into popular fabrics. However, the Plan did not offer any scope for monitoring changes in the pattern of demand and thereby failed to establish any system which would guide the industry towards meeting any demand for;

- (a) Knitted or other non-woven fabric forming techniques,
- (b) non-cotton fibre fabrics,
- (c) wider and lighter fabrics,
- (d) printed or colour woven fabrics.

All of these were mentioned in discussions with the team as factors currently affecting the pattern of demand.

2.2.1.6

Superimposed on these changes are regional variations in demand.

Both the 15-Year Tentative Plan and The Six Year Plan recognise the importance of regional development. Little attempt was made in the preparation of either plan however,

(4) The Six Year Plan of Economic & Social Development, 1977/78 - 1982/83, Vol. 1, Ministry of National Planning, April 77, p 76.

to explore and quantify existing differences in demand in order to decide the most appropriate manufacturing facility.

2.2.1.7

The advent of a public textile sector has also affected the supply side of the market. In the 15-Year Tentative Plan it was assumed that an expanding and competitive private sector would meet the growing domestic demand. establishing a public sector which concentrates on producing the Damouria and Willaya - type fabrics, the Government runs the risk of weakening the public sectors competitiveness relative to the private sector, and forcing whatever skills that are developed in the public sector entreprenurial back into the private sector. Reported attempts by the Government to persuade the private sector to devote a fixed proportion of output to these relatively low-cost, low-quality fabrics have not been sustained. * Thus the private sector is free to develop and concentrate on the more marketable products, the most recent technology, and the most economic methods of production, thereby gaining early familiarity with these attributes at the expense of the public sector. dynamic effects are an important factor affecting the marketing strategy for the two sectors and should be considered in some detail before any future plan for the industry is developed.

2.2.1.8

Attention has already been drawn to the control of prices by Government departments. It is not clear to what extent variations in cost between manufacturing plants are included in these price revisions. It is clear however, that the public

* The Government's purpose was to provide an increase in supplies of popular fabric; shortages having arisen because of (i) a yarn deficit in the public sector mills, and (ii) foreign exchange difficulties limiting imports.

sector mills have borne the brunt of government regional development policies. Given the system of licence control in the private sector, and the understandable desire by government departments to be seen implementing government policies; it is perhaps inevitable that this role would fall to the public sector. The Six Year Plan even anticipates, though without doubt, would not wish to encourage too much, the possibility that the Sudan Development Corporation might invest in development projects which yield, "poor or doubtful economic return", for clear social and political effect. (5) If such policies are to continue, and the mills in question are to thrive, then it is essential that local management is free to utilise its local knowledge in applying pricing and product strategies which allow it to develop the strongest possible market links and entrepreneurial skills.

2.2.2 Capacity

2.2.2.1

Spinning and weaving capacity – as measured by the number of spindles and looms installed in the country, has increased rapidly since 1972. Tables 2 & 3, Appendix 3, illustrate the fact. The number of equivalent installed ring spindles in Sudan has increased from 96,000 to 206,900; a growth rate of roughly 10% a year (See Table 2). The table also shows that increases in private sector capacity account for 84% of that growth rate. However completion of the Port Sudan and Hag Abdullah mills during next year is expected to add a further 142,000 spindles to the public sector capacity, and produce greater equality in sector growth rates.

2.2.2.2

Over the same period growth in weaving capacity amounts to 3,930 looms, equivalent to 11.5% a year. The completion of the Friendship Textile factory and the six public sector

weaving sheds financed by a Belgian Government loan through the Sudan Development Corporation means that in this instance, public sector growth exceeds that in the private sector. When comparing performance in both the spinning and weaving sectors, it should be remembered that the public sector is of more recent origin, thereby emphasising the dominant role that this sector has lately occupied in an industry striving to realise the objectives laid down in the various plans.

2.2.2.3

Compared with the targets for installed capacity stated in the 15-Year Tentative Plan, the industry had by the end of 1979/80 achieved 36% of the desired spinning capacity for both Stages 1 and 11 of the Plan, and 91% of the desired weaving capacity for both Stages 1 and 111. The Six Year Plan failed to provide for any new cotton textile development projects, simply confirming its interests to the provision of funds for incomplete projects.

2.2.2.4

Unfortunately installed capacity is not the best proxy measure of productive capacity in the Sudan. Production in recent years has failed to match the levels which installed Some time series data on the levels capacity has promised. of output measured in square metres of cotton woven fabrics are available (5) for the Sudan, but only between 1968 and When this new data is compared with that used in 1975. the two Plans, then a number of inconsistencies readily However, the team's best estimate of production in terms of weight of fabric based on selected information from all the identified sources, is summarised in Table 1, The industry's average overall operating Appendix 3. efficiency which this production represents is also uncertain.

⁽⁶⁾ Yearbook of Industrial Statistics, 1977, Volume 11, Commodity Production Data 1967 - 1977, United Nations.

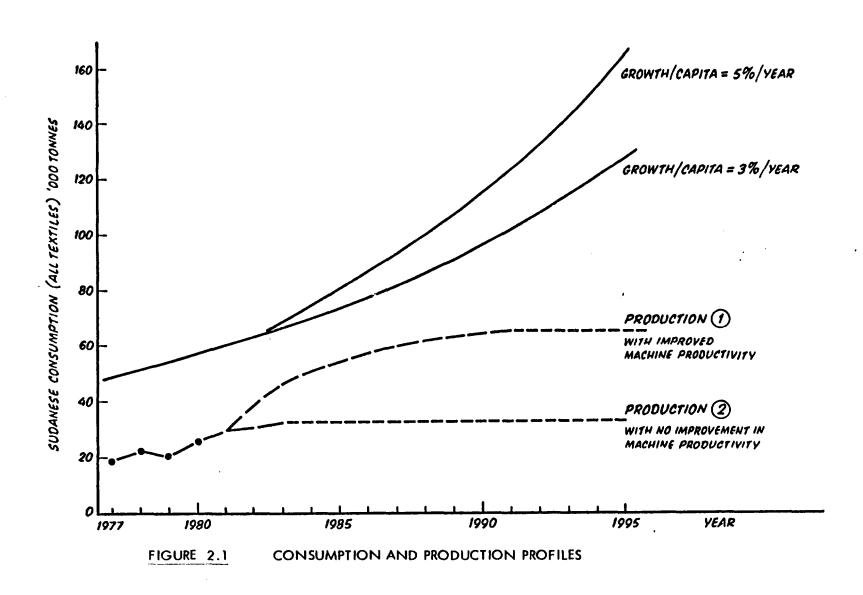
2.2.2.5

Several efficiency estimates were given to the team; the most detailed being that offered by Dr. Abedeer, which attributed losses in production to the following:

-	power interruption	12%
-	absenteeism	16%
-	lack of spare parts	14%
_	other causes	21%

leaving only 37% of total time available for production. Obviously a comprehensive mill survey is necessary before accurate efficiency figures can be confirmed, and though the team had hoped to collect more detailed information for this purpose from the questionnaires left in the Sudan at the end of the fieldwork, it is clear from the completed returns received that inadequate coverage has prevented Probably the simplest means of illustrating the team's perceived gap between production and consumption is Figure 2.1 Consumption and Production Profiles. In this figure two consumption profiles, one based on 3% average annual per capita growth in all textiles with a population growth of 2.56% a year, and the second on a 5% average annual per capita growth in all textile consumption from the end of the current Six Year Plan onwards, are compared with two production profiles. The lower of the two production curves assumes that existing production (as indicated in Table 1, Appendix 3) will grow in future in line with known planned installed fabric weaving capacity increases alone. The upper production curve is similarly based, but makes the further assumption that over a ten-year period commencing in 1981/1982 the average overall operating efficiency in the industry can be lifted from its present 40%

Managing Director, Khartoum Spinning and Weaving Company.



level to 80%. * The implications which can readily be drawn from the figure are that:

- (i) without further investment self sufficiency in textiles cannot be attained. If the existing level of non-cotton textiles remains substantially unaltered, then a similar statement can be made about self sufficiency in cotton textiles. However, a growing substitution effect arising from an increased propensity to consume man-made fibre fabrics, could invalidate this latter statement. Unfortunately the statistics available cover only a short time span and prevent extrapolation of existing trends.
- (ii) without any improvement in overall operating efficiency (and machine productivity) from 1981 onwards, imports must supply an increasing proportion of the total weight of textiles consumed. This statement holds no matter which of the two growth rates apply.
- (iii) with productivity improving at the hypothetical rate previously described, import penetration will not begin to increase again until 1984/85 if the 3% consumption growth rate is assumed, or sometime in 1983 if it is assumed that the 5% consumption growth rate is resumed after the end of the current Plan.
- 2.2.2.6 Whilst these estimates are the best the team feels able to offer, it should be emphasised that some respondents expressed strong reservations about the accuracy of all Sudanese production, consumption and population statistics (on which the above estimates are based.)
 - * The curve assumes that in any year average overall operating efficiency increases by roughly 25% of the outstanding difference between the average overall operating efficiency in any specific year and the target 80 %.

2.2.3 Manpower and Employment Policies

2.2.3.1

An almost complacent attitude towards the availability of suitable manpower to support the proposed expansion in textile activity, was adopted by the authors during the preparation of the 15-Year Tentative Plan. of the Plan illustrates better than probably any other, the danger of preparing such an industry plan independently of other trends in the economy as a whole. Although the 15-Year Tentative Plan and the Six Year Plan both assumed similar population growth rates, the industrial development throughout the 1970's led to a strong demand for all categories of labour, particularly for the managers and engineers necessary to implement the development projects, and this contributed to project delays. An expanded education programme to overcome this inadequate stock of professional staff would have alleviated the shortages, but hidden another apparent problem from which the textile industry in Sudan suffers, namely overmanning. For example, the plan mentions spinning mill staffing levels equivalent to 32 spindles/person and weaving levels, equivalent to 0.9 looms/person. However an analysis of the returns to the questionnaires left by the team at the end of their field work suggests that a labour productivity of roughly half these values (i.e., 16 spindles/person and 0.45 looms/person) is probably being achieved. At such low levels of productivity, the demand both on, and for, managerial and supervisory staff is obviously greater.

2.2.3.2

The supply of managers, technicians, assistant technicians, skilled workers, and clerks is expected to remain less than demand for the duration of The Six Year Plan. A surplus is expected to be found in the professional, and semi-skilled categories, but this expectation hides a deficiency in the

supply of electrical, mechanical, chemical and construction engineers - all important categores if textile investment schemes are to be implemented and operated efficiently.

2.2.3.3

It is possible to minimise the demand for some manpower categories by carefully selecting the most appropriate technology. However, given the restrictions on possible machinery suppliers which are often imposed by the source of the investment funds, the scope for minimising may in practice be narrower than is theoretically possible. Each case should be examined on the merits, a practice which was clearly not anticipated by the 15-Year Tentative Plan, which assumed that the overriding objective would be to select a technology, described as 'developed conventional', which was labour rather than capital intensive, and that this technology could be freely and repeatedly used. A further point of interest is the assumption made in The 15-Year Plan, that wage rates can be adjusted in order to vary labour productivity within very wide limits quite independently of the technology employed, a point we find difficult to substantiate.

2.2.3.4

These manpower problems, arising as they do from an inadequate understanding of the interaction between technical factors and the demand for all levels of manpower in the textile industry, form only part of the picture. A number of additional problems, arising from broader social and economic considerations, compound the difficulties of obtaining an adequate workforce. For example, staff turnover is high in relation to that in other countries. The following turnover rates were given by interviewers as typical of the industry at the time of the team's visit. (Turnover is defined simply as the percentage of persons in each occupation leaving their job in the past twelve months.)

Management staff 5 - 10%
Accountants 60%
Mechanical Engineers 55 - 60%
Electrical Engineers 30 - 35%
Civil Engineers 20 - 25%

Unskilled male operatives

(Shendi) 35%

Unskilled female operatives (Shendi)

0%

2.2.3.5

The lack of turnover in unskilled female labour is persuading managements to undertake urgent examination of their potential for wider employment. Strong family ties are a feature of Sudanese life, but it seems this does not prevent the head of a household moving about the country – even though the remainder of the family unit remains relatively static.

2.2.3.6

A number of reasons have been offered to explain these high levels of turnover; they fall into two broad categories:

Earnings in the Sudan are 1. Monetary factors. allegedly higher (one estimate put it at twice the value) in the private sector than in the public Consequently people are using the public sector to provide them with sufficient training to qualify for a more rewarding, but equivalent position In the case of skilled in the private sector. operatives, a further opportunity to raise income levels exists by simply moving out of the private into the self employed (or informal) sector of the economy. Employees have the freedom to move between sectors, though it is apparently much more difficult for them to move between companies within a particular sector. Employment, it is claimed can be changed with the approval of both present and future employers, but this approval is forthcoming on welfare grounds alone.

During their visit to Khartoum the team had pointed out to them the queues of residents seeking visas to enter a number of Gulf states and Saudia Arabia.

Average earnings in these countries are significantly higher than in Sudan and are particularly attractive to young professionally qualified engineers and accountants, though the problem is not limited to these categories.

It is often claimed that the Sudanese who fill these overseas jobs rarely use the training or qualifications they have obtained. If this is so, then the long-term implications for the Sudanese labour force are not good. If these people do subsequently return to the Sudan as they claim they intend to do, then they are quite clearly going to need some form of refresher course if they are to occuply jobs consistent with their earnings expectations and qualifications. The Six Year Plan calls for an investigation to establish the causes and magnitude of the emigration of qualified nationals, by undertaking field studies in the host country. As far as is known however, these studies have as yet not been reported, but their importance to any future development plan cannot be over-emphasised.

Non-Monetary Factors. Besides money there are a 2. number of other 'hygiene or maintenance' factors (7) influencing a person's choice of workplace. include company policy, supervision, inter-personnel relations and the physical and social working and In the view of the Management domestic conditions. Development and Productivity Centre, a lack of clearly defined objectives at both corporate and functional levels is a feature of all Sudanese business enterprises. (8) This situation appears to be worsened by frequent changes in the most senior managements in public sector enterprises creating an instability which hinders the establishment of managerial order and continuity and is reflected in supervision, discipline, planning and cost problems.

It is a basic function of all managers to plan for the future development of the resources for which they are responsible. Better planning at mill level, assists planning, at Corporation level, which in turn would permit the occurance of a realistic dialogue between the Ministries of Industry, Planning and Finance and National Economy. Only in this way can the infrastructural targets and developments necessary to ensure the implementation of the mills' plans be agreed and co-ordinated so as to improve the likelihood of outcomes which satisfy everyone.

Very few of the management techniques essential for the effective planning and control of an enterprise appear to be practiced in mills in Sudan. This we believe is not

⁽⁷⁾ Work and the Nature of Man, F. Herzberg., World Publishing Co., 1966.

^{(8) &#}x27;The Management Problems of Sudanese Business
Enterprises', Management Development & Productivity
Centre, 1978, p.15.

a function of the education standards, but rather a failure to sustain the efforts necessary to introduce these techniques through the start-up period, and in the face of other unrelated problems. As a consequence middle management and supervisory grades are ill-informed of their departments performance, have little guidance about targets and the means of improving the level of performance, and therefore leave their employ utterly frustrated.

The siting of one of the six weaving mills at Mongalla, a town roughly 25 miles north of the Eastern Equatorial provincial capital Juba, has raised additional staffing problems. When the nill was built very little local infrastructure existed, and there was an absence of schools and other socially desirable enterprises. Staff were consequently reluctant to accept employment at the mill.

- 2.2.3.7 Clearly then, inadequate assessment of these 'hygiene factors' at the project planning stage, has exacerbated the situation arising from the already high levels of staff turnover caused by the differences in monetary awards discussed earlier.
- 2.2.3.8 Absenteeism is a further problem for the industry to cope with.

 Reserves of 25% on normal manning levels to cover for absent staff are commonplace, but the situation is at its worst on the night-shift. Then one estimate given to the team suggests, absenteeism typically reaches 50%; the mill is experimenting with a night-shift incentive payment 50% above the normal daily rate, plus two days off per week, and double the money allowance for meals apparently with some success.

However some interviewees emphasised their belief that there exists for most Sudanese workers a general dislike of indoor work, and this is felt more strongly still when shift work is employed or when the location of the workplace is furthest from the existing urban centres. The part played by considerations of this nature in most plant dispersal decisions remains totally obscure to the team.

2.2.4 Investment, Profitability and other economic considerations

Questionnaires, which the team left with the counterparts 2.2.4.1 for completion after the fieldwork period ended, have revealed some useful indicators of the financial and economic problems, currently besetting the Sudanese textile industry. In the main, the private sector information appears to have been more readily forthcoming than that from the public sector, though neither can claim to have been adequately However in order to minimise disaggregation covered. problems incurred with the vertically organised enterprises, the team have selected from those available two spinning companies returns for comparison with the expected yields from one of the mills proposed in the 15-Year Tentative Plan, in particular one of the ten 72,960 spindle units which were recommended for building in Stage 11 of the Plan to increase the value added of otherwise exported raw cotton. Table 5 Appendix 3 summarises these indicators.

- 2.2.4.2 Some care should be taken interpreting these figures as the questionnaires were returned without comment, leaving the team with no indication as to their accuracy. However, it appears that the following deductions can be made:
 - Spinning mills have not yet provided the employment they were originally expected to do. Both mills
 B and C have a higher ratio of spindles/employee than the 15-Year Tentative Plan anticipated. A breakdown

of labour allocation is given in Table 2.2below. It shows that the direct labour numbers 1,000 spindles are lower in the two operating mills. This could of course arise from:

- (a) the use of more capital (rather than labour) intensive machinery, or
- (b) the operation of two rather than three shifts.

This last point however is contradicted both by statements made to the team during their fieldwork, and by the relatively poor output/employee performance (obtained from the spindles/operative x output/spindle product) seen in the two operating mills. Variations in average counts spun for which no allowance has been made, will obviously distort the relationships further.

TABLE 2.2

Employment Ratios - Spinning (Employees/1,000 spindles)

Employee enterery	Mills (Key as in Table 5, App.3)		
Employee category Direct labour	A 20	В 11.2	C 13,40
Service/security	1.6	3.16	5.24
Inspection/control	1.2	0.92	1.20
Maintenance/repairs	1.8	2.96	1.84
Clerical/managerial	2.4	0.16	0.40
Total:	27.0	18.40	22.08

- 2. Operative productivity is lower than anticipated in the 15-Year Tentative Plan as mentioned above. However the classification of labour in Table 2.2 is of questionable homogeneity particularly the service/security and clerical/managerial categories and are probably best treated as an aggregate. If this is done, then the main variation in staffing levels between the proposed and operating mills is seen to occur in the Direct Labour category.
- 3. Machine productivity is lower than anticipated. The figures in row 9, Table 5, App. 3 illustrate the lower output/spindle-year which the two operating mills achieve in spite of the evidence that relatively modern capital intensive machinery has been employed. The main reasons for this lower output have already been discussed under Section 2.2.2. Capacity.
- Investment costs are higher than expected. 4. 15-Year Tentative Plan, as Medani & Jackson pointed used 1971 machinery prices in the investment appraisal and these prices were subsequently subjected to rapid increases during the oil crisis. Any subsequent investment should therefore have been made as the basis of a feasibility study carried out in the light of more up to date prices; one can even argue that the whole plan should have been reviewed because of the fundamental changes in the nature of the cost structure which developed after the crisis. Some clue to the extent of the changes can be seen from Table 5 App. 3. Mills B and C relative to Mill A - the hypothetical mill, have higher investment
 - (9) The Sudanese Cotton Textile Industry, M.H. Medani and K.C. Jackson, Textile Institute & Industry, March/April, 1979.

cost/spindle (ratios of 9.7 and 3.9 respectively), average salaries and wages/employee (4.8 and 4.5) and sales income/ton of yarn (2.96 and 1.72).

- 5. Export prices for yarn, over the past twelve months, are lower than home market prices. The sales income/ton of yarn spun is lower for company C (Row 10, Table 5 App. 3) with 88% of sales exported, then for company 8 which sold entirely to the home market. Inadequate information regarding differences in home and export product mixes prevents any detailed analysis of sales income. However it is clear that the differences in price are substantial.
- 6. Some mills have failed to contribute to the economic development of the Sudan. Mill C is an example. Rough estimates, calculated on the basis of the questionnaire returns, suggest that both the net output and the gross value added for Mill C is negative. The components causing this to be the case are mainly:
 - (a) excessive purchase of materials for use in production, packaging and fuel,
 - (b) very high increases during the year in the value of stocks of materials, stores, and fuel,
 - (c) very high repayment rates on outstanding loans.

It is interesting to note that even if Mill C had achieved the same price/ton of yarn spun as Mill B, the gross value added at factor cost would still have remained negative if the components (a), (b), and (c) remain unchanged.

3. Changes in circumstances and factors inhibiting progress

- 3.1 The 15-Year Tentative Plan and the Six Year Plan both failed to include any facility for monitoring changes in the socio-political or economic climate in the Sudan or for revising objectives in the light of these changes. Certainly the earlier of the Plans can now be in the sense that the said to have been overtaken by events; likelihood is extremely remote, that the Plan's investment programme (to increase the size of the local industry with the installation of 992,800 spindles and 10,100 looms by 1986), will be successfully Indeed the very desirability of an industry of this completed. size is now being questioned in some quarters. Changes in a variety of circumstances have combined to bring about this movement in Already the relatively poor performance (when compared attitude. with that anticipated in the Plans), of the textile sector in terms of operative and machine productivity, of economic performance, of ability to match desired employment levels and conditions for management and other grades of employee, and of achieving targeted project completion dates arising from delays in the build-up of the nation's infrastructure have been highlighted in the review of the industry's recent performance. These failings, which are well known to the Sudanese, must contribute in part at least, to the change in attitude towards further industrial expansion, but there are a small number of additional changes in circumstance, mainly of a sociopolitical nature, which have also prompted a more cautionary approach. These are discussed below:
- 3.2 The establishment of regional government
- 3.2.1 Regional government history extends over practically the same period as that of the 15-Year Tentative Plan. In 1971 the local Government Law was passed and resulted in the setting up of local government institutions with wide powers in

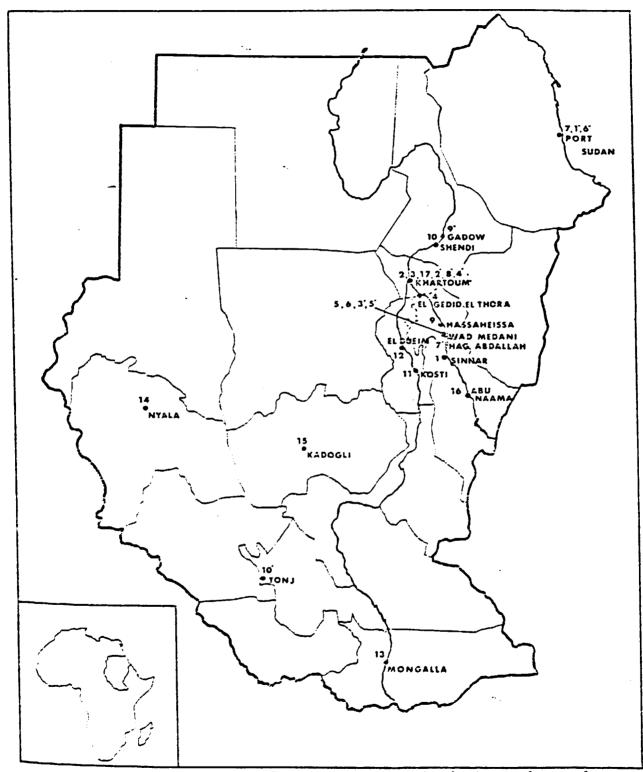
the field of investment in local development schemes
(10)
which have quick (financial) return. The justification
for the introduction of this Law is stated to be;

"Economic and social differences which presently exist between the various provinces as regards income levels, levels of economic development, availability of infrastructure, and social services such as education, health, housing and others."

- The need to increase the number of employment opportunities and hence the standard of living in rural areas was acknowledged in the 15-Year Tentative Plan (see objective iii, Section 1.1). The fact that these desiderate are likely to remain powerful influences on any future investment decision was recognised and accepted by all those with whom the topic was discussed during the team's fieldwork.
- 3.2.3 If the location of plants in both the public and private sectors are compared (this can be done by reference to the recent Italian workshop survey and to Fig. 3.1), then it is clear that since 1971 it has been the public sector which has borne the brunt of implementing this regional development policy. With the exception of Port Sudan, all private sector mills have been located along a short stretch of the Blue Nile valley between the 'three towns' and Sennar, close to the railway line servicing Khartoum and Port Sudan. There are no sites in the private sector which can be compared with Nyala, Kadugli,
 - (10) The Six Year Plan op. cit. p 146.
 - (11) 'Feasibility Study for a Central Workshop for the Manufacture of Spare Parts for the Sudanese Textile Industry' UNIDO (Proj. No. SI/SUD/78/802), Vol. 2 Tables 1 and 2.

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TABLE 3: OPERATING AND UNDER INSTALLATION TEXTILE FACTORIES IN SUDAN



Reproduced from "Feasibility Study for a central workshop for the manufacture of spare parts for the Sudanese Textile Industry". UNIDO (Proj. No. 51/SUD/78/802).

Nzara. Mongalla, Abu Na'ama, and Shendi, all public sector mill locations away from what is generally accepted as the dominant market area, with its established distribution network and supporting infrastructure and which centres on Khartoum. In addition many of them are some distance from raw material supplies.

- 3.2.4 The nature and extent of the problems arising from, and the hidden costs associated with, implementing this plant dispersal policy have in the team's opinion been inadequately studied. It is now nearly forty years since the Nzara project was conceived and nearly thirty since the textile plants there first began operations. Though at least three reports concerning those events have been identified, (12), (13), (14) no attempt seems to have been made in the feasibility study for the Abu Na'ama project, nor for the implementation of the six weaving sheds at Shendi, Kosti, El Duiem, Mongalla, Nyala and Kadogli, to identify and test, qualify, or quantify the costs and benefits of establishing plants at these locations.
- 3.2.5 There are indications that the decisions to implement the six weaving shed projects were more strongly influenced by socio-political objectives, than by financial/economic considerations. It may also be argued that the possibility of such a balance of influences was foreseen when, in the mid-1970's, objectives were drawn up for the Sudan Development Corporation.
 - (12) "The Azande Scheme, an anthropological case study of economic development in Africa", C.C. Reining, 1966.
 - (13) "Textile Industries in the Sudan" an unpublished paper by M. Mekkawi, 1966. through ref. 9 above.
 - (14) UNDP/UNIDO Mission report, 1973. through Ref. 9 above.

(15)

To quote from the Six Year Plan;

"In 1975/76, the Sudanese Development Corporation played an important role in local development. A specialised section was set up to look after local development and follow up the execution of the proposed development schemes. Certain guiding principles and measures were laid for the vetting of projects so as to ensure that they are econimically feasible and socially and politically sound".

The second of these principles states:

"Returns of local development efforts should not be evaluated in terms of economic benefits alone, with complete neglect of the social and political considerations. Projects which have clear social and political effects might be given special consideration even though they might have poor or doubtful economic return".

Since 1976 however, mainly in response to the liquidity 3.2.6 problems affecting the Sudanese economy as a whole (examined in greater detail below), attitudes to development projects have become more critical, and in the view of a number of persons with whom the matter was discussed during the fieldwork, have changed as a consequence to favour a much more vigorous economic/financial assessment. These changes in attitudes unfortunately - in the case of the earlier textile projects - lead to the creation of further problems. Given the alreadystated vagueness of the recorded decision making concerning the early projects, it now becomes difficult to identify a set of objectives against which to measure the present performance of these factories.

(15) "The Six Year Plan op. cit. p 148.

Clear identification of socio-political objectives allied to a more vigorous economic evaluation of these earlier projects, would have enabled:

- the cost differences between implementing the projects at their present locations and at alternative sites to be more realistically estimated,
- (ii) economic/financial performance targets at enterprise and corporation levels to be set,
- (iii) the extent to which these targets can be modified in the light of changes in socio-political objectives to be determined,
- (iv) the values and constraints (by which the overal! performance of the factories can now be evaluated) to be confirmed by the decision-making process.

3.3 The advent of the 1973 Oil Crisis

3.3.1 According to The Six Year Plan, the soaring energy prices and international inflation since 1973 are major causes of the failure of the Sudanese economy to meet the increase in gross domestic product planned between 1970 and 1975.

Certainly, with the unit value of imported petroleum products increasing by 132% between 1973 and 1974 - a period during which the volume of long staple cotton exported dropped by nearly 60% (in part off-set by a rise in unit prices), then the recorded deficits in the balance of payments are hardly surprising. If the public sector deficit and the rapid rise in development expenditure are added into the picture then the period between 1970 and 1975 is seen to be one of acute liquidity problems.

- 3.3.2 These economic factors, led to a reduction in the availability of pesticides. fertilisers and agricultural machinery which when combined with the effects of both the planned introduction of additional crops (again with inadequate additional capital expenditure) and the reduction in the surplus a ailable to the farmers themselves reduced the yield and outputs from the cotton crop to the levels illustrated in Table 6 Appendix 3. Only the introduction of an incentive scheme linked to parallel exchange rates is thought likely to increase yields, and these changes will need at least two years before they can be expected to take full effect.
- 3.3.3 This circle of events in which the shortage of liquidity leads to poor levels of output which then reduces
 liquidity even further also has wider implications. Without analysing cause or effect the circle's inevitable consequence is a reduction in the quality of the fibre produced on the farms a fact confirmed by the growing presence of 'honeydew' in the crop. This in turn has serious effects on operating efficiencies in the mills, reducing the output of domestic textile products, increasing the demands for imports and thereby worsening the liquidity problem.
- 3.3.4 No simple solution to this problem exists, but from hindsight, it does seem that an earlier re-assessment of the original 15-Year Tentative Plan in the light of those economic difficulties, would have led to a slowing of the textile, and other industries' growth rates, which might it can be put no more strongly have led to better balance in the utilisation of resources. In turn this would have permitted better operating efficiencies to be achieved at lower expense and therefore at higher reward to the economy in general. The need for any future plan to incorporate a monitoring system which permits regular re-assessment of current values, quantities and qualities of resource inputs and outputs is however abundantly clear.

The establishment of the Spinning and Weaving Corporation (SWC)

- 3.4.1 The historical development of the SWC is mentioned elsewhere in this report (See Section 4.10), and described in some detail in at least two recent reviews of public sector performance.

 (16), (17)

 Both these reports highlight the difficulties which the public sector experienced during its formative years and are entirely consistent with the comments made in Section 2 of this report. The aims and objectives to overcome these difficulties identified in the latter report are to:
 - (i) strengthen the organisation and management monitoring capacity of the central "Monitoring Unit/Technical Bureau" within the Ministry of Industry.
 - (ii) improve the management system and efficiency/
 productivity/profitability of at least 3 public
 corporations, one of which is the SWC, and
 their respective operating establishments.
 - (iii) provide assistance to the implementation planning and the management of the projects for establishing new Plant and Corporation activities.
 - (iv) carry out direct training activities for the national counterparts and managers of corporations and factories in various specialised fields of industrial management.

(16) Sudan: Study of Public Enterprises, Report of a Joint Committee of the Ministries of Industry and Finance and National Economy, Feb. 1978.

(17) 'SUD/79/010 - Improvement of the Efficiency of the Public Sector Industries - Phase Two', Ministry of Industry, March 1980.

- Two points emerge from this set of objectives. Firstly, the strengthening of the monitoring capacity within the Ministry of Industry, and the introduction of improved management systems at corporation and individual establishment levels, in so far as these activities are related to the textile industry, should be carried out within the total textile industry context envisaged in the next development plan, as outlined in this report.
- Secondly, it should be remembered that much of the early experience at SWC was gained operating Friendship Textile. Factory and Abu Naama Kenaf factories, both vertically integrated units located close to the source of their primary raw material. The additional complexities arising from operating horizontally organised units which rely on regular deliveries of raw materials, over the production of which they have little or no control, and which are transported by organisations over which they have a similar lack of control, and even less influence should not be under-estimated. In this context a centralised agency becomes an eminently suitable vehicle for overcoming the recruitment, administration and control problems which exist if adequately staffed and equipped.

3.5 Factors inhibiting progress

It is in the nature of events that the availability of resources to implement a plan will inevitably change from those initially forecast. The Sudan's open economy must respond to the behaviour of the world economy in general, certainly to the economies of its major trading partners, and in particular to the micro-economic pulses of the constituent parts of its domestic economy. In this section of the report effects on the textile industry are summarised in terms firstly of inter-industry constraints, followed by infrastructural and manpower difficulties, trade, marketing and pricing policy, industry structure and location, management structures and systems; the scale and timing of the development programme; and finally the financing of investment projects.

3.5.1 Linkages or inter-industry constraints

Interruptions to the flow of materials from other industries, and variation in the quality of materials supplied have led to many of the delays and much of the reduction in operating efficiency in the Sudanese textile industry, which are reflected in its relatively high manufacturing costs.

Recent construction programmes have been delayed by shortages of locally-produced cement and imported steel and the agricultural sector has supplied relatively poor quality cotton and inadequate quantities of kenaf to the home industry.

Shortage of foreign exchange has caused severe difficulties in obtaining spare parts and consumable items which are needed from abroad, leading to a reduction in both the scale and quality of production. Not all the inter-industry linkages have such directly adverse effects however. In other cases the linkages remain largely unexploited, though if advantage were taken of them, they offer considerable potential. A case in point is the 'downstream' processing of the fabric produced by the textile industry. Public sector enterprises in particular have not yet exploited the opportunities presented by an apparent trend to ready-made clothing which could offer a valuable bulk market for fabric. A noticeable example is the requirement for uniform clothing for all kinds of public-sector employment. Given the establishment of appropriate quality standards, relatively large-scale garment-making units could readily be set up to meet this demand and would yield a secure and stable offtake of fabric. A somewhat similar example in 'upstream' processing has to do with the supply of man-made (particularly synthetic) fibre to the textile processing industry. Here since one of the objectives for the industry is to make use of locally-grown cotton, the balance of advantage is less clear. Nevertheless, there seems to be a developing preference at consumer level for man-made fibre and blend fabrics, currently satisfied by imports. Management in the industry ought therefore to consider whether or not, by producing some cotton/synthetic blend fabrics and thus responding more sensitively to changes in customer preferences, it might maximise its cotton consumption and value added, while improving operating efficiencies.

If this is judged to be the case, the question then arises as to whether local synthetic fibre production facilities might be justified.

3.5.2 Infrastructural difficulties

Both in the construction and the operation of the textile mills transport problems have been significant. These are two-fold. The transport network in the Sudan is not extensive in relation to the country's size - the mileage of railway. metalled road, easily navigable river and scheduled air service is limited. Serious bottlenecks occur, particularly in distributing goods imported through Port Sudan. In recent years, shortages of oil fuels have made this already difficult situation worse. Such transport difficulties have compounded delays due to lack of supplies, whether for construction of factories or for their operation, and may have caused enterprises to respond by maintaining high stock levels, thus further increasing costs. The problem has been less apparent in terms of distribution of finished product, particularly for the public-sector mills since sales are made ex-factory. However from the point of view of the economy as a whole the difficulties will make themselves felt at this point too.

Communications by telephone and telex are also difficult. The team's own experience in this respect was such as to demonstrate clearly the difficulties of operating and controlling dispersed manufacturing establishments, and to call in question whether any real improvement in supply can be achieved by centralised services, for example the suggested workshop to manufacture spare parts for the weaving sheds.

Electric power failures have already been identified as an important factor contributing to the relatively low operating efficiencies of the textile mills. Standby policies, normal in other countries. cannot be implemented at present owing to the fuel oil shortages mentioned above, which are in turn compounded by the lack of foreign exchange. At some of the more remotely situated mills, no public electricity supply is available and they therefore depend on their own diesel generating capacity, which makes the cost and availability of fuel even more critical to their operation. Opinion in Khartoum however, suggests that by the end of the current Six Year Plan this difficulty may have been eased if not completely cured.

Social institutions outside Khartoum Province and the Gezira are stated to be inadequate, certainly in comparison with those inside this area. In some of the remoter locations the lack of adequate housing and educational, medical and other social facilities is sufficient to discourage professional and managerial staff from accepting employment (18)

3.5.3 Manpower difficulties

Lack of adequate supply of suitably qualified and experienced manpower to construct and operate the mills has been a persistent problem, especially for certain categories of professional, managerial and supervisory employees. The factors influencing

(18) See for example; 'Industrial Mission to the Southern Sudan SI/SUD/77/802 Terminal Report, UNIDO Vienna Dec. 1978 pp 84-85.

this have been discussed in Section 2.2.3 above. Moreover, local training facilities are unable to meet demand in full in most of these categories including those such as textile technologists and spinning and weaving technicians, which are specific to the textile industry. The situation is compounded in the public sector by a rapid movement from job to job of those senior professional and managerial employees who do remain within the system. The Management Development and Productivity Centre has identified this as an important problem in general in Sudanese business enterprises (19) and has estimated the average length of job tenure by managers as less than two years. The MDPC has also drawn attention to important problems of motivation to achieve effectiveness and efficiency in the utilization of resources, within the context of prevailing social attitudes in the Sudan. (20) These have undoubtedly adversely affected textile industry development in both public and private sectors.

3.5.4 Trade, marketing and pricing policies

In the Sudan, firms and establishments are not free to set prices for their products so that supply and demand do not tend to come into equilibrium as a result of market forces. However, there appears to be a marked lack of any coherent central policy for determining prices and quantities supplied of textile goods. The ministerial responsibility for

^{(19) &#}x27;The Management Problems of Sudanese Business Enterprises' op. cit. p 16.

⁽²⁰⁾ ibid. pp 22-23.

setting basic retail prices and for setting quotas and issuing import licences lies with the Ministry of Co-operation Commerce, and Supply while that for determining the levels of import duty and for collection of duty lies with the Ministry of Finance (via the Customs Department). Ex-factory prices for the products of the textile industry are set by the Ministry of Industry which also effectively controls the extent of competition in the industry through its licensing of all manufacturing enterprises. The information available for monitoring consumption levels and estimating market volumes is extremely limited, most consumption estimates being based on very broad aggregates of manufacturing statistics and rather more detailed import data. In this situation it is not surprising that very little explicit policy emerges whether at Government, public sector corporation, or firm/ establishment level regarding for example:

- the allocation of market shares between public and private sectors (particularly by product and price segment)
- regional, urban and rural market variations
- the channels of distribution including the place of the co-operatives.

The effect of decisions so far in textile industry development has been to restrict the activities of the public sector mills largely to supply of the cheaper more basic fabrics, leaving the private sector free to tackle the rather more sophisticated products on which there may conceivably be higher margins to

be earned. Whether this apparent policy has as yet acted as a constraint on the profitability of the public sector industry is doubtful since there are strong indications that at current price levels demand is well in excess of supply throughout the range of textile products. However as argued above (para. 2.2.1.7) it carries important implications for the development of market strategies.

3.5.5 Industry structure and location

The changes in approach to industry structure resulting in alterations of the balance between large vertically integrated production units and smaller single process-stage units are described elsewhere in this report. The point to be emphasized here is that the combination of the structure of the public sector, as it is emerging, with its regional dispersion, subject as it is to the linkage and infrastructural problems discussed earlier in this section, is very unlikely to yield technical or economic efficiency in operations, when measured by conventional criteria. This situation will be further compounded if the proposed central dyehouse facilities are to be used to finish fabric woven in the six regionally dispersed weaving sheds. Moreover there is no indication either in the plans as such or from their implementation that the development of the private sector is being controlled in such a way

* See Section 4.12.

as to provide complementary production facilities so as to yield balanced development overall. A noticeable structural gap is that of knitting as a means of fabric formation and/or of garment making. Little consideration has been given in the plans to this sector, which as a rapid method of fabric formation in some countries yields in the smaller establishments a higher net output per worker than correspondingly sized companies engaged in weaving. Nor has much development occurred in practice in this sector, although there are some privately-owned knitting establishments.

3.5.6 Management structure and systems

It is widely acknowledged that Sudanese industry as a whole, and the public sector corporations in particular, suffer from extensive managerial problems. These have been well documented by the Management Development and Productivity Centre (21) and acknowledged for the public sector industries in the institution of the UNDP project for 'Improvement of the Efficiency of Public Sector Industries' (22). Their substance is indicated by the objectives set out for Phase II of that project, listed in Section 3.4.1 above. The textile industry is no exception to this. Indeed it is significant that the Spinning and Weaving Corporation is one of three public-sector corporations chosen for assistance, directed to improvement of the management system and of efficiency/productivity/ profitability in Phase II of the UNDP project.

⁽²¹⁾ ibid.

⁽²²⁾ SUD/79/010... op. cit.

A particular feature in the contextof the present study is that of management information systems, which provide the feedback basic to the control of the enterprise in order to achieve planned targets, and to the recurrent task of updating and amendment of plans. Adequate systems are clearly not in operation in the textile industry in the Sudan, particularly perhaps in the public sector with its problems of operating dispersed and to some extent disparate production facilities.

3.5.7 Scale and timing of development

During its first five years, the 15-Year Tentative Plan aimed at installing twice the number of spindles and one-and-a-half times the number of looms installed in the Sudan in the previous ten years. The double acceleration implied by these targets placed extremely severe demands on all contributory functions and services. The difficulties of co-ordination of supply and of infrastucture which would have been encountered in any substantial industrial development effort, were exacerbated by the scale and time pressures of this 'great leap forward' and were very probably not fully foreseen. The 15-Year Tentative Plan itself certainly makes little reference to them, and it has been suggested that despite the participation implied by the presentation of the plans to a Cotton Industrialization Conference in 1972 those attending had no authority to enter into commitments regarding, for example, provision of infrastructure. (23) The large scale and short

time-scale of development gave inadequate lead-time for negotiation of finance, for thorough appraisal of individual projects and for proper preparation of tenders and evaluation of tenders received. Difficulties and delays have been experienced in all these aspects of the development programme. Moreover, with such a demanding development programme, it was only to be expected not merely that delays and difficulties would occur, but that they would not affect all aspects of the programme identically. However, there is no evidence of the establishment of any mechanism for revising and replanning in response to differential rates of achievement in different parts of the overall plan. The relationship of the achievements, in terms of capacity, with the phasing of development set out in the plan, demonstrates the effects of this.

3.5.8 Financing of investment projects

The machinery cost estimates of the 15-Year

Tentative Plan were very much lower than the costs
eventually incurred. Part of the reason for this has
been the international inflation sparked off by the
1973 oil crisis, which one could not reasonably
expect to have been foreseen. Nevertheless,
there is some reason to believe that the estimates
were optimistically low in any case. Tenders received
before the impact of the 1973 oil crisis apparently
showed costs per spindle and per loom over twice
as high as the estimates in the Plan. (24) Moreover
no provision for price increases was made in the Plan
and more importantly, in detailing its implementation,
despite the fifteen-year time horizon. The effect

^{*} See above, Section 2.2.2

⁽²⁴⁾ ibid.

of this under-costing was of course to increase the capital sums required to carry through the projects. This in turn, since the Sudan was and is very largely dependent on foreign capital for the implementation of its textile industrialisation plans, meant a need to raise larger sums by international loan. In consequence these took longer to arrange - a further source of delay. The need to raise international finance for the capital requirements of the plan has also tended to introduce constraints on the choice of technology. There is the general feature that although the Plan was based on the use of simple technology, this was, and is, not readily available from the established overseas suppliers considered acceptable by the bodies providing the funds. Most established textile machinery makers offer equipment geared to the demands of the more developed textile industries of the world. Further, more particular, constraints on the freedom of choice of technology arise from the inevitable practice of attaching 'strings' to international, particularly intergovernmental loans. Thus the Hasaheisa mill was fully equipped with Chinese equipment as a condition of a Chinese loan and the projected Khartoum North fine spinning mill is similarly to be provided with Romanian equipment by agreement between the two governments. Even when finance is not secured by direct intergovernment loan with such provisions, there are clearly strong pressures for the equipment to be supplied from the country providing the major part of the finance (e.g. by providing the finance in the form of trade credit guarantees). In fact, the

source of equipment for the public sector projects so far implemented in the Sudan follows vary closely the source of the finance and it is very likely that this is largely true in the private sector also.

4. The planning context

- 4.1 It is neither feasible nor appropriate that the formulation and monitoring of plans for the textile industry in the Sudan (or indeed in any country) should proceed independently of plans for other industries or for other sectors of the economy. The experience of rapid development of the textile industry to date in the Sudan has demonstrated in a very pointed way how important are the links between sectors and between It is at these very interfaces that the difficulties of development have shown up most sharply. For example, there is the need to match the availability for local consumption of suitable cottons with the expanding requirements of the local industry. Appropriate provision of infra-structure also emerges as an important factor affecting textile industry supplies of energy in appropriate forms of development; transport facilities, and of cement for construction have all been visible as actual or potential constraints on development.
- 4.2 Preparation of a plan for the next phase of development of the Sudanese textile industry therefore needs to be done in a way which will enable the plan to be integrated with and evaluated in relation to other sub-sectoral and sectoral development In the ideal situation, the development of each plans. industrial sector would proceed towards a set of objectives consistent with the overall development goals of the country and matched with the objectives of all other industrial and non-industrial sectors. Moreover, the planning of such development would incorporate an effective mechanism for the resolution, in accordance with overall development policy and goals, of problems arising from potential conflict or mutual This is perhaps of particular exclusiveness of objectives. importance at the stages of evaluating plans and of monitoring their progress,

- 4.3 In the real world the co-ordination and integration of plans, and of their implementation and monitoring, can only take place by means of interaction between the institutions accepted within the Sudanese social and The paragraphs which follow political framework. therefore attempt a review of the institutional context within which Sudanese textile industry development has taken place to date. This has both substantive and procedural significance for the next phase of textile industry planning in the Sudan. Any new plan must specify and/or obtain commitments of inputs from all relevant authorities (e.g., power supply, water supply, transport, possibly even housing) and must be designed so that in the course of its implementation, it has the best chance of obtaining the required level of inputs at the appropriate time. The processes of formulation and acceptance of a workable plan will require the fullest exchange of information and views between all organisations concerned, however marginally.
- Even before independence some steps had been taken towards 4.4 the establishment of a textile industry. The earliest occurred around 1950 when a small cotton spinning and weaving mill was established at Nzara in Equatoria Province. This was part of a wider scheme of economic development for the Azande people of this area, proposed initially in 1943 by the director of the Department of Agriculture and Forestry in the Sudan and brought into being by the Equatoria Projects Board. 'Damouria' fabrics manufactured at Nzara came on to the market in 1952, but production ceased four years later in the civil disturbances which occurred at that time in Southern Following the Addis Ababa conference in 1972 and Sudan. the establishment of the Regional Government of the Southern

Sudan, production was re-started in 1974, but appears to have aeclined to a small fraction of available capacity over the next four years, due to shortages of fuel and of cotton lint for spinning. The mill was reported not to be in production in the autumn of 1978⁽¹⁾ and it was not established during the project team's visit to the Sudan in July 1980 whether or not the Nzara mill has again been in operation.

- 4.5 During the early 1950's there was further government initiative towards the setting-up of cotton processing on The Sudan Board of Economics & an industrial scale. Trade, with assistance from the U.K. Bourd of Trade, commissioned a British expert to advise on the practicability of establishing a spinning and weaving unit in Northern Sudan using the American type of cotton from Despite acceptance of this report, the Nuba mountains. the earmarking of funds for this purpose in the 1952 development budget, and the preparation of more detailed, costed plans for a mill, the scheme did not proceed. Because of general economic difficulties and heavy calls on the development budget for other purposes, it was decided in 1954 to defer the government-financed textile industry scheme.
- Following independence in 1956, the Industrial Advisory

 Committee set up at that time recommended the establishment of a cotton textile industry as essential to the country, but that this should be undertaken by private foreign and local investors, and not by the Government except as a last resort. As a result of publication of this policy by the Government, and under the influence of the concessions offered by Approved Enterprises Concessions Act 1956,
 - (1) "A Report on an Industrial Survey of the Southern Region of the Sudan" UNIDO December 1978.

a number of applications to establish textile businesses were received. Only two of these came to fruition: Sudanese American Textile Industries Ltd. registered in 1958 and subsequently re-registered (upon change of ownership) as Sudan Textile Industries Ltd., and Khartoum Spinning and Weaving Co. Ltd., registered in 1959 as a private company and converted in 1964 to a public company. Sudanese American Textile Industries was initially financed 50% by a U.S. loan granted under an Aid Agreement of 1958, $12\frac{1}{2}$ % by equity capital provided by a Greek shipowner and the remaining $37\frac{1}{2}\%$ by suppliers' credit made available by a consortium of British companies involved in erecting and Khartoum Spinning and Weaving equipping the mill. Company was promoted by a group of three Sudanese textile importing companies, and initially financed by credit from a Japanese equipment supplier. This was supplemented later by equity and loan participation by the International Finance Corporation which also prompted the broadening of the equity base by public offer of shares. two companies which provided the base for more recent textile industry development.

In the early 1970's shortage of foreign exchange began to be perceived as a constraint on Sudanese economic development, and the Ministry of Industry declared a policy of establishing manufacturing industries based on local agricultural raw materials so as to use indigenous resources to substitute for imports and in the longer term to generate higher added-value exports and boost foreign exchange earnings. Cotton textiles were an obvious candidate in a major cotton-growing country, and the Ministry of Industry obtained UNIDO help in the preparation of the tentative 15-year plan for Sudan cotton textile industries. The draft of the plan produced

by the study team was discussed at a Cotton
Industrialisation Seminar in 1972: one of a series of
such seminars organised by the Ministry of Industry to
discuss the selection of industries for development in
accordance with its import-saving and export-promotion
objectives. The plan was subsequently approved and
concessions extended to encourage its implementation by
private enterpreneurs, initially by expansion of the two
existing mills and establishment of three new mills and a
central dyehouse. In 1973, however, not very long
after publication of the plan, the government took the
decision to accomplish part of the expansion by
establishing a number of public-sector mills.

4.8 Another strand in textile industry development is represented by the processing of kenaf. In this case, unlike cotton, there was no established commercial cultivation of kenaf in the Sudan, though experimental work had been taking place since 1960 with both rainfed and irrigation methods of cultivation. In pursuit of the same aims as those prompting the 15 year tentative plan for cotton textiles, a report examining the technical and economic feasibility of kenaf processing had been submitted to the Ministry of Industry in 1969 by a member of the Sudan Industrial Research Institute. This report examined a proposal to produce sacks from locally grown kenaf, in considerable detail as to production methods and costs. It found sufficient commercial merit in the project to justify further intensive investigations, and recommended the establishment of a joint Ministry of Agriculture/Ministry of Industry committee to pursue these investigations of the combined agricultural/industrial project. The outcome of this other textile industry development initiative consisted of two government schemes formulated in the early 1970's for kenaf-growing and processing – one at Abu Na'ama in the Blue Nile province and one at Tonj in Southern Sudan.

- 4.9 Over the period since the adoption of the 15-year plan for cotton textiles and the formulation of the kenaf projects there has been considerable change in the socio-political and institutional environment within which planning and implementation of industrialisation in the Sudan has taken place. This has affected and has been affected by, changes in the detail of plans and their execution in a way which makes it extremely difficult and not very meaningful to try to identify cause and effect. In this situation it is hardly surprising that the team were unable, despite vigorous pursuit of enquiries during their limited time in the Sudan, fo establish a complete and unambigous picture of the participating bodies and their roles and responsibilities.
- During the period of the Sudan's first Ten-year National 4.10 Development Plan (1961 - 1970) an Industrial Development Corporation (IDC) was set up (in 1965) to oversee the construction and operation of publicly-owned industrial facilities, most of which were to be in the food-processing sub-sector. It was this corporation which initially became responsible for the execution of the Abu Na'ama kenaf project following the feasibility study mentioned In 1969 and 1970 the Government nationalised 36 companies, and it became the responsibility of the I.D.C. to manage these also, though some were In 1971 it was re-organised subsequently de-nationalised. and given the new title of Industrial Production Corporation The I.P.C.'s primary responsibility was to (I.P.C.). oversee the management and operation of established

Responsibility for development of major enterprises. new enterprises was allocated to the Ministry of Industry. The Ministry of Industry itself was thus apparently responsible for the early detailing and implementation of investments under the 15-year plan for cotton textiles. By 1976 it was considered that the I.P.C., covering as it did all sectors of industry, had become cumbersome, Its functions in respect of overgrown and bureaucratic. individual industry sectors were hived off to separate industry Corporations, the relevant one for textiles being the Spinning and Weaving Corporation. Remaining functions were returned to the Ministry of Industry. Overall consideration of planning issues extending beyond the manufacturing sector were the responsibility of the National Planning Commission in the early 1970's, but by the end of the decade this was handled by the Ministry of National Responsibility for detailing and implementation Planning. of plans in sectors other than manufacturing has lain with a variety of ministries (e.g., transport, agriculture) whose constitution and areas of responsibility have also been (and are still) subject to re-organisation.

Also during the period of industrialisation, Government 4.11 policy, and therefore the emphases and direction of planning Policy towards objectives, has undergone some changes. manufacturing enterprises, when the 15-year cotton textile plan was first formulated, favoured private ownership controlled within an overall framework of development by the granting of concessions. Subsequently, a greater degree of direct public ownership was envisaged, and currently a 'mixed economy' approach with both private and public sector ownership appears to be accepted. In the kenaf sector, with its close integration with the establishment of a new branch of commercial agriculture,

Government ownership has figured more strongly throughout. This has been the case, too, for the Nzara mill which is part of an industrial complex including, in addition to a ginnery for locally grown cotton, an oil mill and refinery, a soap factory and a saw mill and woodworking shop. Moreover, it was established before independence as a Government enterprise and has been administered by the Regional Government of the Southern Sudan since the creation of that administration.

4.12 Policy in respect of the structure and location of the cotton textile industry has also undergone some change Phase 1 of since the formulation of the 15-year plan. the plan envisaged five integrated production units incorporating balanced spinning and weaving capacity. To date, only one such unit has been established, at Hasa Heisa, and one further unit, at Gadow, is scheduled although the best available estimate suggests this will not become operational before 1983. The remainder of the public sector units, whether completed or under construction, are singleprocess - 6 weaving sheds and 3 spinning mills. The plan recommended that the spinning and weaving mills be distributed over a wide area of the country, to give extra impetus to social and economic development in areas outside the 'three towns', and also to locate them within or near the cotton growing areas. This locational aspect of policy has largely been maintained, if not intensified. The result is that the six weaving sheds are to be supplied with yarn from one central spinning mill at Hag Abdalla (when it becomes operational) at distances of up to 1,700 km.

4.13 It was clear from the outset that overseas finance would be required for a considerable share of the investment necessary to achieve the demanding objectives of the 15-year plan. The fact that this finance has been obtained from a variety of sources (see Tables 4.1 and 4.2.) has added further institutions to the list of those involved, and a further dimension to the problem of co-ordination between individual projects. Moreover, this complexity is intensified by the changes in public/ private sector emphasis in Government policy as discussed above, since private-sector enterprises can, at least in theory, be expected to make their own financing arrangements. A particular feature relating to institutions is the creation of the Sudan Development Corporation in 1974. This body has been concerned in the provision of finance for both public sector and private sector textile enterprises. In the public sector the group of 6 weaving sheds are included in the S.D.C. portfolio. These the S.D.C. regards as 'inherited commitments', the decision to arrange finance through S.D.C. having apparently been taken prior to the setting-up of the Corporation itself. Private sector textile enterprises with S.D.C. participation are Cotton Textile Mills, already in operation, and the Gezira Managle (Gematex) venture which is currently under construction. S.D.C.'s investment in textiles to date forms a large part of its total portfolio, and the team were informed during discussions with representatives of the S.D.C. that it is not expected that it will be increased.

Table 4.1

Sources of capital funds for Sudanese public sector textile enterprises

Enterprise			Source of foreign capital
Abu Na'ama kenaf project			Italy
Hasaheisa 'Friendship' integrated cotton textile mill			China
Shendi Weaving Shed			Belgium
Kosti	, n		
Ed Dueim	11	u	It
Mongalla	11	·	и
Nyala	"	•	н
Kadugli	"	n	19
Hag Abdalla spinning mill			France and Abu Dhabi
Khartoum North spinning mill			Romania
Port Sudan spinning mill			E. & W. Germany
Tonj kenaf project			Italy
Gadow integrated cotton textile mill			Italy

Note

Sources available to the team gave conflicting impressions of the precise percentage shares of foreign capital in the total investment of the enterprises shown, but in all cases the majority of the finance appears to be provided from overseas, while Hasaheisa and Khartoum North are believed to be fully funded from China and Romania respectively.

Table 4.2

Share of foreign capital in total investment of Sudanese private sector textile companies

Sudan Textile Inds., Khartoum North	n.a.		
Khartoum Spinning & Weaving Co. Ltd.	n.a.		
Blue Nile Spinning & Weaving Co. Ltd., Khartoum			
Red Sea Spinning Co. Ltd., Port Sudan			
Sennar Spinning & Weaving Co., Khartoum			
Cotton Textile Mills, Ltd., Khartoum North			
Wad Medani Textile Co. Ltd., Wad Medani			
International Spinning & Weazing Factory Ltd., Port Sudan	93%		

Principal Source:

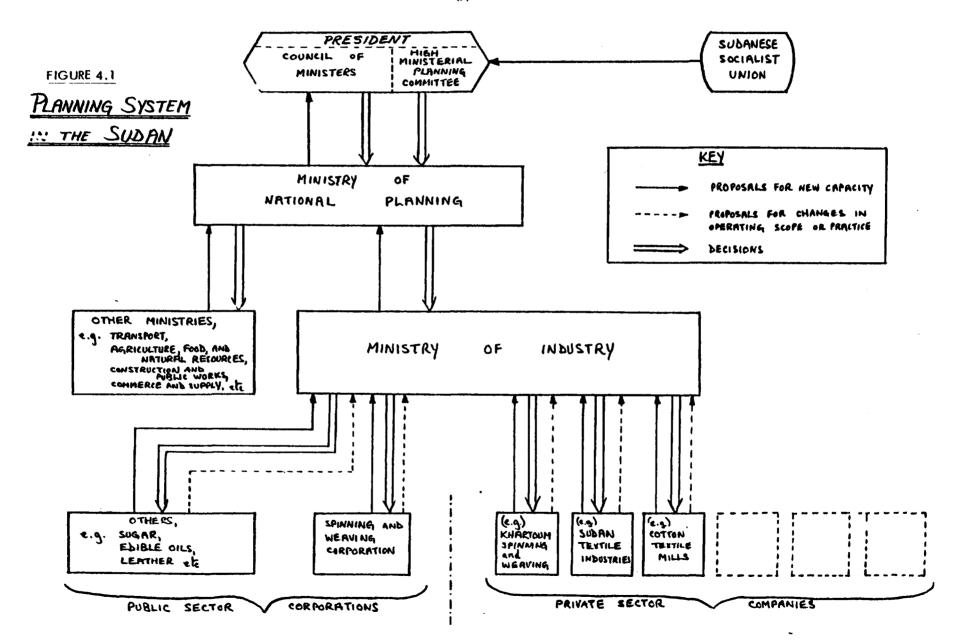
survey conducted by IRCI counterparts, on team's behalf.

Note

Sources of finance for private sector mills could not fully be ascertained, since the financing arrangements are generally more complex and involve a greater number of sources than in the public sector, and were not always disclosed in the information available to the team.

n.a. = not available in respect of current situation.
For initial funding of Sudan Textile Industries and Khartoum Spinning and Weaving Co., see text, para. 1.5.6.

- The other principal institutions involved with financing 4.14 the projects making up the planned programme of development are the Ministry of Finance and National Economy, the Bank of Sudan and its subsidiary, the Industrial Bank, and the ten commercial banks. Until recently, the Bank of Sudan's chief role appears to have been confined to exercising some control or influence over the activities of the commercial banks in industrial lending. However it has now been empowered to participate in the financing of development projects, so that it will have a rather more direct role in the future in public sector enterprises. The Ministry of Finance, as the fiscal authority, is concerned with the provision of local public funds through the Industrial Bank, which is responsible to it. Jointly with the Bank of Sudan it is concerned also with the level, servicing and repayment of government overseas debt. Despite their having the ultimate sanction in terms of the provision or withholding of funds, the role of the financial bodies has not emerged clearly either from study of the documents available to the team or from the interviews conducted during the period spent in the Sudan.
- During these interviews the team devoted some considerable time to establishing as far as possible the respondents' perceptions of the planning system as it currently operates. There was a reasonable consensus about the general framework of operation as far as capacity expansion and major changes in operating scope or practice are concerned, and this is presented in Figure 4.1. Nevertheless descriptions differed between respondents in respect of the precise allocation of responsibilities between the various institutions in the system, and in respect of the role and status of specific bodies such as the "Projects Bureau".



As mentioned above, the role of the financial bodies was also not entirely clear, particularly in respect of their influence on the sectoral and sub-sectoral balance of development and the assessment of the feasibility of These have therefore not been shown specific projects. Nor does the diagram attempt to in the diagram. represent the system in respect of trade, commercial and pricing policy plans which was also rather obscure. Co-ordination of plans between industrial sub-sectors appears to be the responsibility of the Ministry of Industry in conjunction with the Ministry of National Planning, while co-ordination between the industrial sector and other sectors of the economy is the responsibility of the Ministry of National This is claimed to be achieved in broad terms via development budget allocations and for individual projects via a Permanent Technical Committee set up to verify the details of project infrastructural etc. requirements at the negotiating stage.

4.16 Means for direction and control of development in the private sector are even more tenuous than in the public sector - as witness the very large number of licences which have been issued for private sector textile developments. 58 were outstanding at the end of 1979 comprising a total capacity of about 1.4 million spindles and 30,000 looms. It cannot seriously be envisaged that all these licences will be taken up, but their granting is strongly indicative that little or no effort has been made to achieve a balance of expansion between the private and public sectors of the industry, nor indeed to achieve any other identifiable objective. There is, however, some acknowledgement of the need to move towards at least establishing better means for direction and control of private sector development, whether or not the motivation exists.

The recent 'Encouragement of Investment Act' which consolidates a variety of largely pre-existing but scattered tax-relief provisions should, it is claimed, enable control of private sector capital investment to be exercised by the Ministry of Finance and National Economy and thus give a single focus for the implementation of development policy.

- Sections 2.1 and 2.2 above have shown that the development 4.17 of the Sudanese textile industry under the 15-year tentative plan (as subsequently amended) has undoubtedly been rapid, though not as rapid in a number of respects as envisaged in However, partly because of the the original plan. demanding pace set for development, certain areas of difficulty have become evident, many of which point up the need for improvements in the functioning of the planning These difficulties have commonly been shown up system. by delays in project realisation and/or by low levels of efficiency of operation. They are evident in the following areas, which have been discussed in more detail in Section 3.5 above:
 - 'Upstream' and 'downstream' and other linkages with sectors or sub-sectors beyond the defined limits of the 'textile industry'.
 - Provision of infrastructure, both in the construction and subsequent operation of projects.
 - 3. Supply of manpower, of appropriate quality in appropriate quantity.

- Trade policy and the establishment and appropriate allocation of markets.
- 5. Structure and location of the industry.
- 6. Scale and timing of development.
- 7. Financing of projects.

In most of these instances relationships with broader aspects of economic and social development and with institutions beyond the limits of the textile industry are involved. In the execution of the plans to date, these areas of difficulty are clearly visible in relation to each of the three levels of plan formulation, project assessment and implementation, and monitoring progress against plan targets. Nevertheless, since one cannot reasonably expect perfect foresight on the part of planners, and unpredictable changes of circumstances do occur, perhaps the most significant lesson to be learnt is the importance of having monitoring and feedback systems which will enable adjustments to be made in response to observed deviations from the planned targets.

5. Basis of approach in future textile industry planning

- 5.1 From the analysis above can be identified a number of fundamental considerations in respect of planning for the development of the textile industry, or indeed any particular industry sub-sector, in the Sudan. These are by no means unique to the task in hand, nor to the country. Nevertheless, it is the case that conditions peculiar to the Sudan have affected, and will in future affect, the nature of the planning decisions and the success of their execution.
- 5.2 Nearly all large-scale public policy issues involve a multiplicity of objectives, and Sudanese textile industry Consideration of the development is no exception. specific objectives of the 15-year Tentative Plan and the subsequent 6-Year Plan (see above, Section 2) shows the large number that were identified (sixteen in the The list includes both economic and 6-Year Plan). This is inevitable in almost socio-political objectives. all societies since generally the furtherance of the one type of objective has substantial implications for the other. Moreover, there is a considerable degree to which individual objectives, though not completely mutually exclusive, are partially conflicting in the sense that trade-offs exist between pairs of objectives when resources are constrained. in a number of cases a particular objective can be achieved only at the expense of some other objective or objectives. A particular example shows in the regional dispersion of textile industry establishments, in accordance with regional development objectives ((iii) in the 15-Year Tentative Plan, (xii) and (xvi) in the 6-Year Plan). This has adversely

affected the industry's ability to achieve its productivity and economic efficiency objectives (embodied in objectives (i) (ii) (iv) (xiv) and (xv) of the 6-Year Plan). (See para 2.1 and 4.12 above).

- It would be unreasonable to suppose that it would be either 5.3 feasible or desirable to limit the objectives in future Sudanese textile industry development to a set among which there was no potential conflict. An important consideration, therefore, is the extent to which any approach to planning which is contemplated is capable of accommodating multiple objectives and of resolving the conflicts which may occur between them. Such conflicts arise over the relative importance to be attached to various goals. A planning process which enables these relative values, as assessed by the decision makers (i.e. the Sudanese people or their elected or appointed representatives) to be taken into account as explicitly as possible is thus highly desirable.
- It is inherent in every form of planning for future human activity that the outcome of the planned actions is uncertain.

 Future events are always uncertain and Sudanese textile industry development in the decade of the 1970's has demonstrated this more than adequately. The corollary of this is that choice of a particular option at a given time, that is when a plan is formulated and accepted, will almost always affect the range of options open at subsequent decision points. The importance of these 'dynamic' aspects of planning options, in the face of the inevitable uncertainty of future events, is clear. The situation may even arise when it may be judged preferable to adopt a 'second-best' initial option in order to provide the flexibility in later options to cope with the

possibility of changed circumstances and/or failure to reach initial targets.

- 5.5 The logical implication of the uncertainty of future events is that assessments of the technical and economic feasibility of plans can strictly only be made in terms of probabilities rather than certainties. A planning process which, however crudely, explicitly caters for the uncertainty inherent in specifying the outcomes of choices between options is once again desirable. If it can go further than this and take into account to some extent the fact that the outcome of an action usually constitutes an opportunity for further actions with their associated range of probabilities of success then it is even more preferable, as long as the increased complexity is not too great for the resources available.
- 5.6 These considerations become all the more important in view of the fact that in the particular case of textile industry development in the Sudan the scale of activity dependent on the planning decisions is large and the time-horizon for planning is long, i.e. the requirement is to plan up to the The Sudan has as yet a predominantly year 2000. agricultural economy, the output of the manufacturing and mining sector amounting only to approximately 10% of CDP. Of this, a relatively large share is accounted for by the In employment terms the significance of textile industry. textiles is perhaps even greater within the manufacturing sector because of its relatively labour-intensive character.* The scale of activity dependent on textile industry planning decisions is also large in terms of the number of subsidiary levels of decision which are involved. Textile fibres, particularly the natural fibres, pass through a large number
 - * Data from the Industrial Survey of the Sudan, 1970, show textile, clothing and leather industries to have accounted for about 23% of value of output, 33% of capital investment and 37% of employees in manufacturing industry in that year. Comparable current data were not available to the team.

of processing stages to convert them into the form in which they are finally used (e.g., clothing). The process of preparing detailed action programmes from broad plans for the industry as a whole is therefore a substantial task. Moreover it has implications beyond the textile processing industry, as conventionally defined, affecting prior and subsequent activities such as cotton-ginning and garment-making.

- 5.7 Bearing these considerations in mind, one can divide the total task of industrial sub-sector planning into four types of activity. These form a logical sequence, though not necessarily a chronological order. In practice it will be important to repeat the earlier steps in the sequence a number of times in order to refine the set of feasible plans considered and the process of choosing between them.

 Activities are:
 - to explore the value system applicable to textile industry planning in the Sudan
 - 2. to generate a range of feasible policies and plans
 - to assess feasible policies and plans by reference to their implications in terms of the value system
 - 4. Select the development programme
- Exploration of the value system or 'ground rules' within which textile industry planning should take place is necessary since it can be presumed that there will be a number of objectives to be served and that it is likely that these will not always be wholly consistent with each other. Thus part of the activity in planning will be to identify as far as possible, within broad national development

considerations, the set of values applicable to textile industry planning decisions, and the relative importance to be attached to each one. In this way, one may consider the relative merits of plans in terms, for example, of their contribution to growth of GDP, to employment creation, regional development, and the balance of payments.

- 5.9 Generation of policies and plans which will contribute to the achievement of development objectives is clearly essential. It is likely, however, that a number of possible paths of development may be identified, particularly when there is a variety of objectives, and when account is taken of the uncertainty and dynamic aspects of planning options. This type of activity will therefore consist of the drawing-up of a number of possible general 'scenarios', covering the range of policies feasible to achieve the major development objectives. Within these policies, more specific plans and projects can be identified and ultimately specified.
- In order to be able to assess or evaluate policies and plans, it 5.10 is necessary to describe their implications in terms of the values which have been identified. Some appreciation can then be gained as to the extent to which each policy or plan satisfies individual dimensions of value and fulfils individual objectives. Depending on the degree to which the dimensions of value can be treated as objective, this can be done in a more or less, quantitative mariner. It is at this stage that some account can be taken of the uncertainty inherent in predicting the outcomes of actions taken in pursuit of the policies. Evaluations on individual dimensions of value or in relation to specific objectives can then be combined, according to the relative importance accorded to each, to permit an overall evaluation to be made.

- It is from this activity of assessment that it will be 5.11 appropriate to return to the exploration of values and generation of policies and plans. Initial consideration of a feasible set of policies may reveal that their implications in terms of some objectives are so slight as to cause the relevance of those objectives to textile industry policies to be questioned. generally, knowledge of the implications of a set of. policies may prompt revision of the dimensions of value and indeed of the means by which the extent of fulfilment Equally, consideration of the of objectives is judged. approximately limits of the range of initial options and their sensitivity to relative values placed on objectives may encourage more precise definition of specific options and/or permit the selection of those options sufficiently viable to be examined in more detail.
- 5.12 After a number of repetitions of this cycle, the final selection can be made of policies, plans, and/or projects which are to form the development programme for the The number of iterations is dependent textile industry. on the speed with which the number of options and of relevant or critical dimensions of value reduces, on the level of detailed definition considered appropriate for options, on the degree of consensus required concerning the process of choice, and of course on the extent of resources available The criterion of choice would be to for the planning task. select that policy option or that set of options for which the combined evaluation across all accepted dimensions of value is highest - that is the option or options which best fulfils the relevant objectives, taking into account the relative importance of different ones.

The preceding paragraphs of this section describe our 5.13 recommended approach to planning for the development of the Sudanese textile industry principally in terms of the preparation of an initial plan. However, it is in the nature of planning that plans, once made, should not be regarded as immutable, but should be subject to regular if not continuous revision. Indeed the terms of reference of the present study make it clear that the master plan for the textile industry is to cover the period up to the year 2000. This can only sensibly be achieved by outlining general policies to be pursued over the whole period, focussing down through broad programmes for the medium-term, to specific plans and projects for the immediate planning The latter can be defined as the period of time, plans for which demand immediate commitment of resources. Moreover, textile industry planning should obviously be phased in with the planning cycle for the whole economy. If the current 6-Year planning period is to be the norm in future, there would be 3 such periods between the end of the present Plan in 1982/83 and the end of the century. would provide appropriate points for revision, updating and the detailing of targets for the next or immediate planning The Sudanese experience since 1972, reviewed in Section 2.2 above, bears witness to the importance of establishing adequate means of monitoring and control of the implementation of plans, if such a programme of revision and updating, etc., is to be successful in responding to feedback of experience and changes in conditions, including changes in values and objectives.

5.14 The basis of approach put forward above is well suited to such a process of periodic revision, updating and It is capable of accepting new refocusing of plans. information into each of the activities defined, and it is not necessary to re-work the whole planning task from the beginning unless the changes are so widespread as to Thus feedback from experience leading to demand it. better estimates of the probable outcomes of actions or to adjustment of the timescale of implementation of projects can be used to generate new policies and plans for a further planning period. They can be assessed in terms of the initially established objectives, if these are to be maintained. If achievements are deviating from targets established under the development programme, there is scope for assessing the effect of the deviations and the importance, within the established value system, of devoting resources to remedial Changes in the nature and relative importance of action. objectives can equally well be incorporated.

6. Availability of local resources for planning tasks

- 6.1 The principal resource required for planning functions is, of course, appropriately qualified and experienced manpower, since given this and adequate finance, other necessary resources can be acquired. In common with other developing countries, however, it is precisely this particular resource which is in shortest supply in the Sudan. This is clearly recognised in the appropriate section of the Six Year Plan, (26) particularly in respect of the 'management cadre' which is the chief category of manpower appropriate to this task.
- 6.2 Within the public sector in particular, the constraints placed on implementation, evaluation, and monitoring activities by lack of appropriately qualified and experienced manpower have been recognised in the two phases of the UNIDO project "Improvement of the Efficiency of the Public Sector Industries". (27) Phase Two of this project, now in train, has as its overall objective "to assist the Government, and the Ministry of Industry in particular, in strengthening its institutional and staff capacities needed for the overall management, monitoring and direction of existing public sector manufacturing industries; as well as the implementation of new industrial projects in the public and mixed sector; while simultaneously improving the management capabilities and the economic performance of specific selected public sector corporations and factories". (28) In seeking to achieve this objective, the project recognises, on the basis of the Phase 1 activities, that the development of management capacity will be crucial, both at the level of a Monitoring Unit/Technical Bureau associated with the Ministry of Industry, and at corporation and individual factory level. basic concept of the project is for a team of expatriate experienced

^{(26) &#}x27;The Six Year Plan' op. cit. Vol. 1 Chapter 7

^{(27) &#}x27;SUD/79/010...' op. cit.

⁽²⁸⁾ ibid. p. 2

industrial managers to give 'on-the-job' training and experience to Sudanese counterparts while tackling a planned series of tasks which in themselves will make a contribution to the raising of efficiency. (29)

- organisation's response to its changing environment, within overall objectives, are integral parts of the manager's task, the insights seen as relevant to improvement of efficiency of the public sector industries are equally applicable to preparation of plans.

 Moreover, while the project referred to in para. 6.2 deals only with public sector and mixed enterprises, there is little doubt that the shortage of management capacity (in terms of the coupling of qualifications with experience) affects the private sector too.

 In any case, overall planning and control of private sector development in the context of a mixed economy such as the Sudan, involves guidance by the executive arm of Government.
- 6.4 Some attempt was made, during the first phase of work on this present project, to explore the feasibility of Sudanese counterpart staff undertaking the type of mill survey work, information gathering and case study recording which would be necessary both to establish the information base for preparing the development plan, and to monitor its progress and update it in the future. Four counterpart staff were made available for this work:
 - nominated by the Spinning and Weaving Corporation:
 Mr. Fathi El Rahman Fargabi
 Mr. Abu Bukr El Fadli

(29) Ibid, pp 5 - 7.

⁽³⁰⁾ see for example: 'The Management Problems of Sudanese Business Enterprises' - op. cit.

 nominated by the Industrial Research and Consultancy Institute;

Mr. Ahmed Ibrahim Fadul, Head of Textiles Section Mr. Ghazi Ibrahim El Fahal, Textiles Section.

6.5 The duties entrusted to these counterpart staff were twofold:

firstly, to conduct a case-study of the Abu Na ama kenaf factory, using a simple guide to procedure/list of information requirements prepared during the team's mission to the Sudan. This case-study was intended to provide information on the basis of which the attempt could be made:

- (a) to evaluate the cost, in terms of 'lost' production, of obstacles such as lack of necessary infrastructure, or failure to achieve proper co-ordination of linkages with other sectors and sub-sectors.
- (b) to identify the technical possibilities (if any) for alternative modes of operation to overcome or circumvent such obstacles, and to assess their effect on quantity or quality of output.
- (c) to assess the cost of such modes of operation, so as to make an assessment of the incremental benefits, if possible in value-added terms.

secondly, to undertake a programme of mill surveys, again using an information schedule prepared during the mission. This activity was intended to yield an information base upon which to review the current status of the industry in relation to the 15-Year Tentative Plan. It was intended to include all major firms in both public and private sectors, estimated at approximately 25 in number, together with up to four small firms selected from each of the weaving, knitting and readymade garment industries.

- 6.6 The case study was to be undertaken by the full counterpart team, while the mill surveys were to be divided between them, Spinning and Weaving Corporation nominees covering the public sector mills, and I.R.C.I. nominees the private sector. Mr. Fathi El Rahman Fargabi (S.W.C.), the only one of the counterparts to have been a ailable to work with Shirley staff during the period of their mission, was to act as liaison man for the assembly and despatch of material via UNDP, Khartoum. The counterparts were briefed at a meeting held towards the end of the mission in the Sudan, and objectives in terms of achievements and target dates agreed with them.
- In the event, the counterpart staff were able to meet neither the 6.7 time deadlines nor the full achievement objectives. Despite the valued assistance of the staff of the UNDP Resident Representative, Khartoum, in urging completion of the work, despatch of information was delayed for over 6 weeks. This, of course, necessitated adjustment of the date of submission of this report. Moreover, the information obtained fell short of the targets, in some cases quite No case study as such was produced for Abu Na'ama: substantially. copies of three earlier documents were sent. These were: the initial (1969) report on the technical and economic feasibility of a kenaf project; the contract for the Abu Na'ama factory project; and the contract for the Abu Na'ama fibre production plant. While some of the information required for the case study, relating to initial intentions, could be extracted from these documents, virtually no information relating to subsequent experience, achievements and In respect of the mill survey, 15 information problems was provided. 7 relating to public sector establishments schedules were received: and 8 to major private sector establishments. None were received for small scale enterprises. The schedules for the public sector establishments lacked much of the information required: indeed they added little or nothing to the summary information provided, during the mission, from records held at Spinning and Weaving Corporation

headquarters. The schedules for private sector establishments had been completed much more fully though some gaps still remained. No commentary was received for either sector despite emphasis being given in the briefing to the value to the project of learning about the range of further information available and in particular of learning of and understanding the difficulties encountered in trying to obtain the information required to complete the schedules.

This experience supports the views indicated above concerning 6.8 the scarcity of appropriate planning resources. Clearly the local staff likely to be available to gather information about Sudanese textile industry experience and achievements to date, necessary as a base for planning, need considerably more help, guidance and supervision in the course of the task than could be made available in the framework and with the resources of Phase i of this project. The conclusion drawn by the Shirley team is that considerably more intensive involvement of consultants will be required in Phase II than was originally envisaged. Only in this way can an adequately reliable and detailed information base for planning be secured, and appropriate 'on-the-job' experience be gained by counterpart staff. In particular, consultant time will be needed to reinforce the lessons of that experience so that counterpart staff can motivate themselves to cope adequately with future monitoring and updating of the development plan, relying much less on external consuliants.

7. Draft terms of reference for the preparation of a development plan

7.1 Objective

The objective of the next phase (Phase II) of the overall project is to assist the Government of the Sudan in preparing a draft of a development plan for the textile industry. This draft plan will be reviewed and revised in Phase III. The draft plan will indicate broad lines of development for the industry over the next three ó-year planning periods for the Sudan i.e. up to the year 2000, and specify more detailed programmes of action for the first of those periods. It will incorporate means of monitoring and control of progress towards targets specified in the plan. It will be capable of recurrent updating at appropriate intervals establishing as appropriate, new lines of development and further programmes of action, taking into account the industry's rate of progress and any relevant changes in national priorities and policies.

7.2 Outputs

The plan will present recommendations, at a level of detail appropriate to each time-horizon, for the Sudanese textile industry, covering all stages of processing from yarn production, through grey and finished fabric manufacture, to knitwear and ready-made garment production, and including those fibres and filaments actually or potentially available to the industry. These recommendations will concern the following:

- (a) the nature and scale of the markets to be served and the means of access to them,
- (b) the nature of the products and the scale of production,
- (c) the nature of the technology to be employed,
- (d) the extent of integration of sequential stages of production and the location of the production establishments,

- (e) the nature, source, and extent of commitment to the industry of: factors of production (including in particula capital); raw materials; and infrastructural facilities,
- (f) Policy relating to the valuation of the industry's outputs and inputs,
- (g) information and action systems appropriate for the monitoring and control of implementation of the foregoing recommendations.

7.3 Activities

- 7.3.1 It is necessary for the plan to be developed in accordance with the social, political, and economic preferences of the Sudanese people, as exemplified by previous behaviour patterns or interpreted and expressed by their elected and appointed representatives. To this end, it will be appropriate to identify those bodies with a significant stake in or voice in planning decisions for the textile industry, and to explore with them the system of values appropriate to such decisions, so as to permit the explicit use of these values and their relationships as the basis for the setting of objectives and the generation and evaluation of plans. In practice this will include, but not be restricted to, discussions with Government Departments and official bodies. These discussions will seek to ascertain aspirations, priorities and resource constraints significant for decisions necessary in the formulation or textile manufacturing policy as outlined in 7.2 (a) to (g).
- 7.3.2 As the nature and relative importance of objectives for Sudanese textile industry development begins to emerge from the activities described in 7.3.1, a further

key activity is required. This is to examine the possibilities open to the Sudan for action in order to meet those objectives. The task is to identify the issues for decision in textile manufacturing policy as outlined in 7.2(a) to (g), both in terms of broad development paths or scenarios up to the longer time horizon and more specific policies, action programmes or projects for the more immediate planning period.

- 7.3.3 The starting point for this process of generation of policies and plans would be a full-scale technoeconomic survey of the current state of the Sudanese cotton and kenaf processing industries, so as to establish with some accuracy the nature and extent of the gap between present achievements and ultimate objectives. The survey will be based on a comprehensive data-gathering exercise, which will in addition serve as a pilot for the information systems necessary for monitoring and controlling the implementation of plans. The survey, which would be designed in the light of experience of data collection in the first phase of the project, would make appropriate use of Sudanese counterparts and would also involve a programme of visits by the sub-contractor's staff to obtain at first-hand data on and understanding of the situation and problems.
- 7.3.4 By this means an appreciation would be gained of the constraints on the nature and pace of textile industry development in the Sudan so as to help in initial consideration of the feasibility of possible development paths or programmes of action. The set of feasible plans and the criteria and process of choice between them would then be refined by examining

the outcomes of possible actions in terms of the likelihood of their meeting the development objectives i.e. of being in accordance with expressed values and preferences. Reconsideration of plans and of the relative importance accorded to objectives would take place until recommendations had been identified both for the long and the short term, which appeared to be in accordance with an acceptable consensus of values or preferences.

- 7.3.5 The process of assessment or evaluation of possible development paths or programmes of action described in the preceding paragraph would include but not be limited to examination of their economic implications. This would be conducted both at the more general level of examining demands on resources and the value of those resources in alternative uses, and at the more specific level of estimating the costs and expected financial returns of individual programmes of action and projects. Financial analyses and budgets for the recommended development plan will therefore be a product of this activity. However, the process of assessment would also be concerned with establishing the degree to which financial and economic criteria may be modified to take account of other social and political objectives.
- 7.3.6 The final activity in this phase of the project would be to prepare a draft final report of the procedure, findings, and recommendations of this phase of the work. This would enable Phase III of the project to proceed by the presentation of the draft plan to the Sudanese Government jointly by representatives of the sub-contractor and of UNIDO so that the final determination of the development plan can be made by the Government of the Democratic Republic of the Sudan.

8. Draft detailed work programme for the preparation of a development plan

- 8.1 A programme of work in pursuance of the terms of reference suggested in Section 7 above is detailed in the attached network diagram (Fig. 8.1). The programme, which embodies the basis of approach discussed in Section 5 above, is organised in the following time-s equence of activities:
 - 8.1.1 Preparatory work
 - 8.1.2 Data gathering
 - 8.1.3 Formulation of broad strategies and determination of policies for long-term development.
 - 8.1.4 Consideration of tactics, formulation and assessment of action programmes for short-term development.
 - 8.1.5 Assembly of a tentative outline of the complete development plan.
 - 8.1.6 Report preparation.

The network diagram shows that the process of exploration of the system of values applicable to textile industry planning in the Sudan is an integral, though identifiable, part of the three major steps of the sequence (8.1.2, 8.1.3, 8.1.4), which in themselves represent the generation and assessment of policies and programmes.

Also integral to the work programme and indicated in the diagram, is substantial involvement of Sudanese personnel. This occurs both in the under counterpart staff in all stages except the final one of report preparation, and in the process of exploring, refining, and determining the applicability of values, priorities and constraints relating to textile industry development. This process will involve repeated consultations

with persons or organisations involved in or affected by decisions on textile industry development. These consultations will be aimed at eliciting as precisely and explicitly as possible the criteria (economic, financial, social, political) by which the relative merits of possible development policies and action programmes should be judged.

- 8.3 A number of activities and groups of activities have been described in the network in a way which does not specify the degree of rigour or formality with which they may be pursued or the extent to which a quantitative approach may be adopted. A particular example is the assessment of potential short-term action programmes. For this the network indicates that physical, organisational, financial and economic requirements will be detailed, and that consideration will be given to relevant values, priorities, and constraints. There is no commitment, however, to any particular mode or technique of assessment such as for example. cost-benefit analysis, or project appraisal using discounted cash flows. The team support strongly the use of the most rigorous and precisely quantified methods appropriate to the circumstances, but also consider that these methods cannot be specified in advance. In the event, the degree of rigour appropriate in any activity will depend on the amount and quality of information available, the nature and depth of analysis appropriate for the needs of the decision-takers, and the resources available for the task.
- B.4 The programme indicates within the preparatory work a visit by consultants to the Sudan. This is enrisaged as a short period visit by a small probably two-man team. They would return to the UK after distribution of the questionnaires necessary to establish the information base for planning.

After a period allowed for recipients to attempt to complete the questionnaires, a larger consultant team (4 to 6 man) would travel to the Sudan for the major part of the project i.e. activities from questionnaire collection and checking through to preparing the outline of the development plan (8.1.2 to 8.1.5). This considerable consultant involvement is judged necessary as a result of the experience in attempting initial survey and case-study work in Phase I of the project, which has been reviewed in Section 6 above. In particular it will provide resources to give appropriate guided 'on-the-job' experience and training to Sudanese counterpart staff so that at the conclusion of the project there would be a nucleus of local staff better equipped to undertake the necessary monitoring and updating of the plans.

- The work programme provides two specific occasions for 8.5 general involvement of all the parties concerned in the planning process. At the close of the stage of formulation of broad strategies and determination of policies for the long term (8.1.3 above) it is proposed that a conference should take place at which the final agreement of policy guidelines should be acknowledged. This agreement will have been approached by the exploration and reconsideration of values, etc. in relation to feasible strategies and policies. After formulation and assessment of action programmes for the short term (8.1.4 above) and assembly of a complete, but tentative, outline development plan (8.1.5), a short series of final discussions is scheduled between key Government and industry officials, UNIDO and UNDP representatives and the consultant team to agree the plan prior to the preparation of the report.
- 8.6 The programme of work detailed in the network diagram complies with the terms of reference issued by UNIDO and included as

Annex E to the contract between them and Shirley Institute for the present, Phase I, study (31), particularly in respect of the outputs and activities described for Phase II. Further, it includes though in some cases with modification, the provisions of the original request submitted to UNIDO by the Government of the Sudan and appended to the terms of reference referred to above.

The particular relationship between network activities and specific items in the original Sudan Government request are indicated by the numbered 'flags' on the activity lines of the diagram. The numbers refer directly to the items in the Government's request, which has been reproduced as Appendix 4 to this report.

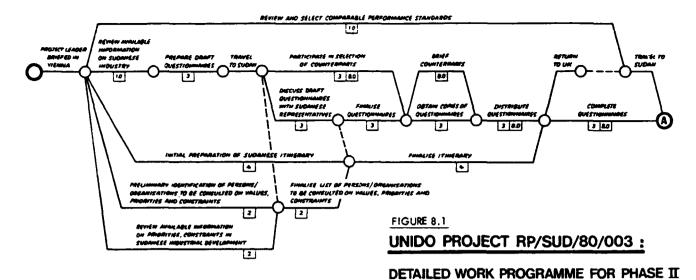
The work has been designed to take account, as far as possible, of the practical situation in the Sudan as best the team could observe this during their two-week Phase I mission and interpret it from the data-collection and case-study exercise subsequently conducted by the counterpart staff assigned to them.

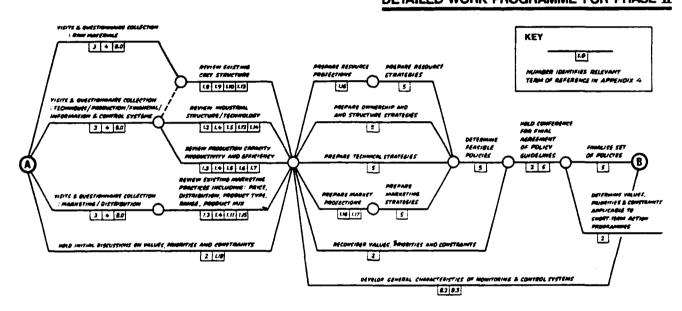
8.7 Preliminary estimation of the resources required to carry through the activities detailed in the network diagram suggests that approximately 24 man/months of consultant time would be required, in an elapsed time of 7 to 8½ months. This is based on the assumption that approximately 1 month is allowed for completion of questionnaires after their distribution. It assumes in addition a moderate level of rigour and quantification in assessment of policies and in particular short-term action programmes, in keeping with what appears to the team to be the spirit of the Sudanese Government's request (see Appendix 4). The requirement for direct counterpart resources as planned would be for 4 to 6 persons amounting to roughly 22.5 man/months, though more could be accommodated if it were thought appropriate to increase the opportunities for counterpart training.

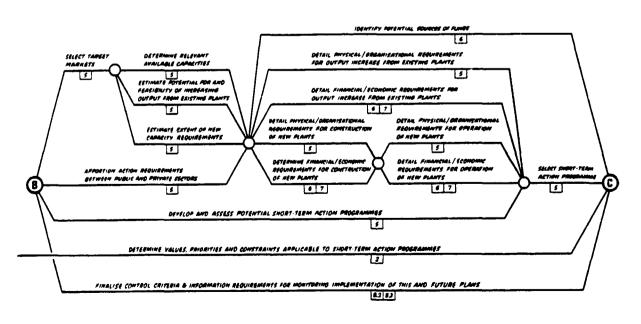
(31) UNIDO Contract No. 80/94: Project No. RP/SUD/80/003.

Counterpart staff should be drawn, it is recommended, certainly from the Industrial Research and Consultancy Institute, and also from one or more of: the Ministry of National Planning; the Ministry of Industry; the Spinning and Weaving Corporation; and any other organisation which would be expected to be concerned in the monitoring, control, or updating of the textile industry development plan.

In addition, some resources would be taken up by the need for many Sudanese organisations and individuals to participate as respondents in data- gathering and the consideration of values, priorities and constraints. The programme as outlined is, however, reasonably flexible. It could be adjusted to some degree to accommodate a greater or lesser emphasis on formal assessment which would be reflected in a higher or lower level of resources required. Similarly it could be amended, up to a point, to match a direct resource constraint.







1 1

1 1

APPENDIX 1

UNIDO PROJECT RP/SUD/80/003

List of persons interviewed during mission to Sudan, 15 - 31 July 1980

Public Corporation for Spinning and Weaving

Mr M.S.M.Abdalla, Dr Y.A.Abbass, Mr M.H.Medani,

Managing Director Technical Director Manager, Shendi Weaving Factory

Ministry of Industry

Mr Abdullatief Widatalla, Mr El Dawi, Dr Fath El Alim Ibrahim Under-Secretary
Director, Planning and Projects
Head of Planning Section

Ministry of National Planning

Mr Abdullahi Ahmed Mohamed, Mr J.Prazak, Dr A.Sattar, Mr M.El Shinnawy,

* Mr D.S.Pearson,

Inspector, Industrial Sector
IBRD Industrial Adviser
IBRD Agriculture Adviser
IBRD Education & Manpower
Planning Adviser
IBRD Senior Development and
Planning Adviser

Ministry of Co-operation, Commerce and Supply

Mr Osman Sharif, Mr Gaafar Abu Bakr, Miss C.David, Imports Dept.
Supplies Dept.
UNCTAD/GATT Trade Information
Adviser

Cotton Public Corporation

Mr Abdalla Medani Osman,

Managing Director

^{*} Interviewed in the U.K.

Sudan Development Corporation

Mr M.A. Nadeem,

Deputy Project Director

Industrial Research and Consultancy Institute

Mr Faruq El Tahib,

Mr Ahmed Ibrahim Fadul,

Director

Head of Textiles Section

Bank of Sudan

Mr Ibn Idris, Dr B.N.Khanna, Head of Research Dept.

I.M.F. Adviser

Project Bureau

Mr Abdalla El Tahir Bakr,

Mr Mohamed Sakran, Mr Adam Tageldin Suliman, Director

Head of Follow-up Staff

Follow-up Officer

Management Development and Productivity Centre

Mr Muzzamil Abdel Hamied,

Mr Mohamed Suleman,

Mr Mohamed Osman Hashim, Mr Stelios Theocharides, Assistant Director

General Management Section General Management Section 1.L.O. Chief Technical Adviser

Textile Chamber of the Sudanese Industries Association

Mr Yousif Zaki Sid Ahmed,

Chairman

Khartoum Spinning and Weaving Co

Dr Emil Fawzi Abadeer,

Mill Manager

Sudan Textile Industries Ltd

Dr Aadil Sadik Mr Mohamed Khairy Production Manager Technical Manager

Cotton Textile Mills Ltd

Mr M.I. Khurram,

Managing Director

The Star Knitwear Co Ltd

Mr Mustafa El Mekkawi,

Proprietor

Informal discussions were also held with the following:

British Embassy

Mr J.C.Durham, Mr A.R.Arabi, First Secretary (Commercial)
Commercial Secretariat

U.N.D.P.

Mr H.W.Sabhaney,

UNIDO Adviser on Textile Training

Tootal Ltd, International Division (providing technical management consultancy services)
to Jumeira Textile Mills (Sudan) Ltd

Mr D.J.Brocklehurst,

Production Manager

Notsen Trading Co (providing technical management consultancy services to Sudan Textile Industries Ltd and formerly to Khartoum Spinning and Weaving Co).

Mr A. Needham,

Director

Mr D.Barton,

Finance Director

Mr R.Lomax,

Consultant

Sudanese Textile Machinery Agency

Mr M.A.El Dabi,

Proprietor

Unionmatex

Mr Sheifumera,

Head of Administration

APPENDIX 2

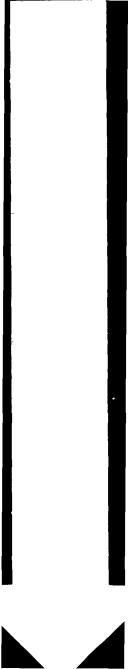
UNIDO PROJECT RP/SUD/80/003

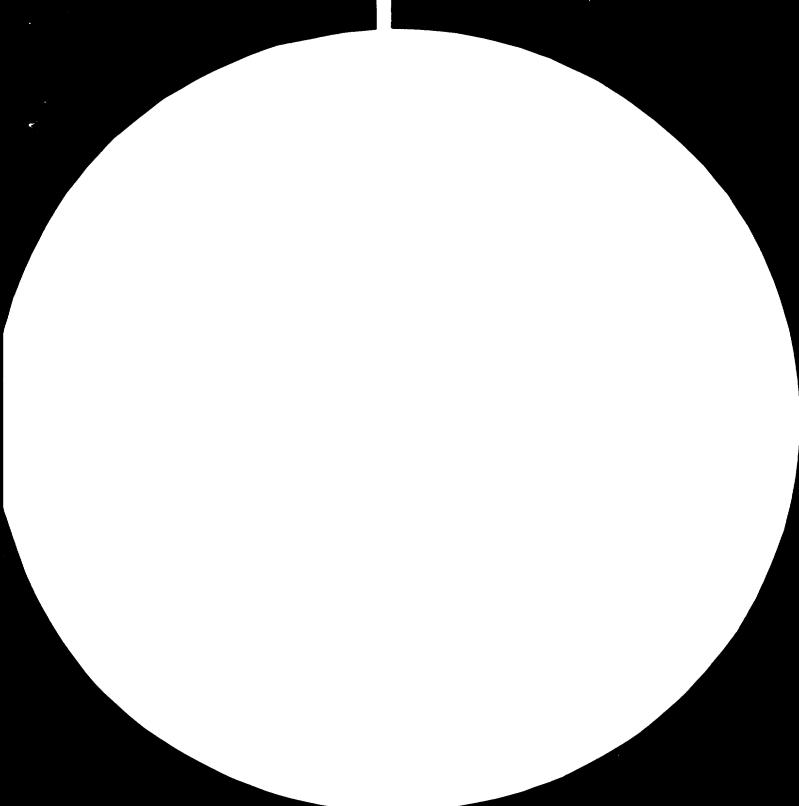
List of Reports & Publications Consulted GENERAL

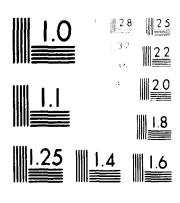
GENERAL				
A 15 year tentative plan for Sudan Cotton Textile Industries (Part 1: Survey and marketing, Part 2: Plan and Plan evaluation)	1972			
The 6 year plan of Economic and Social Development 1977/78 - 1982				
Ministry of National Planning April	Vol.2 1977			
The Management Problems of Sudanese Business Enterprises S. Theocharides and N. Harrison - Management Development and Productivity Centre,	1978			
Study of Public Enterprises. Vol. VI: The Industrial Public Secto Vol. II: Financial Results of Parasta Ministry of Finance & National Economy F	itals			
A Rehabilitation Strategy for the Equatoria Province Agricultural Production Corporation (EPAPC) in Southern Sudan. P.R.Street, etal, U. K. Ministry of Overseas Development	1978			
A Report on an industrial survey of the Southern Region of the Sudan - UNIDO, executing agency for UNDP Dec. Ref. SI/SUD/77/802				
Annual Reports and Statement of Accounts, Sudan Development Corporation	1978/79			
Bank of Sudan: 19th Annual Report, 1978 Marc	h 1 <i>97</i> 9			
Statement of Policies Sudan Development Corporation,	1979			
Development of Cooperative Training Centres - Phase II National Cooperative Development Training Centre & ILO Ref. SUD/79/006	19 <i>7</i> 9			

Manual for Evaluation of Industrial Projects in Arab Countries, UNIDO, Industrial Development Centre for Arab States (IDCAS)

1979







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The Sudanese Cotton Textile Industry - A Case Study M.H.Medani and K.C.Jackson Textile Institute and Industry Part 1 March 1979 Part II April 1979 Preparatory Assistance Mission to the Dem. Rep. of the Sudan Report and Proposal - Ray Nield & Magdo Elaref UNIDO April 1979 P.E. & W.C. Organisational and Management Needs -A Preliminary Survey - Management Development and Productivity 1979 Centre Consultancy Report No. 134 June Feasibility study for a central workshop for the manufacture of spare parts for the Sudanese Textile Industry. Vols. 1 & 2 by Borghi E Baldo Engg on behalf of UNIDO Contract 79/23- Project No. SI/SUD/78/602 Nov. 1979 Recent Performance of the Agricultural Sector-An analysis of agricultural trends and production policies in Sudan. Ministry of National Planning, 1979 Agricultural Section Dec. A Diagnostic Study and Plans for Improved Performance at the Hasa Heisa Friendship Textile Mills Management Development and Productivity Centre Consultancy Report No. 137, 15th Jan 1980 Improvement of the Efficiency of the Public Sector Enterprises 1980 Ref. SUD/79/010 - Phase 2 UNIDO/Ministry of Industry

STATI STI CAL

Selected Tables from the 1970/71 Industrial Survey (for establishments employing less than 25 workers) (Pub. Dec. 1976) Ministry of National Planning, Dept of Statistics, Industrial Survey Section.

Sudan Foreign Trade Analysis

1970-77

Sudan Foreign Trade Indices

1970-78

Ministry of National Planning, Dept. of Statistics, Foreign Trade and Research Section.

Statistical Yearbook,

1974

(Pub. May 1977)

Ministry of National Planning, Dept of Statistics, Research and Training Division.

National Income - Accounts and Supporting Tables 1975/76 (Pub. March 1979)
Ministry of National Planning, Dept. of Statistics.

Economic Survey

1977/78

Economic Research Section - Ministry of Financial National Economy

Internal Trade Statistics and Price Indices 1977
(Pub. April 1978)

Ministry of Nigtional Planning Dept. of Statistics

Ministry of National Planning, Dept. of Statistics.

Foreign Trade Statistics, 1978
Ministry of National Planning, Dept. of Statistics, Foreign Trade and
Research Section.

Sudan Cotton Review July 1977 Issue No.18 Cotton Public Corporation

Foreign Trade Statistical Digest, Annual 1979, Vol.12 Statistical Dept. of the Bank of Sudan

Economical & Financial Statistics Review, Oct-Dec 1979 Vol. 20 No.4 Statistical Dept. of the Bank of Sudan.

Sudan Cotton Bulletin (Nos. 12 & 1) 9 March 1980 Cotton Public Corporation.

Sudan Cotton Bulletin (Nos. 2 & 3) 2 June 1980 Cotton Public Corporation

APPENDEX 3 : STATISTICAL TABLES

TABLE 1

	Imports of Text	iles, The	Suden,	1974-1979	(Hetric Ton	ines)	
Category		74	75	76	. 77	78	79
Grey unbleached wholly of cotto	n .	2566	10936		4853	10349	1693
Bleached wholly of cotton		1589	5460		1854	1356	1743
Printed wholly of cotton		3254	3440	1141	1175	2057	2648
Other dyed in the piece wholly							
of catton		1741	3459		2378	2727	3242
Yarm dyed wholly of cotton		150	104		135	84	147
Other fabrice wholly of cotton		815	44	11	13	17	3
Other fabrics cotton mixed with other materials		705	2396	1230	682	1547	464
Vovem wool & ailk fabrice		64	102	8	30	8	9
Woven fabrice Flax and Ramie		2256	2713	476	1064	2018	15
Woven fabrics synthetics		3537	5353	4330	3520	. 3363	2921
Textile yarns & threads		1941	2038	1293	2916	2472	936
Tulle Lace and Embroidery		69	28	90	12	47	17
Special textile fabrica		2368	2484	1277	1321	1685	1303
Made-up articles of textile materials		5874	1388	815	1446	1302	795
Made-up Textiles		762	936	631	700	1060 ⁽¹⁾	891
1. Grand	Total	27691	40881	17336	22099	30092	16827
2. let S	even items only	10820	25839	8416	10408	18137	9940
2/1 (ao %)	39	63	49	47	60	59

Source: Nineteenth Annual Report 1978, Bank of Sudan and
Foreign Trade Statistical Digest 1979, Bank of Sudan

⁽¹⁾ Estimated, Shirley Institute

TABLE 2 ctual Spinning Capacity in the Sudan compared with Planned Capacity

Actual Spinning Capacity in the Sudan compared with Planned Capacity										
YEAR	1970/1	1971/2	1972/3	1973/4	1974/5	1975/6	1976/7	1977/8	1978/9	1979/80
-Spinning Capacity (Spindles, 1000's)										
Khertoum Spinning & Weaving Factory Sudan Textile Factory Red Sea Factory Sinner Spinning Hill Cotton Textile Hill Hedani Spinning & Weaving Factory	20 76	20 76	23.3 76	23.3 76	23.3 76	23.3	23.3 76 25.1	23.3 76 25.1 24.4	23.3 76 25.1 24.4 17.3	
Total (Private Sector) Friendship Textile Factory Total (Public Sector)	96	96	99.3	99.3	99•3	99.3	124.4 24.0 24.0	148.8 24.0 24.0	182.9 24.0 24.0	182.9 24.0 24.0
Total (Private and Public)	96	96	99.3	99.3	99.3	99.3	148.4	172.8	206.9	206.9
15 year Tentative Plan Phase I Phase II	96	96	148	200.3	200.3 50.0	225.3 75	250.3 100	250.3 172.96	250.3 245.92	250.3 318.88
Total Phases I & II	96	96	148	200.3	250.3	300.3	350.3	423.26	496.22	569.18
Actual Installed Cap./Phase I Plenned Actual Installed Cap./Phase I & II Plan			67 67	50 50	50 40	44 33	59 42	69 41	83 42	83 36

NOTES: ** Included as ring spindle equivalent, 16,800

SOURCE: Feesibility study for a central workshop for the manufacture of spare parts for the Sudanese Textile Industry Vol II, November 1979.

TABLE 3 Actual Weaving Capacity in the Sudan, compared with

1970/1 1971/2 1972/3 1973/4

Khartoum Spinning & Weaving Factory Sudan Textile Factory Blue Hile Factory Cotton Textile Hills Hedani Spinning & Weaving Factory	710 1880 230	710 1880 230	910 1880 230	910 1880 230
Total (Private Sector)	2820	0585	3020	3020
Friendship Textile Factory Shendi Weaving Factory Kosti Weaving Factory Ed Dueim Weaving Factory Mongalla Weaving Factory Nyala Weaving Factory Kadogli Weaving Factory				
Total (Public Sector) Total (Public & Private)	2820	2820	3020	3020
15 year Tentative Plan Phase II Phase III Phase III	2820	5850	3986 -	5252
Total (Phases I, II & III)	2820	2820	3986	5252
Actual Installed Capacity/Phase I Planned Capacity (%)			76	56
Actual Installed Capacity/Phases I, II & III Planned Capacity (%)			76	56

YEAR

Weaving Capacity (Looms)

P1	ann	eđ	Cap	ac	ity

1974/5	1975/6	1976/7	1977/8	1978/9	1979/30
916 1880	910 1880	910 1880	910	910	910
230	230	790	1880 790	1880 790	1880 790
2 30	2)0	790	7-90	330	330
				420	420
3020	3020	3580	3580	4330	4330
		860	860	860	860
			260	260	260
			260	260	260
				260	560
				260	260
				260	260
				260	560
		860	1380	2420	2420
3020	3020	4440	4960	6750	6750
5252	5836	6420	6420	6420	6420
-	-	-	-	-	-
				500	1000
5252	5836	6420	6420	6920	7420
56	52	69	.77	105	105
56	52	69	77	98	91
,,,	76	- 7	,,	,	• •

TABLE 4

Stocks, Production, Exports and Amount Available for Home Consumption of Cotton Lint The Sudan, 1970/71 to 1979/80, by

Broad Stople Length Classification . (1990 Metric Tonnes)

YEAR	1970/1	1971/2	1972/3	1973/4	1974/5	1975/6	1976/7	1977/8	1978/9	1979/80
Opening Stocks	165	169	184	132	195	282	158	165	189	126+
Production: ELS	205	203	160	192	176	79	88	96	65	62+
Production: Medium & short staples	40	41	39	44	44	29	71	102	73	60+
Total Production	245	244	199	236	550	108	159	198	138	122*
Consumption	Ĩ1 3	13	13	15	15	15	17	21	24	24*
Exports	855	216	237	157	118	215	132	150	177	
Closing Stocks	169	184	132	195	282	158	165	189	126	
World Production of ELS	607	548	494	573	533	494	480	(520)	(522)	
Sudanese share of World Prod. (%)	34	37	32	34	33	16	18	18	13	
Average Price US £ /1b. (G5B)	,,	,,	,-	99	64	70	106	94	108	117
Sudanese consumption/production ratio(%)	5	5	7	ĺ6	7	14	11	11	17	•

NOTES: * Estimates by Hiniatry of National Planning . * Shirley estimate. Source

Source: International Cotton Advisory Committee _ estimated figures in brackets.

TABLE 5 Spinning Mill Performance Indicators

	Indicator		Performance				
		Forecast	 	ieved			
		Mill A	Mill B	Mill C			
1.	Year in which establishment first commenced						
	commercial operation	-	1977	1978			
2.	Number of spindles	73,960	25,000	25,000			
3.	Number of employees	1,970	460	552			
4.	Spindles/employee	37	54	45			
5.	Investment cost/spindle (ES)	75	498	240			
6.	Investment cost/employee (£S)	2,773	27, 109	10,870			
7.	Average salaries and wages/employee/year (£S)	145	701	654			
8.	Main market	Export	Home	Export			
9.	Output (kg)/spindle/year	68.53	38. <i>7</i> 8	30.28			
0.	Sales income/ton yarn (£S)	720	2,132	1,239			
1.	Sales income/spindle (£S)	49	83	38			
2.	Sales income/employee (£S)	1,827	4,453	1,698			
3.	Gross output/employee (£S)	1,827	4, 493	1,698			
4.	Net output/employee (£S)	1,611	3,629	-3,686			
5.	Gross value added at factor cost/employee (£S)	1 '	3,501	-6,376			

15-year Tentative Plan hypothetical mill. 25,000 spindle spinning mill. 25,000 spindle spinning mill. Key:

В.

c.

TABLE 6
Past and Future Cotton Output ('000 tonnes)

Variety/Year	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1990/91
A. Long staple	327	300	193	183	128	145	196
B. Medium staple	110	229	193	144	72	87	196
C. Short staple	22	19	20	14	n.a.	n.a.	n.a.
<u>IOTAL:</u>	459	548	406	341	n.a.	n.a.	n.a.

Note: n.a. - not available.

Source: 'Recent performance of the agricultural sector', Ministry of National Planning Agriculture Section, and their estimates.

APPENDIX 4

Original Request as submitted by the Government

NOTE: The classification numbers shown at extreme left identify the relevant activities shown in the network diagram presented in Section 8 of the report.

A full-scale techno-economic study of the textile industry in the Sudan vis-a-vis the world and regional situations will be carried out by a reputable consulting firm in cooperation with the Government. Their report will include specific recommendations for the long-term development of the textile sector. Their terms of reference will be:

- 1.0 Conduct a full-scale techno-economic study of the Sudanese textile industry paying particular attention to and reporting on the following aspects, amongst others:
 - 1.1 implemenation of the original 15-year plan;
 - 1.2 present structure of the Sudanese textile industry including ownership and control of existing mills in the public, private, cooperatives, joint-venture and multi-national sectors;
 - 1.3 extensions of capacity in hand, in the pipeline in abeyance and at the planning stage;
 - 1.4 theoretical capacities and actual production achievements of the individual sections of the industry (spinning, weaving, knitting, dyeing and finishing; cotton, other natural fibres, man-made fibres, blends);
 - 1.5 production sequences
 (a.o.: traditional and modern techniques; degree of automation; capital intensity of production; degree of product specialization);
 - 1.6 requirements of spare parts and accessories;
 - 1.7 installed equipment (mill by mill)
 (a.o.: general description, make and year of manufacture, present condition, degree of obsolescence, imbalances in installed equipment, capacity utilisation, reasons for idle capacities);
 - 1.8 employment
 (a.o.: structure of employment; wages and salaries; pension and retirement expenses, other expenses that effect production costs);
 - 1.9 raw materials and semi-finished products (a.o.: availability of raw materials; price and quality; transportation costs, etc.);

- power, fuel and other inputs
 (a.o.: availability of power and fuel; power rates, etc.);
- 1.11 distribution costs (a.o.: participation of the textile industry in the trading of textile products; transportation costs, trade margins, etc.);
- 1.12 regional differences in production costs;
- 1.13 financial resources
 (a.o.: share of equity and loan capital; availability of credits
 for investment and working capital, credit conditions, etc.);
- economics connected with the dispersion and/or concentration of the industry and its competent parts. In particular, there is the question of the six weaving sheds, which are now nearing completion. It is planned that they should be supplied with yarn from one central spinning mill, Haj Abdulla Spinning Mill, which is due to be completed during the second half of 1979. Haj Abdulla is in the Gezira area whilst the weaving sheds are distributed in the north, west and south of the Sudan at distances of up to 900 km from Haj Abdulla.

An important question is whether to continue with this policy or whether to build a spinning mill next to each weaving shed or whether to build one spinning mill for each region or group of sheds.

There is a samewhat similar problem regarding the finishing of the cloth from the different sheds.

- 1.15 Present domestic demand for finished textile products
 - present pattern of imports
 - present pattern of domestic production
 - present changes in the pattern of demand
 - (e.g. increase in the demand for synthetic textiles, changes from traditional clothing to Western style clothing etc.)
 - regional differences in the pattern of demand.
- 1.16 Prospective domestic demand for finished textile products
 - Basis for estimating prospective demand

 (a.o.: prospective growth of population and income; effects of changing prices on quantity and quality demanded; relevant experience in other countries regarding growth and changes in demand for textiles);
 - Estimated future pattern of demand
 (a.o.: share of cotton and cotton textiles; estimated types of finished fabrics demand. etc.);

Present demand for raw materials and semi-finished products and auxiliary raw materials (e.g. starch, chemicals, etc.)

- Present pattern of imports (including man-made fibres);
- present pattern of domestic production;
- recent changes in the pattern of demand for raw materials and semi-finished products;

Prospective demand for raw materials and semi-finished products for the textile industry (based on the demand estimates for final textile products);

1.17 Export potential

A small quantity of yarn produced by the private sector is exported and this is expected to increase during the next year.

The Sudan should become a net exporter of cotton goods within the next three or four years. The study should include:

The world situation regarding total production, imports and exports, etc. (data from authentic sources);

The regional situation in the Middle East and Arab countries;

The position regarding countries neighbouring on the Sudan (border state agreements);

International rules and regulations which would affect the exporting of textiles from the Sudan;

The economic implications of exporting cotton goods (yarns, cloth, knitwear and ready-made garments) rather than raw cotton.

1.18 Constraints

(a.o.: the problems facing the textile industry as set out in Section 1).

Note: Attention should also be given to the Kenaf and plastic bags factories as these are regarded as part of the textile industry and employ about 12,000 people.

- 2.0 To help with this study and before actually making any formal recommendations discuss ideas with relevant Government Departments to ascertain their aspirations, priorities and resources and, in particular:
 - agricultural policy for cotton; types to be grown, areas and quantities;
 - pricing policy for cotton to local industry;
 - textile manufacturing policies. These have been stated as:
 - import substitution,
 - meeting domestic demand and
 - exports, but clearly many other aspects need to be considered:

- decentralisation to assist rural development
- job creation versus automation
- plans for expansion
- availability of finance
- attitudes towards man-made fibres, blends and textured yarns.
- Incentive policies for investment;
- Infrastructure;
- Taxes, duties, etc.;
- Manpower requirements and availability;
- Prospects for the Oil and Petro-chemical Industries in relation to the production of man-made fibres;
- The various topics referred to under 'Recommendations';

Therefore, hold discussions with:

- Ministry of Industry;
- Spinning and Weaving Corporation;
- Ministry of National Planning;
- Ministry of Finance and Economics;
- Ministry of Agriculture;
- Ministry of Transport;
- Ministry of Energy (possibility of oil-based fibres);
- Ministry of Commerce;
- Ministry of Labour;
- Cotton Corporation;
- Sudan Gezira Board;
- Sudan Development Corporation;
- Sudan Industrial Bank;
- Sudan Bank;
- Spinning and Weaving Corporation;
- Mills in Private Sector, Cooperatives and Joint Ventures;
- Very small factories (5-50 looms);
- Knitwear factories;
- Clothing industry;
- Industrial Research Institute and Consultancy;
- Textile Committee of the Employers' Federation;
- Textile Committee of the Sudan Industries' Union;
- Training centres and institutions related to textiles;
- UNDP;
- Spinning and Weaving Institute (Khartoum Polytechnic);
- Khartoum Foundry.
- 3.0 Prepare questionnaires specifying the data required for the study which can be collected by the counterparts, who will make any necessary mill vist for this purpose before the sub-contractor arrives in the field.
- 4.0 Visit the following areas to obtain first-hand impressions of the situation and problems:

- main cotton producing and ginning areas:

Gezira – long staple and Acala Kashm El Qirba – short staple Nuba Mountains – short staple E + W Equatoria – short staple

- typical mills in:

Khartoum province, Gezira province Port Sudan Kosti (one of the new weaving plants)

- Port Sudan to see the export facilities.
- 5.0 Prepare an overall development plan for the textile industry up to the year 2000 out with detailed recommendations for each five-year period. Obviously the first five-year period will be the most detailed. The recommendations, with supporting arguments, should cover:
 - credit policy
 - foreign trade policy
 - investment policy (incentives)
 - fiscal policy (specifically concerning the level of subsidies, imports and sales taxes, etc.)
 - allocation of investment (considering regional aspects, the efficiency of existing production units, etc.)
 - pricing policy for cotton to local industry
 - wages policy
 - prepare directions for further expansion of the industry viz.
 - public sector
 - private sector
 - co-operatives
 - joint ventures
 - multi-national companies
 - various combinations of the above.
 - choice of technology; traditional (labour intensive), semi-automatic, fully-automatic or a combination (NB: This may be influenced by mill location).
 - rationalisation and standardisation of machinery; the present wide range aggravates the problems of servicing and of obtaining spare parts and accessories.

projected requirements in:

yarn production, grey fabrics, finished fabrics, knitwear, and ready-made garments.

- Recommendations for the;

processing of cotton waste and machinery requirements; production requirements of raw cotton and (possibly) of man-made fibres from petroleum products.

- How to improve working conditions in the mills so as to a) retain existing labour and b) attract new labour;
- Measures necessary to achieve full utilisation of existing capacities, planned extensions and new projects. Specifically, how to overcome idle capacities, mill-by-mill and nationally.
- Recommended extensions to existing plants;
- New capacities required to cater for increased domestic demand and export potential;
- Method of selection of machinery and suppliers for new projects including preparation of specifications, inspection during manufacture and acceptance testing on site so as to ensure that appropriate machinery is acquired;
- Policy for purchase of spare parts and accessories with new machines;
- The advisability of establishing one or more workshops for the manufacture of spare parts and accessories;
- Measures necessary for the installation of a preventive maintenance system for the textile industry;
- The possibility of linking the preventive maintenance system with the workshops through a computer facility;
- Locations of new projects.
- Man-power requirements and training facilities needed.
- Activities required to implement the plan by:

Government of the Sudan Textile Industry UNDP/UNIDO Regional organizations Bi-lateral partners.

- Time schedule for the activities.

6.0 Prepare a budget for the master plan including contributions by:

Government of the Sudan Textile Industry UN Agencies Regional Organizations Bi-lateral Partners.

- 7.0 Indicate the financial requirements to implement the plan. Compute the individual and total costs of the various projects proposed in the Master Plan, e.g. new plants, training facilities, etc.
- 8.0 Sudanese counterparts will be assigned to the sub-contractor's team prior to their arrival on site. Whilst the counterparts will do most of the data collection, it will, however, be one of the responsibilities of the sub-contractor to teach the counterparts the methodology of:
 - 8.1 preparing a master plan
 - 8.2 monitoring the progress of the master plan
 - 8.3 up-dating the master plan.

It will equally be the responsibility of the counterparts to assimilate these techniques and to prepare themselves to continue the work after the sub-contractor has departed.

