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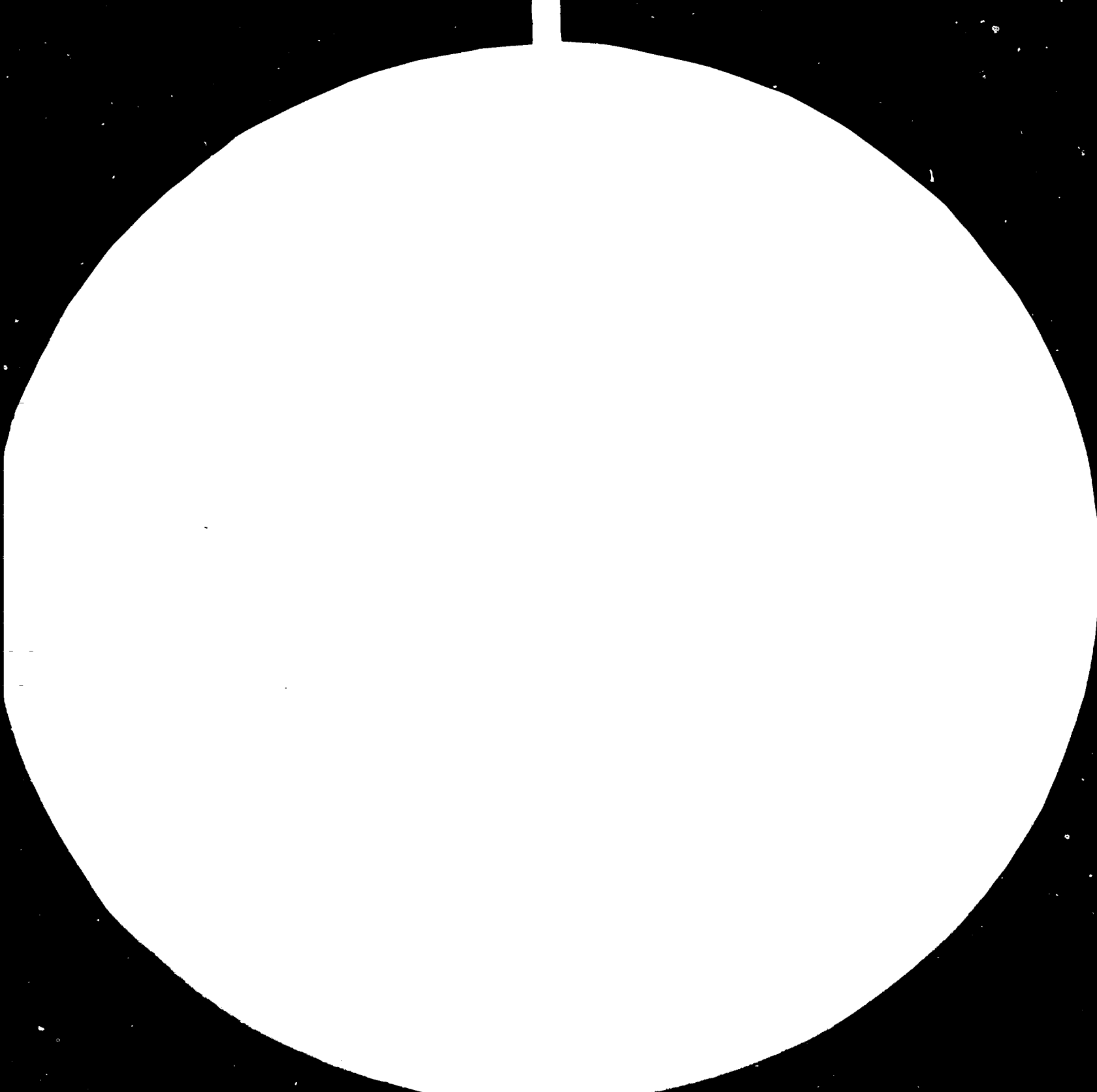
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DP/ID/SER.A/543  
3 October 1984  
ENGLISH

Sudan.

IMPROVEMENT OF THE EFFICIENCY OF THE PUBLIC SECTOR INDUSTRIES .

(Continuing Phase II, 1982 - 1984)

DP/SUD/79/010

The Democratic Republic of the Sudan

Report of the Evaluation Mission\*

Prepared for the Government of the Democratic Republic of the Sudan  
by the United Nations Development Programme and  
the United Nations Industrial Development Organization

United Nations Industrial Development Organization

Vienna

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2852

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V.84-91841

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## 1. INTRODUCTION

The Government of Sudan presented in December 1982 a request to the United Nations Development Programme (UNDP) for continued assistance to a project for Increasing the Effectiveness of Public Sector Industries, following up UNDP assistance granted to a similar project (SUD/79/010 Phase II) which was scheduled for completion in December 1982. The request called for a contribution from UNDP of \$929,860 and a duration of two and a half years. The United Nations Industrial Development Organization (UNIDO) was called upon to continue to act as the executing agency for the UNDP assistance.

The UNDP did not approve the project in the form submitted; it approved partial allocations for further activities as part of a continuing phase II project, but on the basis of the principles for the phase III proposal. UNDP and UNIDO agreed to send a joint evaluation mission in mid 1983. For a number of reasons, the mission was successively postponed and it was finally scheduled with the acceptance of the Government for early May 1984.

The purpose of the evaluation mission was to review the achievements of the project and to assess the means available for its implementation, with a view to recommend a redefinition of its design if considered necessary. The terms of reference for the mission are attached as Annex I.

The members of the mission as designated by the respective organizations were:

Mr. Arturo CHAVEZ J., Principal Technical Adviser (UNDP)

Mr. Nikola CATIPOVIC, Industrial Development Officer (UNIDO)

The Government was invited to designate a representative to associate himself with the work of the mission. The Government considered it sufficient to be informed of the mission's activities and results and therefore did not designate a representative for this purpose.

The mission took place starting in Khartoum on 2 May 1984 until 11 May 1984. The schedule of meetings held and visits made is given in Annex II. The list of persons met is given in Annex III. The documentary evidence examined by the mission is listed in Annex IV.

The mission wishes to thank the Minister of Industry Mr. Mohamed El Beshir El Wagie, and the Under Secretary of Industry, Mr. Abdel Gadir Suleiman, for their clarifications on the Government's aim concerning the implementation of the proposed project. It also wishes to acknowledge the excellent co-operation of the three sectoral experts assigned to the project by UNIDO, but particularly Mr. S. Bhattacharjua, who is acting as co-ordinator of the project activities. The mission wishes to thank the UNDP office for the co-operation and assistance provided in carrying out its assignment and appreciates the advice provided by Mr. G. Ap Rees, Resident Representative who was completing his appointment in Sudan, and Mr. A. Holcombe, Resident Representative who took up his assignment during the mission's stay in the country.

## 2. BACKGROUND

The Government of Sudan has had a continuous active concern with the industrialization of the country. The first Ten Year National Development Plan (1961 - 1970) already included investment actions for the establishment of nine industrial plants in the public sector. The Industrial Development Corporation (IDC) was set up in 1965 to oversee the construction of these plants which went into operation by 1969. The contribution of the manufacturing sector to the GNP was only about 4.5% in 1966/67 with employment of approximately 34,000. By 1969 the Government increased its direct responsibility for manufacturing by nationalizing 36 companies which were also placed under the responsibility of the IDC.

The rapid increase of the Government's responsibility in public enterprises during this period created serious problems which were reflected



in under-capacity utilization resulting in many cases in operating losses. These problems were recognized in large measure to have been due to the inexperience of operating staff. At the time, it was recognized that management needed to be improved and skills of the operating staff had to be increased through better training. There were problems related to process and technological deficiencies. Maintenance practices were inadequate. In addition, in many cases, problems existed arising from lack of spare parts and sometimes raw material supplies. The financial operations of the enterprises were difficult.

Recognition of these problems led the Government at that time to seek the help of the United Nations Development Programme (UNDP), among others, in order to ameliorate the situation and improve the effectiveness of the public sector enterprises. There were at least four development projects during this period of the 1960's which were oriented to the establishment of national institutional capacity to address these matters.

It merits to recall that the following institutions, which are still in operation today, were established with the assistance of the UNDP in that period:

- (a) Leather Institute established in 1965 with FAO participation.
- (b) Management Development Center in 1965 with the participation of ILO
- (c) Food Research Center in 1965 with the participation of FAO.
- (d) Industrial Research and Consultancy Institute in 1965 with the participation of UNIDO.

In 1971, the IDC was re-oriented by the Government into the Industrial Production Corporation which was given primary responsibility for the management and operation of the public enterprises. Responsibility for the development of new enterprises was given to the Ministry of Industry. In

1973, there was a change in Government policy resulting in the return of some enterprises to the private sector.

During that time, the development assistance aspects also changed since a perception was gathered that a disaggregated approach, based on institution building as reflected by the UNDP-supported projects, had not had sufficient impact on the problems still facing the operation of the public sector enterprises. There was a recognition of the need to have such activities closer to key decision-makers in Government. Discussions began in 1974 with the UNDP and UNIDO for a project which started in 1976 to 1979 for the "Improvement of the Efficiency of the Public Sector Industries" (SUD/74/041). The project's start coincided with the dismantling of the IPC in 1976 into a six-branch or sectoral corporation and the shifting of the oversight responsibilities for operation of the public enterprises to the Ministry of Industry. The project envisaged the establishment of a consultancy unit to provide direct assistance to individual factories on a multi-functional basis. The achievements of the project at its completion were considered positive for a few factories but without a sufficiently large multiplier effect. Progress, from an institution-building aspect, was quite slow.

A mission carried out in February 1979 to evaluate the above project pointed out that the experience of implementing phase I project had still shown that "a great many of the enterprises suffer from essentially management inadequacies at the plant level, concerning such varied industrial functions as production, planning and control, marketing and distribution, purchasing, stock control, maintenance, financial and cost accounting and personnel administration. Many also suffer from shortage of skilled people, personnel turnover, lack of managerial incentives, inadequate policy guidelines, slow and cumbersome decision making and the like". The Government requested UNDP/UNIDO assistance for the continuation of phase II project. Improvement of Efficiency of the Public Sector Enterprises (SUD/79/010), calling for a UNDP contribution of US\$1,417,000. However, the design of

this project envisaged the establishment of an Efficiency Improvement Unit (EIU) in the Ministry of Industry, oriented to monitoring the performance of the public enterprises and improving the management practices through diagnostic consultancies of a functional management nature. Its objective was to improve the economic performance of specified selected public sector corporations and factories. This project design was meant to have a greater multiplier effect. A Government/World Bank study in 1978 appears to have had considerable influence in bringing about significant changes in Government policies towards the industrial sector and the public enterprises.

In 1981, the Government announced significant policy changes with respect to the public enterprises. Resulting from these decisions, the Public Corporations are being dissolved with the aim of decentralization or "privatization" of the public sector enterprises (i.e. transforming them into self-managing companies). New companies are to be formed to operate the factories. In view of this policy change, the phase II project became redundant as originally designed focussing on centralized management systems and controls. Based on a mission carried out by Mr. Biritz of UNIDO in September 1981 a tripartite review reshaped the phase II project, phasing out the central monitoring functions and rather centering the project activities directly at the factory level in order to improve their performance. Thus began a shift of assistance from a functional orientation towards a sectoral technical orientation (i.e., a shift from "horizontal" to "vertical" expertise). A further mission carried out to review the Country Programme in March 1982 pointed out that the EIU had become an anomaly and had no role to play. Taking note of the Government's decision of May 1981 covering new industrial policies, it recommended a short-term intervention role to improve performance of public sector enterprises in the transitional period. The sectoral specialists were in textiles, leather and food processing. Phase II project was thus closed as a functional project and continued with a sectoral support orientation.

A phase III project was intended to start from July 1982 with a duration of 2 1/2 years until end of 1984. The Government request for Phase III (or revision of Phase II) has not been formally approved by UNDP because, in its view, the revised project document does not reflect the change in Government policy towards decentralization ("privatization"). Nevertheless, partial allocations have been provided for three sectoral experts in textiles, leather and food. UNIDO continues to implement the assignments of these sectoral experts, which in effect represent a de facto phase III project even though the operations are being carried out as an extension of a revised phase II project (SUD/79/010).

This evaluation mission was to focus its analysis on the sectoral activities carried out by the sectoral experts since mid 1982 to the present.

### 3. PROJECT FORMULATION

#### 3.1. Objectives of the Project

The development objective given in the revised project document (entitled "Increasing the Efficiency of Public Sector Industries", December 1982) is practically the same as the objective in the signed ProDoc for DP/SUD/79/010. It addresses the "Improvement of the performance of the public sector by removing the obstacles which impede optimum utilization of capacities" and mentions the desired "increase in production, productivity and performance, thereby avoiding duplication of effort and waste of resources". Furthermore, the development objective in the revised project document describes the change in Government's policy of 1981 and specifies that the project will focus on "overall improvement and effectiveness of selected individual factories" in the public sector (as opposed to Public Corporations).

Although the development objective should be formulated much more concisely than in the documents indicated, it is still valid, relevant and very much related to the national development plans.

The "immediate objectives" of the project were divided into "overall" and "specific", which did not contribute to clarifying project expectations. The objectives contained in the proposal for the revised project document (quite similar to the ones given in the signed ProDoc) can be summarized in the following manner:

- a) Strengthening the institutional capacity of the Ministry of Industry as follows:
  - i) establish and maintain within IRCI (Industrial Research and Consultancy Institute) a Unit for increasing the effectiveness of Public Sector Industries (UIE) which will inter alia provide management consultancy services to the industrial enterprises and factories.
  - ii) implement a general methodology and system for a planned programme of diagnostic and remedial consultancy activities by the Unit, giving priority to the textile, leather and food industries.
- b) Improving economic performance of existing public sector industrial enterprises by the end of the project through:
  - i) a programme of diagnostic and remedial consultancy assignments developed, introduced and implemented jointly by the Unit and the international experts for three sectors.
  - ii) placing special emphasis on the improvement of the performance of the textile, leather and food industries through strengthening their production management capability.

The primary project function listed in the original ProDoc was "institution-building", while "direct support" was mentioned as secondary.

In the revised ProDoc of 1982, the situation is reversed. However, there is very little difference between the immediate objectives in the two cases, so that the recommended change in project approach, described in Section 2 of this report, is not clearly indicated. The recommended short-term direct sectoral intervention is not reflected in the revised ProDoc. The situation is further complicated by ambiguities in the proposed project outputs, as illustrated in the next section (3.2.).

### 3.2. Design of the Project

The design of the project (as indicated in the revised ProDoc of December 1982) is not all clear. While the original ProDoc (1980) contains quantified outputs with target dates (including staff and resources of the Unit and the number of factories to which direct support is to be given), the revised ProDoc contains outputs and activities which are very unspecific and non-quantified. For example, under the direct support outputs, the revised ProDoc mentions "a number of in-depth studies with recommendations for action, management systems for the individual enterprises and factories, specific technical reports and the like". There is no indication of the number of factories to be covered, priorities etc. Under institution-building outputs, the revised ProDoc mentions "regular monitoring reports on the financial productivity/performance, technical consultancy reports, management performance reports, general policies and procedures for technical consultancy activities", etc. There is no description of the institutional capacity to be established, nor is there any mention how the new Unit is to be related to the Industrial Research and Consultancy Institute.

On the one hand, the original ProDoc for Phase II, which appears to be adequate and has a means-and-ends project logic as required by UNDP project formulation methodology, is not applicable to the re-oriented project since 1982. On the other hand, the revised ProDoc, which should apply for the current phase, is inadequate from a project design standpoint. It has

an "open ended" design, so that it is not possible to conclude what the status at the end of the project was intended to be. This lack of clarity and specificity makes it practically impossible to evaluate the project on the basis of the principal design elements contained in the December 1982 proposal.

The only part of project design which is indicated in relatively clear terms concerns the inputs, where there is an attempt to describe the role of three international sectoral experts.

Although it is always difficult to trace problems in implementation back to design, it is evident to the mission members that the design of the revised ProDoc -- which was considered to be applicable to the current phase by the project staff in the field -- is rather deficient, and that this has not been a help in the implementation, management and monitoring of the project.

The only basis for evaluating the project is found in the section "Project Activities" of the revised ProDoc, where it is indicated that "workplans to be prepared by the international experts will be attached to this document and future Project Progress Reports will be based upon them". The workplans which were proposed by the experts and approved by the Government are therefore the only standard against which the work done thus far in the current phase can be evaluated.

#### 4. PROJECT IMPLEMENTATION

##### 4.1. Project inputs

##### 4.1.1. UNDP/UNIDO inputs

The most recent project budget revision of 20 June 1983, obtained from the UNDP - Khartoum, is shown in Table 1. The total project budget

Table 1. MOST RECENT PROJECT BUDGET/REVISION (20 June 1983)  
(in US Dollars)

Project Number : DP/SUD/79/010/F/01/37  
Project Title : Improvement of Efficiency of Public Sector Industries (Phase II)

		<u>Total</u>	<u>1980 - 1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>
	m/m	\$	m/m	\$	m/m	\$	m/m	\$
10.	<u>PROJECT PERSONNEL</u>							
11.	<u>EXPERTS</u>							
11.01	Chief Technical Adviser	12	93,181	12	93,181	-	-	
02	Manufacturing Expert	6.6	47,186	6.6	47,186	-	-	
03	Financial Management	16.6	110,294	11.6	77,113	5.0	33,181	
04	Industrial Engineering	3.8	31,521	3.8	25,446	0	6,075	
05	Maintenance Expert	12	90,755	9.3	70,343	2.7	20,412	
06	Project Implementation	14.4	97,943	9.4	65,958	5.0	31,985	
07	Food Industry Expert	52.8	400,748	16.8	115,436	12.0	84,312	12 94,800 12 106,200
08	Textile Industry	25.5	211,599	-	-	1.5	10,599	12 94,800 12 106,200
09	Leather Industry Expert	20	169,400	-	-	-	-	8 63,200 12 106,200
12	Short Term Consultants	20	178,626	-	-	-	-	12 106,715 8 71,911
	Sub Total	183.7	1,555,463	69.5	494,663	27	186,564	44 359,515 44 390,511 124,210*
13	Support Personnel		141,072		69,313		35,759	18,000 18,000
15	Experts Travel		22,245		11,218		2,027	6,000 3,000
16	Other Personnel Costs		53,872		17,472		8,400	14,000 14,000
			217,189		98,003		46,186	38,000 35,000
19	Total Personnel Component		1,772,652		592,666		232,750	397,515 425,511 124,210
30	<u>TRAINING</u>							
31	Fellowships		50,752		44,442		6,283	- - -
32	Study Tours		9,000		-		-	- 9,000 -
39	Total Training Component		59,725		44,442		6,283	- 9,000 -

\*Savings from 1982



PROJECT BUDGET/REVISION

(in US Dollars)

	<u>Total</u> m/m \$	<u>1980 - 1981</u> m/m \$	<u>1982</u> m/m \$	<u>1983</u> m/m \$	<u>1984</u> m/m \$	<u>1985</u> m/m \$	<u>1986</u> m/m \$
49 Total Equipment Component	61,945	51,038	3,907	1,000	6,000	-	
51 Operations - Maintenance	63,138	19,331	13,807	15,000	15,000	-	
53 Sundries	16,826	15,826	-	500	500	-	
59 Total Miscellaneous Component	79,964	35,157	13,807	15,500	15,500	-	
<b>GRAND TOTAL</b>	<b>1,974,286</b>	<b>723,303</b>	<b>256,747</b>	<b>414,015</b>	<b>456,011</b>	<b>124,210*</b>	

\* Savings from 1982

The purpose of this revision is to amend the UNDP/UNIDO Budget to reflect anticipated actual delivery in 1982, 1983 and 1984. The revision is within the overall financial provision of the project for 1983 and 1984. However, allotment in different budget lines has been made keeping in view the requirements to increase effectiveness in Production Units. As recommended by the 1983 Country Programme Revision, savings from 1982 have been shown under Budget line 11 - 99 to indicate continuation of the project in 1985.

of SUD/79/010 (one-and-a-half years of the original project - functional orientation - plus the reoriented project - sectoral orientation) is \$1,974,286. The three sectoral experts have been on the project as follows:

leather - since May 1983  
textile - since November 1982  
food - since 1979, continued assignment from previous phase.

As seen in Table 1, it was planned to use short-term consultants in the re-oriented phase (1983 and 1984) as the need arose. However, at the request of the Government, which preferred longer utilization of sectoral experts, short term consultants (financial analyst, as one example) were not utilized. This, together with other factors, has brought about the following savings with respect to the budget:

1982	-	US\$124,210
1983	-	US\$148,177

With some expected saving in 1984, the amount remaining at the end of the current year will be around \$300,000.

#### 4.1.2. Government inputs

The planned government inputs have been adequate regarding the premises<sup>1/</sup> where the project is located, as well as the administrative support staff. However, it is on the question of national counterparts that the project has had most problems and the least support from the Government side. From the beginning of the project, it was mutual understanding that the experts will have two counterparts each to work with on a full-time basis. Due to various problems, this has never materialized on a continuous basis. The current situation is as follows:

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<sup>1/</sup> Premises occupy office space on the second floor of a Government building a few blocks from the Ministry of Industry and approximately 10 km. from the IRCC.

- the leather expert has only one counterpart working with him only one day per week (since February 1984). The counterpart comes from the Industrial Research and Consultancy Centre - IRCC (formerly IRCI) but has little experience in the leather industry.
- The textile expert has two full-time IRCC counterparts, with significant experience in the textile industry, since May 1983 and September 1983, respectively. One counterpart who was with the project during the first half of 1983 left for a post at the University of Khartoum.
- The food expert has two full time IRCC counterparts, but only since February 1984. One counterpart who worked with the expert during 1983 left for a post in the industry.

Obviously, the counterpart situation has been a problem throughout. As was the case in previous phases of the project, there is a high turnover of skilled counterparts who are leaving the project (or IRCC) for other jobs. An additional problem is the relationship between IRCC and the project, which is not yet fully defined. The project (or the Unit) should have been closely tied with the IRCC since 1982.

As a result of this situation, the institution-building aspect of the project (described in the revised ProDoc) has become secondary and practically negligible.

#### 4.2. Implementation of activities

The work of the experts in the reoriented project has been based to a large extent on the workplans which they proposed upon their arrival. These workplans were made according to the job descriptions of the experts which were based on the revised Project Document. The workplans were approved officially (in the case of leather and food processing industries) or unofficially (in the case of textile industry) by the Ministry of Industry.

In the former case, the work programmes were communicated through the Director of IRCC.

As will be seen in the next chapter, the workplans were very ambitious and covered a wide range of activities. In addition to the tasks specified therein, the experts were very often faced with various ad hoc requests from various sources, so that their efforts become very diffused. The sectoral targets became too large and widespread without identification of priorities. The efforts of the experts often went beyond technical sectoral functions in trying to cover multi-functional responsibilities without appropriate means.

Because of the problems with counterparts and the not fully clarified relationship with IRCC (described in section 4.1.2.), the experts worked mostly by themselves (in cooperation with staff of factories where the work was done). Only in a small number of cases was a task force, of the kind proposed by the UNDP Country Programme Review Mission of March 1982, formed to solve important problems. The mobilization of national resources and talents (including IRCC, Food Research Centre, Management Development Centre) to solve the problems of industrial performance -- which was recommended both by the UNDP March 1982 review and in the revised ProDoc of December 1982 -- did not take place in the past two years.

As a result, when analyzing the achievements of the project, the only relevant material is the work of the three sectoral experts. The project has been implemented in such a way that it is synonymous with the three experts.

#### 4.3. Project management

There is no Chief Technical Adviser on the project. The food industry expert acts as an administrative co-ordinator. The three experts report on work in their sectors independently.

At the beginning of the reoriented project, it was envisaged that the Director of IRCC would be the national co-ordinator for the project and that requests for assistance by the project staff would go through him. However, this has been the practice in only a limited number of cases. Requests for services of experts have come to them through various channels, for example: directly from the Minister of Industry, from the Special Adviser to the Minister, from the Deputy Resident Representative (former Senior Industrial Development Field Adviser), and in the case of textiles directly from the Spinning and Weaving Corporation. As a result the experts have had responsibilities to too many different entities, organizations and individuals.

To add to this problems, it should be mentioned that the last Tripartite Review was held in September 1981, although UNDP regulations clearly state that one is required at least once a year for projects as large as this one (see UNDP PPM, Chapter 3466, and UNDP/PROG/FIELD/150). It should be added that the responsible UNIDO backstopping officer was able to visit the project only in December 1982, which must be considered insufficient.

The reporting by the experts to UNIDO, although agreed upon to take place through six-monthly reports (as well as through direct correspondence) has not been too regular and effective (except in the case of the leather expert). Reports were quite formal and repetitive and often did not reflect the true contribution of the project.

No significant evidence was found that would indicate a serious oversight or follow-up by the Government, Resident Representative's office or UNIDO on the planned and approved expert's programme of work. These programmes seem to merely be used to justify the need for the expert post but are not being used as an active management tool to oversee project

progress. At the country level an expert's performance, which is highly regarded by all concerned, seems to depend more on how effectively the expert answers ad hoc requests from the Government, industry or Resident Representative's office.

In summary, the project has had problems regarding monitoring, review and management; it has lacked clear tripartite decision-making, and as a result its targets and activities have become too widespread and uncoordinated.

## 5. PROJECT RESULTS

### 5.1. Public Sector Industries

The structure of the three sectors of the public sector industries, which the project is aimed at, is shown in Annex V. In addition to the leather, textile and food industries, the public sector includes sugar mills, building materials industry and vegetable oil processing.

As already mentioned in Chapter 2, the government announced the new industrial policy in 1981, whereby the sectoral corporations would be dissolved and decentralized, and self-managing companies or factories would be formed. This transition has been slow. The full transition has occurred only in the case of the sugar mills and the building materials industry. In the leather sector, proposals are now under consideration for the establishment of the New Public Sector Tranning Co. In the textile sector, the Friendship Textile Mill has just been formed as a company while another company (including the Hag Abdalla Mill and six weaving factories) is now under formation. The Spinning and Weaving Corporation is in the process of dissolving, although it is still active in helping set up the new organizations. In the food sector, no individual companies have been formed yet.

According to the recommendations of the UNDP Country Programme Review Mission of March 1982, the reoriented project was to assist the three sectors in the transition period. In that respect, it is clear that the three sectors of interest are still very much in the transition period. The time when the individual production units will be viable independent organizations is still several years in the future.

#### 5.2. Results in the Period 1980-81

Although this evaluation is focused on the reoriented project since mid-1982 (i.e. on the activities of the sectoral experts), the team attempted to establish whether any of the results obtained in the period October 1980 - end of 1981 are utilized today. These results are described in detail in the Terminal Report by the CTA, Mr. Ives Biry, of September 1981. The work was done by a six-member international team of functional management experts. Their efforts were concentrated, among other factories, on the Friendship Textile Mill, Khartoum Tannery and several food plants. The primary aim was to develop a monitoring system for the public sector industries. However, the reporting formats developed in that period, as well as some diagnostic reports, are not being used today, either because the situation has changed under the new industrial policy or the work carried out by the experts was not completed due to the reorientation of the project. In addition, of the eight counterparts who were attached to the project in this period, none remain with the project today.

#### 5.3. Results of the Sectorally Reoriented Project (Current Phase)

In Section 3.2. it was indicated that, due to inadequacies in project design, the only basis for examining the progress of the project can be the work plans made by the experts and approved by the government. The general outlines of the work programme for each sector are given in Annex VI.

Annex VIa contains the work plan for the leather sector which was submitted by the leather expert to the Ministry of Industry through the Director of IRCC on 24 May 1983 and subsequently approved without change.

Annex VIb contains the original work plan for the textile sector, which was submitted to the Ministry of Industry in November 1982, as well as an update of May 1983.

Annex VIc contains the programme of work for the food processing sector, which was submitted by the food expert to the Ministry of Industry on 31 August 1982, agreed to by the Director of IRCC, and subsequently approved.

In all three cases the work programmes are very broad and over-ambitious. Considering the counterpart situation described in Section 4.2., each work programme represents a very difficult requirement, the fulfillment of which would be too much to expect from a single sectoral expert. In view of this, in the analysis of results, the evaluation team is reconstructing the outputs envisaged by the reoriented project based on two considerations:

- the general outline of the work plans (Annex VI)  
and also
- the in-depth discussions which took place in the field on the current activities situation and priorities in each sector.

For each reconstructed output, a comment on its current status is included.



5.3.1. Leather Sector

The following outputs are envisaged by the project in the leather sector.

1. Factory by factory analysis (report) on:

- a) Khartoum Tannery
- b) White Nile Tannery
- c) Gezira Tannery

containing a detailed technical and financial analysis (production characteristics, technology used, capacity utilization, environmental conditions, management and organization, financial situation), main problems and proposals for their resolution, and a detailed proposal for a step-by-step programme for rehabilitation.

Status: Data collected, technical analysis made, financial analysis in progress, rehabilitation programme presented in a global manner, but needs to be divided into a gradual phase-by-phase programme. Many items are included in the first 6-monthly report but the final product should be a comprehensive report to be presented to the government.

2. Pre-feasibility study for potential investments for the rehabilitation of:

- a) Khartoum Tannery
- b) White Nile Tannery
- c) Gezira Tannery

Status: Related to output 1. Technical data available, financial data being collected and processed.

3. Policy proposals to the government on measures to be taken regarding the supply of raw hides and skins and the liquidity of the tanneries.

- Status: Proposals were made and discussed with the government.
4. Proposals for the organization of the New Public Sector Tanning Co.  
Status: Organizational chart was presented and the Memorandum of Association prepared.
  5. Detailed proposals for technical assistance projects for resolution of problems identified.  
Status: Proposals were made for "Cold Storage for Leather" and "Leather Training and Research Centre". Financing for these projects is being sought by UNIDO.
  6. Proposals for the introduction of new technology and product diversification.  
Status: in progress (being prepared)
  7. Proposal for the utilization of indigenous materials aimed at reducing the hard currency requirements for import.  
Status: in progress
  8. Proposal for a development plan of the leather industry in Sudan.  
Status: Proposal was made only in the form of a data sheet suggesting possible short and long-term technical assistance projects. It should be coupled with Output 2 to give an overall development plan with all the resources necessary.
  9. Policy proposal for reorganization of the system of institutions related to the development of the tanning industry.  
Status: in progress.
  10. A technical paper on the present situation, constraints and prospects for the leather industry and leather products industry in Sudan.  
Status: A comprehensive paper was presented at the UNIDO Third Consultation on the Leather and Leather Products Industry, Innsbruck, Austria, 16-20 April 1984.

11. A general costing system introduced in the three tanneries.

Status: Example was worked out and introduced in the White Nile Tannery; it will be generalized for the other two tanneries.

#### 5.3.2. Textile Sector

The following outputs by the project are envisaged in the textile sector.

1. Factory-by-factory analysis (report) on:
  - a) Hag Abdalla Spinning Mill
  - b) Friendship Textile Mill (spinning, weaving and finishing)
  - c) Port Sudan Spinning Mill
  - d) Kosti Weaving Factory
  - e) El Dueim Weaving Factory
  - f) Kadugli Weaving Factory
  - g) Mangala Weaving Factory
  - h) Nyala Weaving Factory
  - i) Shendi Weaving Factory

containing a detailed technical and financial analysis (following as much as possible the procedure described in the UNIDO Manual for Preparation of Industrial Feasibility Studies - Annex V. The Status of an Existing Industrial Enterprise), main problems and proposals for their resolution, and a proposal of a step-by-step programme for raising the utilization rates (including a pre-feasibility analysis for any additional investments considered necessary).

Status: Data for the technical analysis are being collected. Only technical analysis for Kosti is in organized, written form although not yet complete. Data for financial analysis are rather inadequate. Accounting systems are inadequate but are being revised and financial data can then be organized. Port Sudan Mill

has not started operation yet. Progress in producing this very extensive output has been slow.

2. A system for monitoring factory performance designed and introduced

- a) spinning
- b) weaving
- c) integrated mill

Status: Only an initial study was undertaken

3. A study of management structure and proposals for its restructuring

- a) Friendship Textile Mill
- b) Hag Abdalla Spinning Mill
- c) Port Sudan Spinning Mill

and a proposal for the organizational structure of the weaving sector as a whole.

Status: a) completed; others remain to be done. Port Sudan Mill is not yet operating.

4. Product demonstration for export (the establishment of quality control standards)

Status: Completed for the Hag Abdalla Mill; Port Sudan not operating.

5. Proposals for technical assistance and investment projects for resolution of problems identified.

Status: Detailed Project proposals (data sheets) made for the "Textile Training Centre", "Textile Quality Control Centre" and "Workshop for Manufacturing Spare Parts for the Textile Industry".

6. Outputs (or activities) not planned initially

- 6.1. Report on the North Khartoum Fine Spinning  
Mill inspection of equipment

Status: completed

- 6.2. Export promotion of Hag Abdalla yarns

Status: the expert has acted as a liaison between  
the mill and European buyers.

- 6.3. Issuance of quality assurance certificates on  
product quality control

Status: 4 certificates issued for export products.

5.3.3. Food Processing Sector

The following outputs by the project are envisaged in the food  
processing sector:

1. Factory by factory analysis (report) containing a detailed  
technical and financial analysis (focused on production,  
maintenance and management), main problems and proposals  
for their resolution, and a proposal for a step-by-step  
programme for rehabilitation (including a pre-feasibility  
analysis for potential investment necessary for the  
rehabilitation) of the following factories:

- a) Karema Fruits Canning Company
- b) Kassala Onion Dehydration Factory
- c) Wau Fruits Canning Factory
- d) Babanousa Milk Dehydration Factory
- e) Krikab Sweets Factory - Khartoum North
- f) Rea Sweets Factory - Khartoum North

Status: a) Data have been collected, processing yet  
to be done, expected date of completion  
is December 1984

- b) Some data have been collected; they  
need to be checked and completed

- c) Data are being collected, processing is yet to be done, expected date of completion is August 1984
- d) Data have not yet been collected
- e) Full report was completed in October 1983
- f) No work done

2. Karema Fruits Canning Company

2.1. Results of tests of high yielding tomato varieties

Status: 13 varieties of seeds are being tested; results are expected by April 1985.

2.2. Results of tests on bulk packaging of tomato concentrate

Status: Containers are to be obtained by March 1985, tests are to follow.

2.3. A study on the diversification of packaging for tomato paste and fruit juices.

Status: Some work has been initiated.

3. Kassala Onion Dehydration Factory

3.1. Securement of stainless steel cutting knives

Status: Accomplished

3.2. Tests on the introduction of new products by dehydration of other vegetables available in the Kassala region

Status: to be done.

3.3. Tests on the reduction of losses in the pre-preparation stage (handling and peeling of onions)

Status: Some work started in 1983 and 1984, further tests remain to be performed.

3.4. Opportunity study for an agro-industrial complex

Status: Initial data are being obtained

3.5. Detailed instructions on quality control procedures

Status: Completed

4. Wau Fruits Canning Factory

4.1. Results of tests on nematode resistant tomatoes

Status: Tests were done and one variety chosen for subsequent larger scale production; tests on two more varieties remain.

4.2. Establishment and installation of a line for semi-mechanical processing of pineapple and mango

Status: Portion of equipment was obtained from India; remaining portion is to be bought through the Ministry of Finance.

4.3. Detailed instructions (manual) for quality control measures.

Status: Design has been prepared; it remains to be tested in the near future.

5. Babanousa Milk Dehydration Factory

5.1. A study on the dehydration of karkadeh

Status: Remains to be done

6. Opportunity study for the establishment of a central tomato concentrating plant

Status: Remains to be done

7. Outputs not planned initially

7.1. Techno-economic study on the establishment of a flour milling plant in the Northern Region

Status: Work being done jointly with a 4 man team from IRCC, data are currently being collected.

7.2. Proposals for marketing and organization of transport and storage systems for the Kassala factory

Status: completed

5.3.4. Institution Building

The revised project document of December 1982 (read: proposal for the revision of the ProDoc) envisaged the establishment within Industrial Research and Consultancy Centre (IRCC) of a Unit for increasing the effectiveness of the public sector industries. Taking into account this project objective and the workplans in the three sectors, the institution building outputs could be reconstructed as follows:

1. Leather Sector -- 2 counterparts with university degrees and experience in the leather industry, as part of the Unit in the IRCC, capable of performing independent consulting work for the leather industry at the end of the project.

Status: Only one counterpart from the Chemical Industry Department of IRCC, with very little experience in the leather industry has been made available (Since Feb. 84) for work with the expert and only on a one-day-a-week basis. This output is unachievable under the present circumstances.

2. Textile Sector -- 2 counterparts with university degrees and experience in the textile industry, as part of the Unit in the IRCC, capable of performing independent consulting work for the textile industry at the end of the project.

Status: One counterpart stayed only for six months with the expert; two who are now in the Unit are from the Textile Industry Department of IRCC, both are PhD's with textile mill experience. One has been with the project since May 1983, the other since September 1983.

3. Food Sector -- 2 counterparts with university degrees and experience in the food processing industry,



capable of performing independent consulting work for the food industry by the end of the project.

Status: One counterpart worked with the expert during 1983 but then left the project and IRCC; two current counterparts from the Food Industry Department of IRCC are working with the expert only since February 1984 (they will be engaged in factory by factory analysis and quality control work).

## 6. SUDANESE INSTITUTIONS RELEVANT TO THE PROJECT

Previous evaluation and review missions (February 1979 and March 1982) have stressed the importance of coordinating project activities with Sudanese institutions capable of providing services to the industry. The mobilization of national resources and talents assembled in these organizations has been called for on numerous occasions. It is therefore very relevant to analyze the current status, activities and capabilities of the following institutions: Industrial Research and Consultancy Centre, Food Research Centre, Management Development Centre and Leather Training Institute.

### 6.1. Industrial Research and Consultancy Centre (IRCC)

The Industrial Research and Consultancy Centre, formerly the Industrial Research and Consultancy Institute, was established in 1965. UNIDO participated in the building-up of this institution in the period 1965 - 1969. It is now located in Shambat (Khartoum North) in a large new building which is still being completed (estimated completion in 1985). Up to March 1983, the Centre was scattered in six different rented buildings in Khartoum. According to the Industrial Research and Consultancy Act of 1980, the main functions of the Centre are: research (lab and field experiments, production innovation, feasibility studies, transfer of technology etc.), consultancy and technical services (industrial planning, industrial engineering, production management, quality control, costing and financial systems) and technical information services.

However, as a result of the long-standing unsolved problems of accomodation and laboratory space, current activities are focused primarily toward pre-investment studies, technical surveys and testing-and-inspection services.

The IRCC is an organ of the Ministry of Industry. Its management is supervised by the Board of Directors which is responsible to the Minister of Industry. The Centre has a Director who is appointed by the President of the Republic on the recommendation of the Minister of Industry. The revenues of the Centre consist of funds allotted by the state and fees collected from its clients. Industrial fees are costed at a rate of approximately 10,000 Sudanese pounds per man-month.

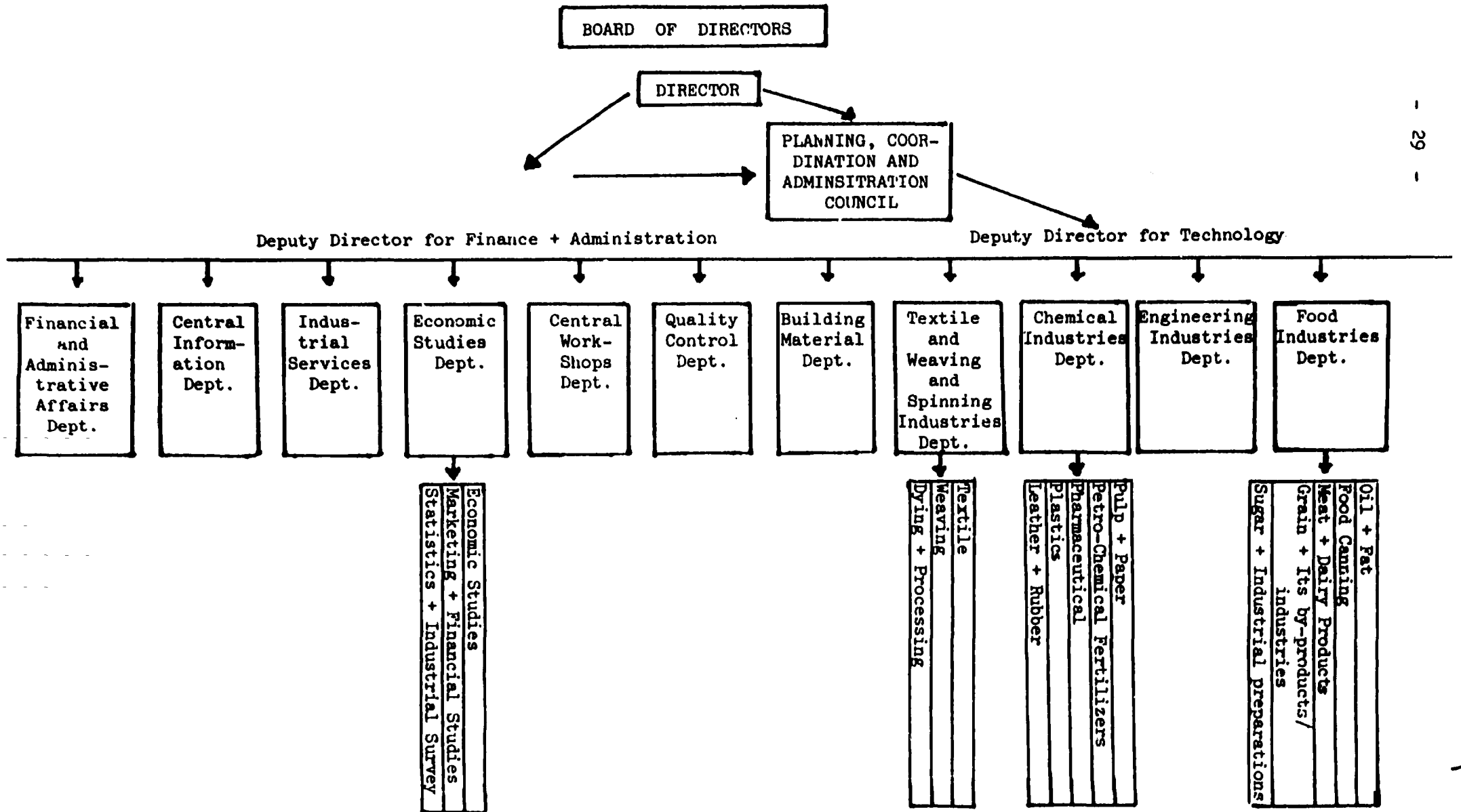
The Centre provides services to both private and public sector industries. The activities of the IRCC in 1983 are summarized in Annex VII.

The organizational chart of IRCC is shown in Table 2. The Centre has eleven departments covering a wide range of services to the industry. The staff consists of 98 professionals (22 PhD's, 51 MSc's and 25 BSc's), 43 administrative personnel and 47 workers. There are four departments which are of interest for the project -- textile industries, food industries, chemical industries and economic studies. The staffing of these is as follows:

textile:	2 PhD's, 3 MSc's, 1 BSc
food :	3 PhD's, 5 MSc's, 2 BSc's
chemical:	3 PhD's, 5 MSc's, 2 BSc's
economic:	5 economists

In the majority of cases, the staff joined IRCC directly from the unviersities although there are staff members who gained significant experience working in industrial enterprises (this is particularly true for the Textile Industries Department). It should be noted that, although the Chemical Industries Department nominally covers the leather sector, the Centre has done practically no work in this area and does not have specialized staff.

Table 2 - INDUSTRIAL RESEARCH AND CONSULTANCY CENTRE ORGANIZATION CHART



The Centre has had major problems with staff turnover. A significant number of people have left IRCC to work in oil-rich Arab countries, while some have found better-paying jobs in the Sudanese industry. However, the impression of the evaluators is that the current staff is competent to do consultancy and trouble-shooting work but is not sufficiently utilized. The wider mobilization of IRCC staff to work on the improvement of the efficiency of public sector industries is a must, both during the life of this project, as well as afterwards.

It should be stressed that there are problems standing in the way of full utilization of IRCC in the public sector industries. IRCC charges fees (although the staff considers them nominal) from the private sector, while the work for the public sector is not additionally stimulated. Its mandate in the public sector thus far has been to diagnose problems and write reports on them, but not to actually help in implementing the recommended solutions. In the current situation in Sudan, where the public sector enterprises are still in transition between sectoral corporations and independent, self-managing companies, it is not clear whom does IRCC contact to offer its services -- the Ministry or the future companies.

The IRCC staff consider the project an excellent vehicle for involving IRCC in the public sector, although the involvement -- for a number of reasons -- has not been extensive thus far. The status of the Unit where the project is currently located should be cleared up and conditions created for further, more extensive involvement, particularly of the Food Industries and the Textile Industries Departments. If at all possible, means should be found to attract a number of experienced people from the industry to these departments.

On the subject of the food processing sector, it should be noted that IRCC is in somewhat of a conflicting situation with respect to the Food Research Centre since both organizations consider themselves competent in the field of industrial food processing. The latter

organization is an organ of the Ministry of Agriculture, and there is no cooperation between the two centres.

#### 6.2. Food Research Centre (FRC)

FRC was established in 1965 to provide research, educational, training and advisory services in the field of food, science and technology. In the past several years, the Centre has been particularly active in: a) studying traditional and rural food industries and handling techniques and improving them, and b) selecting and implementing modern techniques (picking, handling, grading, processing, packaging, storing and marketing) suitable to local conditions.

At the moment, the Centre has 35 scientists (20PhD's and 15 MSc's) in its compound in Shambat, while 15 more are being trained abroad. The professional staff has mostly an agricultural engineering background. In addition, there are about 50 technicians, 15 administrative staff and over 100 workers. The Centre has eight departments:

- post harvest physiology
- fruits and vegetables technology (canning and dehydration)
- grain technology
- animal products technology
- food microbiology
- chemistry, oils, fats and oil seed products
- food engineering
- food economics and marketing

The Centre has a milling pilot plant and a pilot-scale bakery, a library and a 100-feddans farm.

On the basis of a visit to the premises, interviews with staff and documentation reviewed, the evaluation team is of the opinion that the Centre is a very solid, well-organized and relatively well-equipped institution which is doing work of good quality. However, as in the case of IRCC, this very good potential is significantly underutilized. The Centre has no official link with the public sector food processing units since it is under the Ministry of Agriculture while the production units

are under the Ministry of Industry. The latter considers that FRC should deal with raw materials development only and not get involved with industrial processing.

It is obvious, however, that there is a considerable overlap of FRC expertise, on the one hand, and the operations of the food processing units and the activities of IRCC, on the other. For example, the project has been working on onion storage and dehydration at the Kassala plant using techniques developed by FRC several years ago. In milling operations, FRC has developed or adopted a technology for which IRCC is now doing a feasibility study. There is unnecessary competition, bad feeling and duplication of effort due to lack of coordination.

#### 6.3. Management Development Centre (MDC)

MDC was established in 1965 and comes under the responsibility of the Ministry of Labour and Social Insurance. Although it is active in training, consultancy and research, it has excelled primarily as a training institution. Its staff of 24 professionals in business administration cooperates with organization from abroad to train three main management categories in Sudan - top, middle and supervisory. Courses range in duration from 2 to 25 weeks and cover the various functional areas of management (general management, production, management accounting, financial management, marketing, personnel). Managers from both the private and public sector are trained, and the training is not limited to the industrial sector. The Centre's revenues come primarily from fees charged for its services. Although MDC is planning the expansion of its consultancy services, they are at the present time centered primarily on the assessment of training needs.

#### 6.4. Leather Training Institute

The Leather Training Institute, another institution established through UNDP assistance in the 1960's, comes under the responsibility of the Ministry of Agriculture. However, its present role has been greatly

reduced and its staff of seven professionals trains only 8 hides and skins overseers and 18 students of technical schools per year (information for 1983). Its premises and equipment are practically unutilized. There is practically no coordination between its possible activities and the needs of the leather sector.

## 7. ASSESSMENT

The mission considers it useful to synthesize its assessment of the different elements of the project as it bears its evaluation of the effectiveness and impact of the project activities thus far carried out and the likelihood of achieving the project's designed objectives.

### 7.1. Project Objectives

The revised project document of December 1982 articulates the development objectives practically in the same way as the previous project. It is meant to improve the performance of the public sector enterprises by increasing capacity utilization, thus increasing production, productivity and performance. Since the situation in the industrial sector in Sudan is still very much the same in terms of performance as it has been for the last 15-20 years and the Government's efforts thus far have not had sufficient influence to improve significantly the situation, the mission therefore considers the development objective still valid, relevant and directly related to the national development plants.

The immediate project objectives are to establish a unit within IRCI to strengthen the institutional capacity of the Ministry of Industry as well as to improve economic performance of public sector enterprises in textile, food and leather, through diagnostic and consultancy work. These objectives were found by the mission to be not valid since the Government is questioning the merits of having a unit, analysing the role for IRCC, and re-evaluating the responsibilities of the Ministry of Industry vis-a-vis the public enterprises.

Furthermore, the institution building activities for establishing a national institutional capacity to carry on the work of the project have not thus far been supported since counterpart staff of a permanent status for these activities have neither been made available nor developed. Therefore, the mission considers that the project's immediate objectives, as currently proposed through the December 1982 document, are unrealistic for the current situation and are impossible to achieve in the present life span of the project.

The improvement of economic performance of the textile, leather and food factories achieved thus far is not noticeable and it is unlikely that a capacity utilization greater than the currently achieved levels will be achieved by project implementation.

While the project is meant to respond to policy changes of the Government (decided in 1981) for a decentralized operation of public sector enterprises, the design is ambivalent. The document recognizes the new Government's policy but in fact continues with a strategy of providing a functional management approach to the project's activities even expanding to a multifunctional approach without appropriate means. The sectoral approach of providing help at the factory level has not been fully stressed. Therefore, the mission considers UNDP's reservations to be completely valid in requesting a more accurate articulation of the project and its objectives since currently it would not be possible to assess the effectiveness of its implementation based on the current design.

#### 7.2. Outputs

The current project document contains commitments for outputs and activities which are not specific and not quantified. Therefore, no conclusive assessment can be made of the results achieved thus far since there are no benchmarks and no performance indicators.



### 7.3. Work Programme

The project document does not contain a detailed work plan but it does specify that work plans prepared by the international experts will be attached to the document. These work plans have been prepared, principally based on the experts' job descriptions. These workplans proposed by the experts and approved by the Government with little apparent participation of either UNIDO or UNDP provide the only standard against which the work done can be evaluated.

These work plans, however, have turned out to be very ambitious covering a wide range of activities. Their realistic implementation has been further eroded by the lack of sufficient and meaningful national counterpart support. Their implementation has been further limited by the fact that the experts have been requested to undertake tasks outside the framework of their work plans to the point that they are largely devoted to ad hoc assignments coming from too many persons and entities both from the Ministry of Industry as well as the UNDP office in Khartoum.

The mission's assessment of the fulfilment of the work plans is subject to the consideration of the above impediments.

The expert on leather has, in the opinion of the mission, accomplished his work plan not only in quantity and time but also in terms of quality. This expert, due to lack of counterparts from IRCC, did not locate himself at the offices of the project but at the tanneries. He had the least number of ad hoc assignments. Consequently, the completion of his work tasks is likely to be finalized successfully by the end of 1984.

The implementation of work plans of the other two experts however, has not, in the view of the mission, advanced to the same extent. The food expert's programme cannot be completed, in part due to the many ad hoc assignments he had. A reduced programme could be meaningfully completed by mid-1985.

The textile experts programme is one of an immense magnitude and is one in which less progress can be seen. This situation calls for a prioritization for the work to be done, a selection of a lesser number of textile mills to deal with and a strengthening of the capability of the team by providing another complementary expert to deal with weaving as distinct from spinning activities. The magnitude of the tasks for this sector is also considerably larger. Therefore, completion of work would not be possible before the end of 1985.

The above indicated targets for completion of work provide an indirect assessment of the progress achieved in completing the work plans. However, it must be pointed out that these plans do not seem to be active management tools since none of the tripartite system members seem to use them in this manner and the plans may be now considerably out of date. Succinctly, the project seems to have a built-in vagueness that makes an exact assessment of it difficult.

#### 7.4. Project Achievements

In spite of the drawbacks arising from the inadequate design and somewhat loose monitoring, the experts with limited counterpart support have been able to obtain some positive results. An analysis of the outputs achieved will reflect the extent to which each expert has carried out his commitments to the project.

##### 7.4.1. Leather Sector

The work programme for the leather sector (as well as the resulting outputs described in Section 5.3.1.) was more specific than for the other two sectors; as a result, the efforts of the leather experts were directed to relatively clearly defined goals. An output-by-output analysis shows significant achievements in this sector. Outputs 3, 4, 5, 10 and 11 have been fully completed (with output 9 being related to 3 and 4), while major outputs 1 and 8 are not far from completion. The work of the leather expert has been of the highest professional quality. Main problem in the tanneries have been clearly identified and actions necessary for

resolving them (measures related to raw material supply, investments required etc.) have been proposed. A detailed rehabilitation programme is in the final stages of preparation. What is now needed is a step-by-step version of the rehabilitation programme since the financial requirements needed for full rehabilitation are rather extensive. For example, the first "injection" into the leather sector could be funds required for importing the most necessary spare parts and consumables. Coupled with several policy measures dealing with the supply of raw hides and skins, proposed by the project and now being tested, this action could produce an initial increase in capacity utilization (particularly in the Khartoum Tannery). It should be noted that without encompassing measures of this kind, capacity utilization cannot be expected to rise (for ex., during the visit to the Khartoum Tannery, it was established that the factory barely has enough working capital to cover one day raw material supply for the current reduced production capacity). It is estimated that any effort in the improvement of management methods in the tanneries, by itself, can produce only an incremental effect.

The project has already generated proposals for technical assistance and investment cooperation projects required for increasing the efficiency of the leather sector. Specialized expertise required for these projects has been identified and UNIDO is involved in seeking some of the necessary funds. When the current work is completed in approximately seven months (estimate of the evaluation team in consultation with the leather expert), the project will provide the Government with all information necessary for making decisions regarding the rehabilitation of the leather tanning industry.

#### 7.4.2. Textile Sector

Of the three sectors dealt with, the textile sector is certainly the most significant one for the country, both in terms of people employed (21,000 now, 35,000 when all factories become operational, as compared to about 1,000 in the leather sector and about 2,000 in the

factories covered in the food sector) and the export potential. The work in this sector is, therefore, particularly important and complicated, covering various aspects of new plant operation (Hag Abdalla, Port Sudan) as well as rehabilitation or optimization of older plants (weaving factories).

Having this in mind, it should be stated that the work programme proposed was unrealistically optimistic, covering far too many activities. The factory-by-factory analysis in this sector is a very broad task in itself. The efforts of the textile expert have been more diffused than in the case of the other two sectors, covering such activities as inspection, marketing, liaison with foreign buyers, etc. As a result of effort spread too wide and of too many ad hoc requests for assistance received from various sources, the achievements of the textile expert are not as obvious or defined as in the case of the leather expert. Of the outputs listed in Section 5.3.2., outputs 4, 5, 6.1., 6.2. and 6.3. can be considered as completed, but in major output 1 a great deal of work remains to be done. Work also remains to be done related to outputs 2 and 3.

The impression gathered is that the task described above significantly exceeds the capacity of one international textile expert and two national counterparts who have been involved only for a limited period of time.

#### 7.4.3. Food Processing Sector

The work programme in the food sector and the resulting planned outputs (Section 5.3.3.) reveal a very broad front of activities, covering to a significant extent a technical support function by the international expert (in addition to the management consulting function of the type provided by the experts in the other two sectors). It should be noted that the food processing expert has been with the project since 1979 and that some of the work was started in previous project phases, in which he had a specialized supporting role with respect to the

functional experts. As in the case of the textile sector, the efforts have been spread out too much, with the result that a significant amount of work remains to be done regarding the production of major originally planned outputs, which would be in line with the priorities described in Section 7.5.. Only outputs 1(e), 3.1., 3.5. and 7.2. have been completed. In major output 1, parts (a) and (c) could be completed by the end of 1984 if efforts become more directed towards them. Work is well under way towards producing outputs 2.1., 3.3., 4 and 7.1. Little progress has been made in producing outputs 1(b), 1(d), 1(f), 3.2., 3.4., 5 and 6.

#### 7.5. Effectiveness of Project's Sectoral Approach

The situation in the industrial sector in Sudan is still very much the same as pointed out in previous evaluations and reviews of this project. Industrial performance, especially of public sector industries, is strongly affected by external factors (outside the control of factory management) such as inadequate power and water supply, difficulties in obtaining and securing timely delivery of raw materials (problems in policy of raw material supply and pricing), problems in getting foreign exchange for appropriate factory operation (equipment, spare parts), and liquidity and working capital restrictions. At the current time (first half of 1984) problems related to power supply and liquidity and working capital matters are particularly pronounced. Internal factors (inefficient management, disproportionally large work force and lack of proper maintenance) are also present, although overshadowed by the two main problems listed above.

As a result, the process of transformation initiated by the new industrial policy in 1981 has been slow and complicated. In this interim period, the oversight responsibility for factory performance in the public sector has not been clearly defined.

Capacity utilization figures have not risen in recent years (some of them are given in Appendix V). For the three sectors of interest to the project, they are in the range of 15-30% for the leather and textile industry, and even less (overall) for the food processing industry.

Due to such a situation, the "fire-fighting" (or "rescue") type of approach suggested by the UNDP Country Programme Review Mission of March 1982 can have only very limited results. Any technical improvements which could be made in individual factories with currently available means are bound to be marginal in terms of increased capacity or improved economic performance. The more significant improvements will require adding to the recurring operating budgets or major capital inputs, the utilization of which would require significantly more time than the current project (envisaged to be completed at the end of 1985), and a system to oversee and monitor such expenditures.

The priority of the moment appears to this mission to be the diagnostic work aimed at producing a thorough technical and financial analysis for the priority factories, of the type described under Output 1 in each of the three sectors (see Sections 5.3.1, 5.3.2 and 5.3.3.). This factory-by-factory analysis should lay down the foundation for rehabilitation programmes and for the actions necessary to make the factories viable, self-managing units (regardless of what stage of transformation they are formally in at the moment). The resulting proposals for rehabilitation plans aimed at stagewise improvement of production, maintenance and management should enable the Government to make decisions regarding the initiation and organization of a wider action in each sector -- covering policy measures, financial injections in the form of the most necessary investments, organizational changes etc. Only an encompassing action of this kind can give measurable results in terms of the increase of capacity utilization and the improvement of the financial situation of factories.

In light of the above, it should be mentioned that this mission considers that the sectoral orientation of the project since 1982 has been appropriate and relevant. Each of the three sectors is specific in many ways. However, the problems has been that a sectoral expert can do only a limited amount of work in a limited time, especially if the participation of national counterparts is very limited. Priorities have to be selected

and a clear realistic work plan agreed to by the three parties (Government, UNIDO, UNDP). The efforts made by the experts thus far have been significant, but these efforts have been too diffused, with too many problems being attacked at the same time. As a result, a large amount of the work initially planned still remains to be done.

#### 7.6. Co-ordination

The project's phase II was designed to establish an Efficiency Improvement Unit which was meant to provide an institutional focus and leadership role for the improvement of the public sector enterprises. From Section 5.3.4. it is obvious that there has been very little progress in the institution building outputs foreseen. The reason has been the status of the project with respect to IRCC, which has not been completely clarified in the past two years, as well as the turnover of staff which was eventually appointed to work with the experts. Even in the textile sector, where the situation is somewhat better, the appointed counterparts have not been used in an effective manner.

It should be stressed that now institution building should rank in importance below the short-term priorities related to rehabilitation programmes (apart from the fact that a pre-condition for institution building should be a clearly defined institutional focus and organization). In this sense this mission agrees with the recommendations of the UNDP Country Programme Review Mission of March 1982 in that existing national institutional resources and talent should be mobilized and utilized better (instead of creating new units). The Unit for Industrial Efficiency, as envisaged in phase II of the project (with an accent on a central monitoring function) certainly has no relevance in the current Sudanese public sector industry situation.

In Chapter 6 of this report, it has been indicated that institutional service capabilities related to the public sector industries (particularly IRCC and FRC) represent a significant but almost unused potential. It would

seem evident that rehabilitation programmes as vast as the Government has in mind, even though restricted to textiles, leather and food, cannot be carried out by any one single institution, due to the limited capacity and competence it would have concerning the large number of different types of problems that need to be tackled. The fact that many of these problems do have significant interrelationships and thus cannot be solved independently, requires and demands an appropriate co-ordination, co-operation and collaboration among the different institutions which may have capacities, particularly human talent, that can contribute to such a goal. Therefore, the Government must find ways and means to integrate better the available national capacities.

As an example, currently, the project has no linkages to the Food Research Centre. The lack of co-operation seems to rest on the fact that the FRC belongs to another ministry and there appear to be interministerial impediments for an effective co-operation. Problems are even more acute between the IRCC and FRC where the former considers itself jurisdictionally responsible for food industry service even though it currently lacks institutional capacity and competence now available at FRC. It needs to be pointed out that the current project itself has not made any detectable effort to bring together these institutions to its work, even though much of the project activity related to Kassala Onion Dehydration Factory is based on comprehensive work of FRC of more than ten years ago, covering the survey of the factory, development laboratory work and consultancy with extensive recommendations.

The project and the IRCC itself have linkages which cannot be considered effective and basically seem to operate independently of each other even though IRCC has considerable human talent available for economic studies and textiles consultancy and somewhat less so for food industry activity. In this case the problem seems, to some extent to depend on the source of funds required to pay the fees to IRCC to carry out work. The fact that IRCC and the project office are approximately 10 km. away from each other is quite indicative of their relationship.



The mission does not suggest that the project and IRCC should be physically united now since the buildings of IRCC require at least another year for completion but rather that the current project office be considered temporary.

The Leather Training Institute, in existence for many years, is essentially idle even though it has a pilot tannery. No effort seems to have been made to use it and its staff in serving some of the need of the sector. However, proposals have been made seeking financial support to expand the institute, but no actions are apparent as to how to use that which is available.

The mission considers that much greater efforts are required by the Government in sponsoring better co-ordination, co-operation and collaboration among institutions concerned, including those dealing with financial aspects, if steps towards the improvement of the public sector enterprises is to be achieved in the near term.

The work of the international experts for the remainder of the project should be directed towards specific outputs which are recommended in the Chapter 9 (Recommendations). The achievement of these remaining project outputs will require a joint effort which can only be obtained if better co-ordination is achieved.

## 8. CONCLUSIONS

Based on the mission's findings and report, the following conclusions have been reached.

8.1. The revised project document of December 1982 is inadequate. The immediate objectives do not clearly indicate a change from a functional to sectoral approach to be in accord with Government policies established in 1981. The main project design elements are unspecified and non-quantified. Therefore, it becomes necessary to reformulate the main project design elements to clearly establish the scope of the project.

8.2. The project as implemented lacks a clear institutional focus. The relationships between the project and the Ministry of Industry and/or the IRCC have not been clearly defined. The institution building aspect of the project has become negligible in part due to lack of counterparts on a permanent basis.

8.3. The sectoral orientation recommended for the project since 1982 is considered appropriate and relevant. However, the sectoral targets for the project are too large and widespread without identification of priorities. These targets are based on the work plans proposed by the experts and approved by the Government, providing the only standard against which the project can be evaluated. Thus, the project's achievements became synonymous with the results of the experts' work. This work was planned too ambitiously, covering a wide range of activities. In addition, there were a multitude of ad hoc assignments from various sources. The experts' efforts became very diffused to the point that their activities went beyond technical sectoral functions, attempting to cover multi-functional responsibilities without having the appropriate means to do so.

8.4. The monitoring, oversight, review and management by the members of the tripartite system has been insufficient creating problems for the project in that there was no clear-cut decision-making on a tripartite basis, thus permitting the activities to become very widespread and un-coordinated.

8.5. There is insufficient co-ordination, co-operation and collaboration between the project and other relevant institutions in the country, particularly the IRCC in respect to consultancy capabilities in textiles and the FRC as a technical service for the food industry. The lack of co-ordination makes it unrealistic to hope for real improvement of the performance of public sector enterprises in textiles, leather and food in the near term.

8.6. There is a number of external factors outside the control of factory management which affect the performance of public enterprises to a significantly greater extent than production and management considerations. These external factor problems point to the need of better co-ordination in Government policies and actions related to:

- (a) provision of basic infrastructure services for power, water and transport;
- (b) oversight responsibility for factory performance;
- (c) foreign exchange requirements for factory operation, particularly equipment and spare parts;
- (d) raw material supply and pricing;
- (e) working capital and cash liquidity requirements for factory operation;
- (f) support to factory management in respect to:
  - (i) technical functions
  - (ii) management functions
  - (iii) marketing functions

8.7. There is a lack of entrepreneurial focus for factory operation making the sectoral approach at factory level intervention recommended by the Country Programme Review mission of 1982 of limited benefit. Therefore, emphasising of technical assistance may be better placed in work of a diagnostic nature on a factory-by-factory basis, leading to the definition of rehabilitation programmes defined by stages in order to make factory operations entirely viable and thus achieve improved performance.

8.8. The project's achievements to date have not increased significantly the capacity utilization of the sectors and the extent of improved economic performance is negligible. Nevertheless the results achieved through the work of the experts have been positive.

8.8.1. The leather sector's project work is directed to clearly defined objectives is very much on schedule and it will prepare rehabilitation plans for the leather factories by the end of 1984.

8.8.2. The textile sector is the most significant for the country.

However, it will be impossible to achieve the work programme envisaged. Progress is very limited due to too much spreading of the activities, and a great deal of work remains to be done to achieve some results for a limited number of mills. The most significant achievement is related to the production rates achieved at Hag Abdalla Spinning Mill for export.

8.8.3. The food sector work is also too diffused and there is little completed work. Work on Kassala Onion Dehydration Factory and the testing of new tomato varieties has been the most significant activity.

8.9. The achievements obtained thus far are sufficiently promising to warrant the continuation of the current project which, while scheduled for completion at the end of 1984, would need to be extended. The financial resources available for such an extension were established to amount to \$300,000 obtained from savings achieved in the project's implementation.

## 9. RECOMMENDATIONS

Based on its assessment and conclusions, the mission has the following recommendations.

### 9.1. Substantive Matters

(1) The project should aim to carry out its activities utilizing a sectoral orientation with the goal of achieving concrete, specific results as the first steps leading toward a programme oriented to the better performance of a few selected enterprises in the textiles, leather and food sector.

(2) The institutional focus for the project should be established in the Industrial Research and Consultancy Center (IRCC) as an integral part of that organization and drawing upon all relevant staff required to undertake the specific tasks.

- (3) Project activities should be concentrated in:
- (a) preparation of surveys and proposals for stagewise plant rehabilitation of priority factories;
  - (b) financial feasibility test (prefeasibility studies) of the necessary plant rehabilitation schemes;
  - (c) direct support at factory level, for priority factories, covering improvement of production and maintenance operations activities.

(4) The factories to be covered by the project should be reduced in number to a priority list in each industrial sector of the project without attempting to cover all factories in the sector. Thus, it is suggested to restrict project operations to the following:

(a) Leather sector

Khartoum Tannery  
White Nile Tannery  
Gezira Tannery

(b) Textile sector

Spinning Mills	Hag Abdalla
	Friendship Textile Mill
Weaving Factories	Kosti
	El Dueim
	Kadugli
	Mangala
	Nyala
	Shendi

(c) Food sector

Karima Fruits Canning Company  
Kassala Onion Dehydration Factory  
Wau Fruits Canning Factory

9.2. Operational Matters

(1) The mission recommends the following reformulated project (immediate) objectives:

- To enable the Government to make decisions regarding the rehabilitation or improvement of a number of priority factories in the textile, leather and food sectors as part of the implementation of its policy to decentralize (privatize) the public sector enterprises. The project will be aimed at proposing plans for stagewise improvement of production, maintenance and management of these priority factories in order to better their financial performance.
- To improve in the short-term the production and maintenance of priority factories in the above sectors through better technical, process and maintenance operation, within the context of the operating plans before these factories become viable independent companies.

(2) The following outputs are recommended:

Leather Sector

- (a) for the Khartoum Tannery
  - White Nile Tannery
  - Gezira Tannery:
    - (i) Factory-by-factory analysis containing a detailed technical and financial analysis of their main problems, with proposals for their resolution, including a detailed proposal for a step-by-step programme for rehabilitation;
    - (ii) Prefeasibility study for potential investment for the stagewise rehabilitation;
- (b) proposals for the introduction of new technology and product diversification;
- (c) proposal for the utilization of indigenous materials

aimed at reducing foreign exchange requirements for imports;

- (d) proposal for a development plan of the leather industry in Sudan;

Textile Sector

For Friendship Textile Mill

Hag Abdalla Mill

Weaving Factories at Kosti

El Dueim

Kadugli

Mangala

Nyala

Shendi

- (a) Factory-by-factory analysis containing a detailed technical and financial analysis of their main problems with proposals for their resolution including a detailed proposal for a step-by-step programme for raising the utilization rates (including prefeasibility analysis for any additional investments considered necessary);
- (b) System for monitoring factory performance (excluding Friendship Textile Mill);
- (c) Study of management structure with proposals for its restructuring (excluding Friendship Textile Mill);

Food Processing Sector

- (a) for Karima Fruit Canning Company
  - Kassala Onion Dehydration Factory
  - WAU Fruits Canning Factory

Factory-by-factory analysis containing a detailed technical and financial analysis of their main problems, with proposals for their resolution, including detailed proposals for a step-by-step programme for rehabilitation;

- (b) for Karema Fruit Canning Company, results of tests of high yielding tomato varieties;
  - (c) for Kassala Onion Dehydration Factory
    - (i) Tests on the reduction of losses in the pre-preparation stage;
    - (ii) Opportunity study for an agro-industrial complex;
  - (d) for Wau Fruit Canning Factory
    - (i) results of tests on nematode resistant tomatoes
    - (ii) establishment and installation of a line for semi-mechanical processing of pineapple and mango
    - (iii) detailed instructions (manual) for quality control measures;
- (3) Project inputs are to include:
- (i) From the Government
    - IRCC administrative support
    - IRCC technical support in
      - economic studies
      - textiles technology
      - food technology supported by the FRC
  - (ii) From UNDP
    - Leather sector                    - expert until end 1984
    - Food processing sector            - expert until July 1985
    - Textile sector                    - expert until December 1985  
(spinning, management, quality control)
    - expert 12 months  
(textile engineer, weaving, maintenance, cost accounting).



### 9.3. Co-ordination Matters

The existing national institutional capacity relevant to the tasks of the project should be appropriately co-ordinated in order to maximize the possibility of achieving the project's objective and to continue similar work in the future. In particular, the IRCC should prepare itself to provide support to factory management in respect to:

- Technical Functions
- Management Functions
- Marketing Functions

9.3.1. In respect to technical functions, IRCC should structure its services by proper co-ordination with other institutions in the country so as to cover responsibilities in:

- textiles - the textile group of IRCC;
- food - co-ordination and collaboration between the Food Research Centre and the engineering support capacity of IRCC;
- leather - the chemical group of IRCC supported by the Leather Training Institute.

9.3.2. In respect to management functions, IRCC should structure its services by utilizing its economic studies group supported by the Management Development Centre.

9.3.3. In respect to marketing functions, IRCC should seek the collaboration of the ITC Trade Promotion Project, SUD/50/96.

9.3.4. It may be useful to consider the establishment of a Factory Rehabilitation Advisory Committee for each one of the sectors covered by the project.

The Committee's memberships should include:

- Representative Ministry of Industry
- Representative Ministry of Agriculture
- Representative Ministry of Finance

Director IRCC covering a management function  
Sectoral Representative <sup>1/</sup>  
ITC Export Promotion Project Representative

9.4. Project Management and Follow-up Matters

9.4.1. After Government reviews this evaluation report, a Tripartite Review should be held as soon as possible. The TPR should discuss and consider the reformulated project design elements (which are to be valid until the end of the current phase). Detailed work plans with target dates can then be agreed on (as well as the composition of teams for different tasks). Participation of the Resident Representative, UNIDO's backstopping section and a high-ranking Ministry of Industry official would be desirable.

9.4.2. Monitoring of project activities and reporting should be strengthened. Agreement on six-monthly reports should be adhered to. The detailed factory-by-factory reports should be commented on by UNIDO when submitted to the Government.

10. CONCLUDING REMARKS

The intent behind the indicated recommendations of the mission dealing with substantive, operational, co-ordination and management and monitoring matters is to focus the project's activities in the remaining operational period into the completion of the analysis of problems in a few selected factories in the three sectors covered by the project, on the basis of which rehabilitation and improvement are to be prepared.

The mission hopes that the step-wise rehabilitation programmes, with appropriate economic feasibility tests to establish their estimated cost benefit, would in fact provide the Government with a kind of comprehensive prospectus on the factories in question in order to seek partners for the new companies envisaged under which the factories are

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<sup>1/</sup> The sectoral representatives would include:

- For textiles : managers of mills, representative of textile group IRCC
- For food : managers of factories involved, FRC
- For leather : managers of tanneries, Leather Training Institute

to operate or alternatively to seek credit or investment capital required. In view of the mission this is the principal objective to be achieved and the work should be concentrated accordingly.

Improvements in factory process and maintenance, while important in themselves, will not provide the order of magnitude benefit sought in performance and are not likely to be long-lasting in character without the accompanying rehabilitation or improvement programmes which are to be proposed.

Annex I

TERMS OF REFERENCE

Joint UNDP/UNIDO Evaluation Mission on SUD/79/010

Improvement of the Efficiency of the Public Sector Industries (Phase II)

Scope and Purpose of the Mission

- a) Examine project design of both the signed prodoc and the proposed draft with a view to determine the appropriateness for achievement of the project's objectives and outputs.
- b) Identify the factors which may have facilitated or deterred achievements of the project's immediate objectives and outputs and the likelihood of achieving the immediate objectives during its present lifespan.
- c) Assess Government's participation and support, particularly the adequacy of major inputs including national counterpart staff.
- d) Determine the extent to which major recommendations made by previous review missions (UNIDO in September 1981 and Joint CP review in March 1982) were implemented by the Government, UNDP and UNIDO.
- e) Examine the relevance and effectiveness of the sectoral approach of the project under the new industrial policy and assess the direct support results obtained thus far through the work of three sectoral experts currently in the field.
- f) Assess the contribution of the project to building-up the institutional capacity, in particular in the Unit for Industrial Efficiency (UIE), primarily in the monitoring and advisory functions for improvement of the performance in the public sector industry.
- g) If necessary, in doing a) through f) above redefine major design elements to clearly indicate the scope of the project until the end of the current phase.

Composition of the Mission

The mission will be composed of one representative of UNDP and one representative of the United Nations Industrial Development Organization. The members are as follows:

- Mr. A. Chavez - Principal Technical Adviser,  
UNDP
- Mr. N. Catipovic - Industrial Development Officer  
Evaluation Unit, UNIDO

The Government of Sudan is invited to fully associate itself with the mission's work.

Consultation in the Field

The mission will maintain close liaison with the Resident Representative in Sudan, the Government authorities concerned and the national and international staff assigned to the project as well as other staff directly or indirectly involved in the project. Although the mission should feel free to discuss with the authorities concerned anything relevant to its assignment, it is not authorized to make any commitments on behalf of the UNDP or UNIDO.

Timetable and Report of the Mission

- (a) The mission will start its work on 3 May 1984 with briefing by the Resident Representative and/or his designated staff, who will also provide the necessary substantive and administrative support. The mission will endeavour to complete its work by about 14 May 1984.
- (b) The mission will complete its report even if in a draft form in Sudan, and discuss its findings, conclusions and recommendations first with the Resident Representative and then with the Government. If the report cannot be finalised in the field, the mission will leave with the UNDP Resident Representative a first draft of its report prior to departure from Khartoum.
- (c) The final version of the report should be simultaneously submitted to UNDP, UNIDO Headquarters and the UNDP Resident Representative in Sudan, who in agreement, will transmit the report to the Government of Sudan.

27 April 1984

Annex II

SCHEDULE OF MEETINGS HELD AND VISITS MADE

- May 3 - Briefing at UNDP - Khartoum
- May 4 - Meeting with sectoral experts, tentative plan of forthcoming meetings and visits  
- Reading and review of additional material (reports and correspondence) provided by experts
- May 5 - Meeting with Deputy Resident Representative and sectoral experts  
- Meeting with Under-Secretary, Ministry of Industry  
- Meeting with Assistant Under-Secretary for Planning, Ministry of Finance and Economic Planning
- May 6 - In-depth meeting and review of work in the leather sector with expert and counterpart  
- In-depth meeting and review of work in the textile sector with expert and counterparts  
- Meeting with representatives of the Spinning and Weaving Corporation  
- Meeting with representative of Kassala Onion Dehydration Factory
- May 7 - Visit to Industrial Research and Consultancy Centre in Shambat and discussions with staff  
- Visit to Ford Research Centre in Shambat and discussions with Director and staff
- May 8 - Visit to Khartoum Tannery and discussions with management  
- Visit to Leather Training Institute  
- Visit to Krikab Industries (Sweets Factory), Khartoum  
- In-depth meeting and review of work in the Food sector with expert
- May 9 - Continuation of the food sector meeting  
- Meeting with Minister of Industry  
- Meeting with Special Adviser to the Minister of Industry

- Meeting with ITC Representative
- Visit to the Management Development Centre, Khartoum
  
- May 10 - Presentation of mission's preliminary findings and recommendations to the Resident Representative and the three sectoral experts
- Visit to Ministry of Industry, discussion with Deputy Under-Secretary and Assistant Under-Secretary and presentation (in written form) of the summary outline of conclusions and recommendation. Full mission report will be sent urgently.
  
- May 11 - Departure of mission members.

Annex III

PERSONS MET BY THE MISSION

UNDP/JNIDO

- |                        |  |
|------------------------|--|
| - Mr. G. Ap Rees       | - Resident Representative<br>UNDP                          |
| - Mr. A. Holcombe      | - Resident Representative designate<br>UNDP                |
| - Mr. P. Harju         | - Deputy Resident Representative<br>UNDP                   |
| - Mr. S. Bhattacharjya | - Food Processing Expert and<br>Acting Project Coordinator |
| - Mr. M.S.E. Saleh     | - Leather Expert   |
| - Mr. R. Nield         | - Textile Expert   |

Ministry of Industry

- |                       |                                   |
|-----------------------|-----------------------------------|
| - Mr. M.E.B. El Wagie | - Minister of Industry            |
| - Mr. A.G. Suleiman   | - Under-Secretary                 |
| - Mr. A.K. Idris      | - Special Adviser to the Minister |
| - Mr. Subai           | - Assistant Under-Secretary       |

Ministry of Finance and Economic Planning

- |                  |   |
|------------------|---|
| - Mr. A.A. Nugud | - Assistant Under-Secretary for<br>Planning |
|------------------|---|

Industrial Research and Consultancy Centre (IRCC)

- |                      |   |
|----------------------|---|
| - Mr. S.E. Elagib    | - Acting Director IRCC and<br>Head of Food Department |
| - Mr. A.I. Fadl      | - Director of Textile Department                      |
| - Dr. A. Elhag       | - Manager, Building Materials<br>Department           |
| - Mr. Z.A. Nabi      | - Manager, Quality Control<br>Department              |
| - Dr. M. Osman       | - Manager, Engineering Department                     |
| - Dr. E.A. El Sheikh | - Manager, Personnel and<br>Finance Department        |
| - E.A. Hammour       | - Management  |



- Dr. I. Abdel Magid
- Dr. T.M. Suleiman
- Dr. M.S. Mahdi
- Mr. M. El Siddig
- Dr. A.R. Ali
- Mr. K. Farah
- Senior Researcher,  
Food Department  
(Counterpart to Food Expert)
- Research Scientist,  
Food Department
- Researcher, Food Department  
(Counterpart to Food Expert)
- Researcher,  
Food Department
- Textile Department  
(Counterpart to Textile Expert)
- Chemical Industry Department  
(Temporary Counterpart to  
Leather Expert)

Food Research Centre (FRC)

- Mr. B. Bashir
- Director

Management Development Centre (MDC)

- Mr. Mosambil
- Mr. O. Ibrahim
- Deputy Director
- Head of Training Department

Leather Training Institute

- Dr. A. Abbo
- Director

Industry Representatives

- Mr. M..A. Tambal
- Mr. A.R. Gouda
- Mr. I.S. Ahmed
- Mr. E.A. Mahdi
- Mr. I. Mabrouk
- Mr. A.F. Ali
- General Manager  
Khartoum Tannery
- Technical Manager  
Khartoum Tannery
- Acting General Manager,  
White Nile Tannery
- Deputy Factory Manager  
Kassala Onion Dehydration Factory
- Acting Director  
Spinning and Weaving Corporation
- Technical Office,  
Spinning and Weaving Corporation

International Trade Centre

Dr. F. H. Nawas

- Senior Trade Promotion Officer  
Project Co-ordinator

Annex IV

LIST OF DOCUMENTARY EVIDENCE EXAMINED BY THE MISSION

Project Background and History

1. Project Document SUD/74/041 - Improvement of the Efficiency of the Public Sector Industries, April 1975.
2. Report on project evaluation mission SUD/74/041, 16 February 1979.
3. Project document SUD/79/010 - Improvement of the Efficiency of the Public Sector Industries (Phase II), March 1980.
4. Terminal report DP/SUD/79/010 by Ives Biry, Chief Technical Adviser, September 1981
5. Report of the Tripartite Review, 27 September 1981.
6. Report on the review mission of DP/SUD/79/010, by L.F. Birits, UNIDO, 28 September 1981.
7. Joint Country Programme Review by UNDP and the Ministry of Finance and Economic Planning, 10 March 1982.
8. Mission report on formulation of revised project document for DP/SUD/79/010, by M.F. Farah, UNIDO, 22 December 1982.
9. Project Document SUD/79/010 (revised) - Increasing the Effectiveness of Public Sector Industries, 20 December 1982.
10. UNIDO Internal Evaluation System, Project Evaluation Report, DP/SUD/79/010, February 1983.

Leather Sector

1. Programme of work for the development of the leather tanning industries sector, 24 May 1983.
2. Six month report to UNIDO, by M.S.E. Saleh, November 1983.
3. Policy proposal on raw material regulation and trade and working capital of tanneries, 1 September 1983 (in Arabic).
4. Bi-monthly report to UNIDO, November-December 1983.
5. Analysis of financial effects of power cuts and shortage on Khartoum and White Nile Tanneries, addressed to Director of IRCI, 4 September 1983 (4 pages).

6. Proposal for the organization of New Public Sector Tanning Co. (2 pages).
7. Proposal for the Memorandum of Association of Khartoum Tanneries Company Limited.
8. Collection of facts on the leather sector in Sudan.
9. Project proposal for the integrated development of the leather industry.
10. Note on working capital requirements for the rehabilitation of the leather tanning industry (2 pages).
11. Project proposal for "Cold Storage for Leather in Process".
12. Project proposal for "Leather Training and Research Centre".
13. "Present situation, constraints and prospects for the Leather and Leather Products Industry in Sudan", paper for the UNIDO Third Consultation on the Leather Industry, Innsbruck, Austria, April 1984.

#### Textile Sector

1. Textile industry workplan - Phase I, November 1982.
2. Long term work plan for the textile industry sector, May 1983.
3. Bi-monthly progress reports to UNIDO (May-June, June-July, August-November 1983, January-February, March 1984).
4. Six month report to UNIDO, by Mr. R. Nield, 31 May 1983.
5. Progress report for the project evaluation, May 1984 (20 pages).
6. Report on Khartoum North Fine Spinning Mill - Inspection of equipment, April 1983.
7. Kosti Weaving Factory - Technical Report, August 1983.
8. A study of the management structure and organization of Friendship Textile Mill at Hassa Heissa, August 1983
9. Quality Assurance Certificate No 51/84 - Hag Abdalla Spinning Mill, 1 May 1984.

#### Food Processing Sector

1. Programme of work for processed food industry sector in the reoriented project SUD/79/010, 31 August 1982.
2. Bi-monthly progress reports to UNIDO (June-August, August-September 1983, April-March 1984).

3. Report on work carried out and tentative future programme in food industries sector, prepared for the evaluation mission, April 1984 (6 pages).
4. General papers on monitoring of performance of food processing factories (7 February 1983 and 11 May 1983).
5. Kassala Onion Dehydration Factory: a) 12 correspondence letters in period September 1982 - February 1984; b) 3 notes; c) 1 report on visit, 2 December 1983.
6. Wau Fruits and Vegetables Canning Factory: a) rehabilitation programme, 1980; b) 6 letters (May 1982-December 1983); c) review of production programme 1983/84.
7. Krikab Industries Corporation - Present Status and Future Prospects, report by IRCC and project DP/SUD/79/010, October 1983.

Sudan - General

1. Yearly report on industrial conditions in Sudan by the Senior Industrial Development Field Adviser, UNIDO, February 1983.
2. "Prospects, Programmes and Policies for Economic Development - II, 1983/84 - 1985/86", Ministry of Finance and Economic Planning, The Democratic Republic of Sudan, October 1983.

Sudan - Institutions

1. The Industrial Research and Consultancy Centre Act, 1980.
2. A report on Wau Fruits and Vegetables Company Factory, IRCI, January 1977.
3. Summary report of Karema Canning Factory, IRCI, 1977.
4. Feasibility study for an agro-industrial complex in Khartoum province, IRCC - for Sudanese Animal and Agricultural Production Company Ltd. (SAAPC).
5. Activities of the Industrial Research and Consultancy Centre during 1983 (reference list).
6. Food Research Centre - Shambat, Agricultural Information Division, December 1981.
7. Sudan Journal of Food, Science and Technology, Volume 13, January 1981 - published by the Food Research Centre.
8. Management Development Centre - Training Programme - January-December 1984.
9. Management Development Centre - Programme for Graduate Diploma in Management, December 1983 - May 1984.

Annex V

INFORMATION ON PUBLIC SECTOR FACTORIES IN THE  
LEATHER, TEXTILE AND FOOD PROCESSING INDUSTRIES

Leather sector

Industrial unit	Installed capacity (pieces/annum)	Actual production* (pieces/annum)	Cap. utilization
Khartoum Tannery	Hides: 90,000	60,000	66%
	Skins: 450,000	100,000	22%
White Nile Tannery	Hides: 180,000	45,000	25%
	Skins: 600,000	53,000	9%
El Gezira Tannery	Hides: 300,000	60-90,000	20-30%
	Skins: 750,000	100-150,000	15-20%
Total above three	Hides: 570,000	165-195,000	30%(approx)
	Skins: 1,800,000	253-303,000	15%

\*The figures for "actual production" are rounded averages for the years 1980-83. In the case of the El Gezira Tannery, the fluctuation in production was too great to yield a meaningful average, hence ranges of production are indicated.

Textile sector

Name of the Factory	Annual Design Cap. (100% Eff.)		Utilization (1982)	
	Yarn (tons)	Fabric (mill.metres)	Spinn.	Weav.
<u>Spinning Factories</u>				
Port Sudan Spinning	5,300	-	+	-
Khartoum North Spinning	1,680	-	-	- under construction
Hag Abdalla Spinning	10,350	-	+	-
<u>Weaving Factories</u>				
Kosti Weaving	-	6.9	N/A	28%
Shendi Weaving	-	6.9	N/A	13%
El Dueim Weaving	-	6.9	N/A	10%
Kadugli Weaving	-	6.9	N/A	6%
Nyala Weaving	-	6.9	N/A	4%
Mangala Weaving	-	6.9	N/A	0
<u>Spinning Weaving and Finishing Factories</u>				
Friendship Textile Mill	2,100	16.0	31%	30%
Gaddow Textile Mill	1,800	16.0	-	- under construction.

Food processing sector

Name of the Factory	Annual Production Capacity	
	Maximum	Actual Production Figures
(1) <u>Kassala Onion Dehydration Factory</u>	De-hydrated onion - 900 tons	Maximum - 611 tons (1974-75) Minimum - 108 tons (1969-70) <u>1980-81</u> - 110 tons
(2) <u>Wau Fruits and Vegetables Canning Factory</u>	a) Tomato Paste 900 tons b) Pineapple 144 tons Products c) Mango Products 432 tons d) Canned Vegetables incl. Beans 1080 tons	Maximum (All products) - 412 tons (1974-75) Minimum (All products) - 18 tons (1978-79) Since rehabilitation of this factory (since 1980-81), the factory has made 435 tons of all products.
(3) <u>Kareima Fruits and Vegetables Canning Factory</u>	a) Tomato Paste 3240 tons b) Dates 1700 tons c) Canned Fruits and vegetables incl. Beans 1080 tons d) Fruit juices 720 tons 60 tons	Maximum 1124 tons (1973-74) Minimum 39 tons (1966-67) <u>1980-81</u> 219 tons 190 tons on average per year Maximum 731 tons (1968-69) Minimum 27 tons (1980-81) <u>1980-81</u> 27 tons Maximum 190 tons (1967-68) Minimum 1.5 tons (1975-76) <u>1980-81</u> 9 tons Maximum 128 tons (1979-80) Minimum 0.6 tons (1977-78) <u>1980-81</u> 34 tons
(4) <u>Babanousa Milk Products Factory</u>		

The factory has been designed to manufacture some milk products with the following capacities:

- a) Spray dried whole milk powder 900 tons Maximum 74 tons (1973-74) Minimum 6 tons (1976-77)
- b) Butter 216 tons Information not available
- c) Ghee (Butter oil) 72 tons Information not available

However, as adequate quantity of milk is not available to the factory, it has switched on to manufacture De-hydrated Karkadeh and Gum Arabic Powders with the following capacities:

- a) Karkadeh 280 tons Maximum 212 tons (1973-74) Minimum 30 tons (1978-79) 1981-82 40 tons
- b) Gum Arabic Powder 560 tons The factory only provides processing facilities to Gum Arab Co. and therefore figures are not available.

The factory can manufacture one of these two products at a time. However, in absence of milk, the factory can work year round for Gum Arabic and four months for Karkadeh. In that event, production capacity will go up for these two products.

Name of the Factory	Annual Production Capacity	
	Maximum	Actual Production Figures
(5) <u>Krikab Sweets</u> <u>Factory, Khartoum</u> <u>North</u>  Hard and soft boiled sweets including some chocolate products, fruit juices and powdered coffee.	4200 tons	-
(6) <u>Rea Sweets Factory,</u> <u>Khartoum North</u>	3600 tons	-



24th May, 1983.

**Programme of work for Development of the leather tanning industries sector in the reoriented Project SUE/79/010. Improvement of Efficiency of the Public Sector Industries.**

At present there are 3 public sector leather tanning factories i.e.

- |                           |   |                     |
|---------------------------|---|---------------------|
| 1- The Khartoum Tannery   | } | located at Khartoum |
| 2- The White Nile Tannery |   |                     |
| 3- The Gezira Tannery     |   | located at Medani   |

Another 4th tannery is a factory shared on equal basis between Public Sector and Private Sector namely the Red Sea Tanning Co. located at Port Sudan. All above 3 Public Sector Tanneries work on the same lines and produce almost the same articles of tanned, semi tanned and pickled hides and skins. They are all confronted with the same major difficulties which prevent them to utilise their capacities efficiently.

The Red Sea tannery is specialised in producing only pickled skins, mainly sheep, for export. It also suffers from many different problems which need identification and solution.

The work programme proposed in its general outlines is as follows:

- 1- Analysis of each factory alone from the different points viz:
  - a- Aims of the factory
  - b- Production lines and Technology adopted
  - c- Capacity Utilisation
  - d- General environmental conditions
  - e- Management and Organisation
  - f- Financial analysis
  - g- Summary and recommendations.
- 2- Analysis of the Sudanese Leather Tanning Sector as a whole based on the above studies.
- 3- The Strategy of Development of the whole Sector to meet the local national demands as well as export and raise capacity utilisation of each factory and the leather industry as a whole.

- 4- Diversification processes of different final Products suited to each Tannery in particular taking in consideration lay-out, machines, labour force .. etc.
- 5- Assist in establishing an effective nucleus of local personnel at both the Ministry of Industry "Industrial Research and Consultancy Institute" and factory level through which project support and progress could be implemented.
- 6- Study the main difficulties in the leather Tanning industries as a whole e.g. flow and acquisition of raw materials, Assist in technology transfer, improvement of quality control, inventory control, costing of different products, maintenance of equipment and machines by proposition of simple systems and supervising their implementation in practice.
- 7- Training of national personnel concerned with the development of the Sudanese leather Industry, and proposition of ways and means to upgrade the capacities of different levels of personnel.
- 8- To study the possibility of utilization of indigenous materials in the Sudanese leather Industry with the aim of reducing the hard currency part required for Import of materials.
- 9- Study the interrelationships existing between the different Institutions and bodies related to the leather tanning industry with the aim of maximising the role played by each in expansion and stimulation of the Sudanese Leather Industry.
- 10- Based on the above facts, consideration to both short-term and long-term planning of the leather industry could be worked out.
- 11- The economic utilisation of the by products of the leather tanning industry e.g. splits, white and tanned shavings .. etc.

INCREASING THE EFFECTIVENESS OF PUBLIC SECTOR INDUSTRIES

(DP/SUD/79/010)

TEXTILE INDUSTRY SECTOR

PHASE I OF THE WORK PLAN ( THROUGH JUNE 1983 )

1. Immediate actions

- 1.1 Organisation of activities.
- 1.2 In conjunction with the Director of the IICI, form a Task Force of specialists in appropriate fields. It might be best to appoint one permanent counterpart and assign other specialists to the group as and when required.
- 1.3 Start work on Project tasks as soon as possible.
- 1.4 Carry out any special tasks set by the Minister.

2. Establishing the Database; Analysis by Factories.

2.1 Visit selected textile factories in the Public Sector to analyse the situation on-the-spot, starting with:-

a) Kosti Weaving Factory

Kosti is representative of the six newly built weaving factories located in various parts of the Sudan, namely, Shendi, El Duein, Kosti, Kadugli, Nyala and Mangala.

b) Haj Abdalla Spinning Mill

This mill has been designed and built to produce yarn for the six weaving factories mentioned above, which were previously supplied with imported yarn, mainly from Egypt.

c) Friendship Textile Factory (Bassahaissa)

This is the only fully integrated textile factory (comprising spinning, weaving and finishing) in the public sector.

2.2 During the mill visits study the following aspects:-

Location of the factory  
Financial analysis  
Capital invested  
Costs of production  
Raw materials required  
Products  
Production plan  
Machinery installed  
Details of processes  
Balance of machinery  
Operating efficiency  
Quality Control  
Maintenance system  
Spare parts consumption  
Energy supply  
Transport  
Management structure  
Staffing levels  
Personnel matters

Working conditions (noise and dust)  
Training facilities and requirements  
Marketing  
Constraints outside the control of the mill  
Problems peculiar to the mill  
Social benefits for the community.

- 2.3 Meet all persons in the Government, URDP, IRCI, SMC, educational establishments and the project who are involved with the textile industry. Discuss the constraints and other problems facing the textile industry to get a proper grasp of the present situation.
- 2.4 Collect, study and summarise all available reports and other documentation relevant to the textile industry in the Sudan. Whenever possible, discuss the findings with the authors.
- 2.5 Establish working relationships with the organisations connected with the textile industry, such as the Gezira University, Khartoum Polytechnic, Khartoum Central Foundry, etc., to determine how they can contribute to the solution of the problems identified.

### 3. Creating Development Plans and Projects by Factories and Follow-up.

- 3.1 Write brief reports on the above visits and discuss the findings with all concerned in order to identify specific and, particularly, common problems.
- 3.2 Formulate initial recommendations for practical steps to be taken to improve the performance of the mills concerned.
- 3.3 Discuss the recommendations with the appropriate authorities.
- 3.4 Prepare plans and projects for the implementation of the agreed recommendations.
- 3.5 Monitor progress through follow-up visits to study the achieved levels of implementation and assess the effectiveness of the various recommendations.

### 4. Encouraging Project/Factory Interactions

- 4.1 It is strongly recommended that each factory should appoint at least one counterpart to work full-time with the task force whilst they are in the mill and to form a future channel of communication.

### 5. Rendering Assistance to Related Projects

- 5.1 Assistance will be rendered, as required, to related projects and activities, including:-
  - a) The Industrial Survey to be carried out in 1983
  - b) Textile Quality Control Centre
  - c) Textile Training Centre
  - d) Manufacture of spare parts for the textile industry

## 6. Fostering Inter-Sectoral Co-operation

6.1 Close co-operation will be maintained with the other industrial sectors, especially food processing and leather, with a view to :-

- a) Establishing a strong unit (UIS) within the IRCI
- b) Co-ordinating the work of the sectors
- c) Determining the respective roles of the national and international staff
- d) Pooling resources and ideas
- e) Devising a system for effectively monitoring the performance of industrial units
- f) Identifying measures which are susceptible to local initiatives (e.g. conservation of energy and water, etc)
- g) Making a concerted effort to find ad hoc solutions for general (multi-sectoral) problems impeding industrial production
- h) Assisting the Ministry of Industry to develop and promote stronger industrial policies, co-ordination and monitoring capabilities
- i) Forging an additional link between the Ministry of Industry and the industrial enterprises
- j) Providing training in industrial management techniques at the factory level.

## 7. Priorities of Phase I

7.1 Reports will be issued as required but priority will be given to :-

- a) Diagnosing what is wrong in each factory and recommending remedial measures
- b) Helping to implement the recommendations
- c) Mobilising local resources
- d) Devising complementary projects to be financed from outside sources (ECDC)
- e) Identifying future requirements in training and consultancy
- f) Designing future work plans and projects indicating dates when specific events will take place in the factories concerned.
- g) Assisting the IRCI to introduce new management systems, extend consultancy services and review achievements so as to ensure that the available resources are being properly used

## 8. Preparation of Work Plan for Phase II (July 1983 - June 1985)

8.1 Towards the end of Phase I, critically assess what has been achieved, take note of any short-comings and extend the work-plan for a further period of 3 years (Phase II).

8.2 During this second phase the above activities will be continued and expanded to cover all the public sector textile factories and, in addition :-

- a) assistance will be rendered, to the extent possible, to factories in the private sector
- b) closely associated areas such as cotton growing and ginning and textile marketing will be studied.

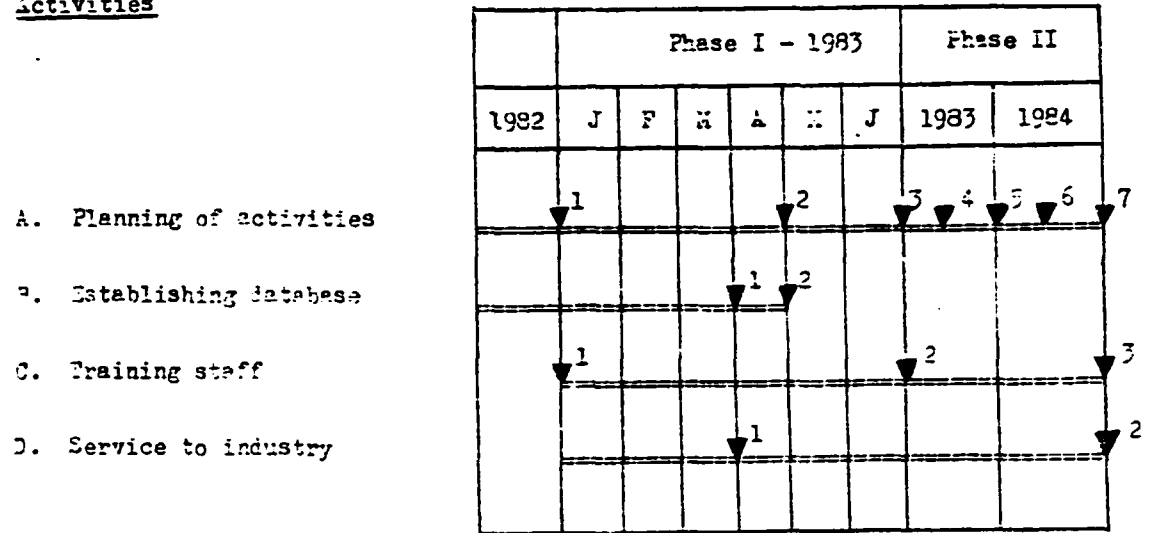
TEXTILE INDUSTRY SECTOR

WORK PLAN - BAR CHART

Output

Improved effectiveness of the public sector textile factories.

Activities



Significant Events (Milestones)

- A.1 Work Plan - Phase I issued
- A.2 Recommendations for projects by factories (Phase I) issued
- A.3 Work Plan - Phase II issued
- A.4-7 Achievements reviewed
  
- B.1 Phase I survey completed
- B.2 Report on survey issued
  
- C.1 Staff appointed
- C.2 Phase I training completed
- C.3 Hand over of Unit to National staff
  
- D.1 Phase I survey completed
- D.2 Hand over on-going projects to National staff

Increasing the Effectiveness of the Public Sector Industries DP/3WD/79/010

LONG TERM WORK PLAN FOR THE TEXTILE INDUSTRY SECTION

Update: may 1983

Annex 1- Page 21

<u>S u b j e c t</u>	<u>T a r g e t D a t e s</u>	<u>R e m a r k s</u>
<u>Capacity Utilization</u>	Continuous	Kosti and El Dueim on 2 shifts Haj Abdalla preparing for 2 shifts in October 83 Port Sudan commissioning to start in October 83
<u>Factory b; Factory Analysis</u>		
Kosti weaving	August 83	The Kosti report is complete except for the financial analysis. The method developed and much of the data collected for Kosti will apply also to the other 5 weaving sheds.
Snendi weaving	February 84	
El Dueim weaving	March 84	
Kadugli weaving	April 84	
Nyala weaving	May 84	
Langala weaving	June 84	
Haj Abdalla spinning	November 83	
FTM spinning/w/finishing	September 83	Combine with management study (see below)
Port Sudan spinning	July 84	During commissioning of mill.
<u>Monitoring Factory Performance</u>		
Design of the system (weaving)	September 83	Discuss with managers of weaving sheds
Testing and approval	Oct/Dec 83	Trials at Kosti. Approval by Ministry of Industry
Installation of system	January 84	In six weaving factories
Design of system (spinning)	December 83	Develop on FTM pattern
Testing and approval	Jan/Mar 84	Trials at Haj Abdalla
Installation of system	April 84	At Haj Abdalla
	October 84	At Port Sudan
Design of system (integrated mill)	October 83	Develop on Kosti pattern
Testing and approval	Nov/Jan 84	Trials at Friendship Textile Mill
Installation of system	February 84	At FTM
Follow-up in all factories	Continuous	Starting in October 1983



Increasing the Effectiveness of the Public Sector Industries DP/SUD/79/010

LONG TERM WORK PLAN FOR THE TEXTILE INDUSTRY SECTION

Annex 1 - Page 22

<u>S u b j e c t</u>	<u>Target Dates</u>	<u>R e m a r k s</u>
<u>Management Studies</u>		
Friendship Textile Mill	December 83	Preliminary report required July 1983
6 weaving sheds	March 84	Use data from factory analysis
Haj Abdalla	June 84	Follow on after factory analysis
Port Sudan	October 84	
<u>Export Marketing of Yarns</u>		
Haj Abdalla - Spinning trials	June/July 83	To demonstrate export quality attainable
- Quality assurance	June/July 83	Advise on steps required to maintain quality
- Export organization	April/July 83	Co-operate with ITC
Port Sudan	December 83	
<u>Central Workshop for Textile Spare Parts</u>		
Data sheet	June 83	For use by SIDFA in discussions on financing
Up-date Project Document	September 83	In line with today's needs and prices
Follow-up		As required
<u>Textile Training Centre</u>		
Data sheet	June 83	For use by SIDFA in search for financing
revision of Project Document	September 83	To take account of latest ideas and price increases
Follow-up		As required

Increasing the Effectiveness of the Public Sector Industries DE/SUB/72/010

LONG TERM WORK PLAN FOR THE TEXTILE INDUSTRY SLOVIA

Annex 1 - Page 23

<u>S u b j e c t</u>	<u>T a r g e t D a t e s</u>	<u>R e m a r k s</u>
<u>Textile Quality Control Centre</u>		
Data sheet	June 83	For use by SIDFA in search for financing
Up-date Project Document	September 83	In conjunction with IRCI and SWC
Follow-up		As required
<u>Khartoum North Fine Spinning Mill</u>		
Inspection of equipment	Mar/Apr 83	Over 2,000 cases valued at US \$ 10,000,000 checked and report issued April 83
Decision taking	July 83	Ministry of Industry/Romanian delegation
Preparation of new contract	September 83	Following decision on financing
Completion of buildings	March 85	Estimated cost US \$ 13,000,000
Installation of machinery	Mar/Sep 85	Possibly later, depending on actual condition of equipment and the facilities available for re-furbishing
Commissioning of factory	Oct/Dec 85	Based on Haj Abdalla
Design of monitoring system	December 85	
Installation of system	January 86	
<u>Gauow Textile Mill (Spinning, Weaving &amp; Finishing)</u>		
Inspection of equipment		Awaiting instructions
Feasibility study of new proposals		The project costs (1975 prices) were approx. US \$ 20,000,000 for civil work and US \$ 35,000,000 for equipment
Decision taking		
Preparation of new contract		
Completion of factory		
Design of monitoring system		Based on FTM
Installation of system		
<u>Port Sudan Spinning Mill</u>		
Commissioning	Oct 83/Mar 84	Assist as required
Export marketing	1984	Co-operate with ITC

Increasing the Effectiveness of the Public Sector Industries DF/SUI/79/010  
LONG TERM WORK PLAN FOR THE TEXTILE INDUSTRY SECTION

Annex 1 - Page 24

S u b j e c t	T a r g e t D a t e s	R e m a r k s
<u>Re-structuring of Weaving Sector</u>		
Feasibility study	1983	advise on various proposals
Implementation		Assist as required
<u>Cotton Ginning Factories</u>		
Rehabilitation project		On-going study by Sudan Gezira Board Assist S.G.B. as required
<u>Kenaf Factories</u>		
Modernization project		Waiting Government's decision to proceed Assist as required
<u>Training of Counterparts</u>	Continuous	

Appendix VI c

31/8/1982

SB/153/82

Re-oriented

Mr. Bukhari Mohamed Bukhari  
Senior Official, Ministry of Industry,  
Khartoum.

Dear Sir,

Sub:- Programme of work for Processed  
Food Industry Sector in the re-  
Oriented Project SUD/79/010 -  
Improvement of Efficiency of  
Public Sector Industries.

As discussed and decided in our meeting sometime back in your office, I am sending herewith two copies of the Programme of work for Processed Food Industry Sector in the re-oriented Project SUD/79/010 - Improvement of Efficiency of Public Sector Industries. This programme has been seen and agreed upon by Dr. Farouk EL Tayeb EL Hadi, Director IRCI and Dr. P.Harju Senior Industrial Development Field Advisor (UNIDO/UNDP) .

I now request you to take appropriate action to obtain approval of the programme by H.E. The Minister of Industry and arrange to send us a copy for our record and its implementation. All concerned will be informed of the Programme after its approval by you and H.E. the Minister of Industry.

Thanking you and assuring you of my co-operation.

Yours faithfully,

S.C.Bhattacharjya  
Food Processing Expert and  
Acting Chief Technical Advisor

Programme of work for Processed Food Industry Sector in the re-orient.  
Project SUD/79/000 Improvement of Efficiency of Public Sector Industries.

At present there are six food processing factories in Public Sector; they are:- (1) Kareima Fruits Canning Factory (2) Kassala Onion Dehydration Factory (3) Wau Fruits Canning Factory (4) Babanusa Milk Processing Factory (5) Krikab Sweets Factory in Khartoum North and (6) Rea Sweets Factory in Khartoum North. The first four factories were set up in early sixties with financial and technical assistance from USSR. Though they have sometimes performed fairly well, yet all of them have so far not been able to utilise fully their designed capacities and as a result they have not been able to make profit on a sustained basis and thereby play beneficial roles in the economic development of the areas where they are located. There are many reasons for such inadequate performance. If these factories are to meet the requirements of the new Industrial Policy of the Government that is that they should be economically viable units on their own within a reasonable time limit then the reasons for their inadequate performance so far should be thoroughly and critically analysed and documented and practical solutions suggested and implemented to overcome them wherever possible. With a view to implement such an approach, a comprehensive analysis programme for each factory will be taken and completed within December 1982. This analysis will inter/alia cover areas like investments, raw materials, machinery and equipment, processing operations, product, made, packaging, quality control, marketing, personnel, operational finance, energy, transportation, maintenance and social benefits. This will be followed by a detailed plan for three years to overcome and improve upon deficiencies.

Alongwith the analysis work, regular work that has already been taken for these factories will be continued. They are :-

1. Kareima Fruits Canning Factory :-

- (a) Solving of main raw material (tomato) problem by introducing high yielding tomato varieties in Kareima area. Arrangement has already been made to procure seeds for experimental purpose for 15 varieties of tomatoes.
- (b) Bulk packing of tomato concentrate on an experimental basis to prolong manufacturing season and for import substitution in future.
- (c) Diversification of production by setting up an independent processing line for mango and citrus fruits including a small unit to make pectin from citrus peels.

- (d) Diversification of packaging through introduction of lithographed and trigger-top cans for tomato paste and fruit juices respectively ( a feasibility study ).
- (e) Improvement of data processing and
- (f) Setting up of an Agro-industrial complex with Kareima factory as a nucleus ( Study, planning and preparation of an operational report).

2. Kassala Onion De-hydration Factory :-

- (a) Under TCDC programme, arrangement for securing Stainless Steel cutting knives. 12 such knives have already been arranged for the factory and order for three more has been placed. If this arrangement works then the factory will be able to reduce cost of purchase of these knives (a recurring expenditure) by 50% .
- (b) Examining the possibility of diversification of production by introducing de-hydration of other vegetables available in Kassala region and of setting up a new line in the factory to process mango, citrus fruits, guava and banana.
- (c) Improving handling and peeling operations of onions to minimise loss in pre-paration stage and
- (d) Setting up of an Agro-Industrial Complex with Kassala Factory as a nucleus (Preparation of the proposal for consideration of financing by the Islamic Development Bank as agreed upon during 'Solidarity Meeting')

3. Was Fruits Canning Factory : -

- (a) Sustained assistance in implementation of 'Re-habilitation' programme of the factory that has been approved by the Government particularly in augmenting raw material (tomatoes) supply to it through large scale cultivation of 'nemato' s resistant tomato that has been successfully introduced in Was area on experimental basis by the efforts of the project.

The Regional Ministry of Agriculture and Food and Agricultural Organisation of UN will be involved in this effort.

- (b) Increasing production of pineapple and mango products through setting up of a semi-mechanised processing line for these products.
- (c) Standardisation of processing techniques and improvement of quality control measures.

4. Babanyan Milk De-hydration Factory :-

As adequate quantity of Milk is not available in the area, the factory is now manufacturing de-hydrated karkade and Gum Arabic. A study therefore will be undertaken to findout whether the factory should completely switch on to de-hydrate karkade and Gum Arabic and if so what are the additional facilities required. In addition, study will be undertaken to improve processing techniques particularly extraction and clarification of karkade solution to reduce hygroscopic nature of the final product and also to make different types of karkade products. Assistance will also be given to create a sustained export market for de-hydrated karkade.

In addition to all the programmes mentioned above, continuous assistance will be given to these factories to standardise production techniques, improve upon quality, diversification of production wherever feasible through introduction of new technologies.

5. Two Sweets manufacturing factories in Khartoum North :-

These two factories were nationalised in 1970. In order to workout a developmental plan for them, analysis of their present status and scope of development in future will be undertaken in addition. Introduction of some new technology such as de-cuticuling of sesame seeds that has already been undertaken as an experimental basis will be continued.

Development activities for promotion of Processed Food Industry :-

- (a) At present tomato concentrate in bulk packing is imported and re-packed in consumer packs after dilution and concentration in the form of tomato paste. The current annual requirement of tomato paste has been estimated to be 4000 tons that is likely to increase upto 6000 tons in coming decades. There is therefore scope of setting up a centralized tomato concentration plant that will supply the concentrate as raw material to re-packing plants that can be set up on medium scale in many places of the country particularly in headquarters of the regions. A preliminary feasibility study will be carried out to set up such a centralized plant in association with Sudan Development Corporation which is interested in promoting such a Project.
- (b) A preliminary feasibility study will be carried out to set up fruits and vegetables processing plants in Shendi and Rahad Development Scheme.
- (c) A feasibility study will be carried out to set up a pineapple and other tropical fruits processing plant in Western Equatoria Province of the Southern Region.

In order to carryout the above programme, Institutional support will be necessary in some cases. It is therefore proposed to involve in addition to IRCI other organisations such as Food Research Centre, Horticultural Research Unit of the Agricultural Research Corporation etc. as and when necessary.



Annex VII

The Activities of the Industrial Research  
and Consultancy Centre During the Year 1983

1 - FEASIBILITY STUDIES

Nature of the job	Requested by
1. A Pre-investment study to establish A Maintenance workshop of Port Sudan Industrial Area	Yousif Mohamed Yousif
2. A Pre-investment study to establish A factory for the production and maintenance of air coolers, Irrig- ation pumps, transformers, stabil- izers and chargers	Salah Electric and Commercial Enter- prises
3. A Pre-investment study for setting up an automobile service station	Mohamed El Amin Ahmed
4. A Pre-investment study for Plastic Ropes, fishing nets and twines production plant	the Union Trading
5. A Pre-investment study to establish A factory for the Production of Cement Bloks, tiles and Mosaic	Abdel Hafeez Ibrahim
6. A Pre-investment study for setting up a new line for the production of Edible Oil plastic containers	Malik Industrial Company

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7.	A Pre-investment study to Establish a maintenance workshop at Khartoum	Abdel Rahim Hag AbGalla
8.	A Pre-investment study to Establish a ready-made clothing factory	Abdel Rahman Abdalla El Sheikh
9.	A Detailed feasibility study for Agro-industrial complex in Khartoum Province	Sudan Agricultural and animal production company
10.	A Pre-investment study for Setting up a car washing	Ibrahim abdalla ElMahi
11.	A Pre-investment study to establish a printing house	Ibrahim Taha Abu Samra
12.	A Pre-investment study to establish a soft drinks factory at Khartoum North Industrial area	Malik Industrial C Company
13.	A Pre-investment study for a Match Production Factory at Khartoum North Industrial area	Malik Industrial Company
14.	A Pre-investment study to establish a workshop producing Bus and Lorry Skeleton	Mohamed Ali Abdel Hai
15.	A Pre-investment study for an expansion of delinting plant	Union Industrial and Trading Company

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16.	Up-dating of the feasibility study to establish a sewing factory for the production of Military uniforms	Abdeen Awad & Sons
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2 - MECHANICAL & PHYSICAL TESTING REPORTS

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	Nature of the job	Requested by
1.	Inspection and testing for two samples of Helmet	the department of stores and equipment
2.	Testing for different types of cotton canvas	the department of stores and equipment
3.	Testing for different types of cloth	stores and equipment department
4.	Inspection and testing of woollen pullovers, woollen vests and knitted vests according to the specification requirement	the department of stores and equipment
5.	Testing for two samples of cotton grey fabrics	the department of stores and equipment

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6.	Testing for two samples of woollen blanket	the department of stores and equipment
7.	Inspection and testing for an electric wire locally Made	electrical industries Company
8.	Identification of Imported textile material	Ahmed Gasim & Sons
9.	Inspection and testing for two samples of mild steel electrode	Ministry of Finance and Economic Planning
10.	Inspection and testing for two samples of school chalks	the department of stores and equipment
11.	Inspection and testing of four samples of stoks	the department of stores and equipment
12.	Testing of ▲ woollen Blanket sample	Central Equipment depot
13.	Inspection and testing of four cotton canvas sample	the department of stores and equipment
14.	Inspection and testing for six samples of military waist-belts	the department of stores and equipment

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15.	Testing for two samples of Cotton Bed-Sheets	Boulis welsi Bushra
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16.	Inspection and Testing of duplicating paper weight 80 gms/M <sup>2</sup> (Rhonio paper)	Central Equipment depot
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17.	Inspection and testing of woollen pullovers	The department of stores and equipment
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18.	Testing and analysis of imported canned Tomato paste	Mohamed Abdel Rahim
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3 - Evaluation Reports

Nature of the job	Requested by
1. Technical evaluation report for replacement of machinery of leather & Plastic products factory	Ministry of Industry Industrial control general department
2. Technical evaluation of the pre-feasibility study for Oxyegen and acostylene production plant	the scretarial - general for investment
3. Technical evaluation for the pre-investment study to establish a factory for the production of black honey, alcohol and bakery yeast from raw sugar	the secretarial general for investment
4. Techno-economic evaluation of the feasibility study for the production of gelatin in the Sudan for export	Ministry of Industry

4 - General Reports

Nature of the job	Requested by
1. Inspection of goods imported from United Kingdom ( Engine Mouldings )	Shakti Trading Enterprises
2. General Survey for productivity and technical advice for development	Blue Mile Perfumery Company
3. Commissioning of cold storage and Ice - Making plants at Kosti and Shagara	Fishing Department
4. Membership of committee for standard specification of cement and lime	Ministry of Industry standard, specification and quality Control Department
5. Estimation of land required for cotton waste processing plant	the secretarial - general for investment
6. Comment On the Possibility of Tomato Sheets Production	Ministry of Industry
7. General uses of Propylene Glycol	Ministry of Industry

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8.	Uses of sodium bicarbonate and sodium pyrophosphate	Ministry of Industry
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9.	Technical report about National Blankets factory at Khartoum North Industrial area	Ministry Industry
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5 - Jobs Prepared by Workshop Staff

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	Nature of the job	Requested by
1.	Inspection and Repair of Batteries Charger	Tabaldi Engineering Company

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2.	Repair and Maintenance of Oven Moisture Tester and Vacuum Oven	Food Industries Corporation Kassala Dehydration Factory
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3.	Repair and Maintenance of A knife and piston for flour paste making	Commercial Bakeries Association
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4.12.18

AD.86.07

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