

h) Telephone

Installation of telephone is limited to the rather important facilities in both proposed sites. It will be possible at the Gedaref site to provide a telephone with the existing silo facility, although the condition through is very poor. Summary of the site conditions is given in Table 4.2.

Table 4.2 Outline of the Proposed Site Condition

	Rabak Site	Gedaref Site
- Location	Around 2 km to the west of Rabak town	Around 2.5 km to the south west of Gedaref town
- Site Area	40,000 m ² (100x400 m)	13,000 m ² (55x240 m)
- Foundation Ground	Hard clayey soil	Hard clayey soil
- Infrastructures		
Road	Public road (unpaved)	Public road (unpaved)
Water supply	Possible	Possible
Electricity	Possible	Possible
Telephone	Difficult	Difficult
Drainage condition	Good	Good
- Land Owner	ABS	ABS

4.4 Handling of Sorghum

Handling of sorghum at the warehouse site including receiving, storing and dispatching will be done in bags which is prevailing method at present. The sorghum will be received from mainly by trucks, trailers and will be dispatched mainly by railway. The sorghum in bag will be stacked by labourer using slat-conveyer. A unit bond of stack will be of 4bags which is suitable to the stability of stack and ventilation. One stack of 8.6 m x 8.7 m x 6 m in volume will weigh about 250 tons. Bag will be stacked with adequate walking space around

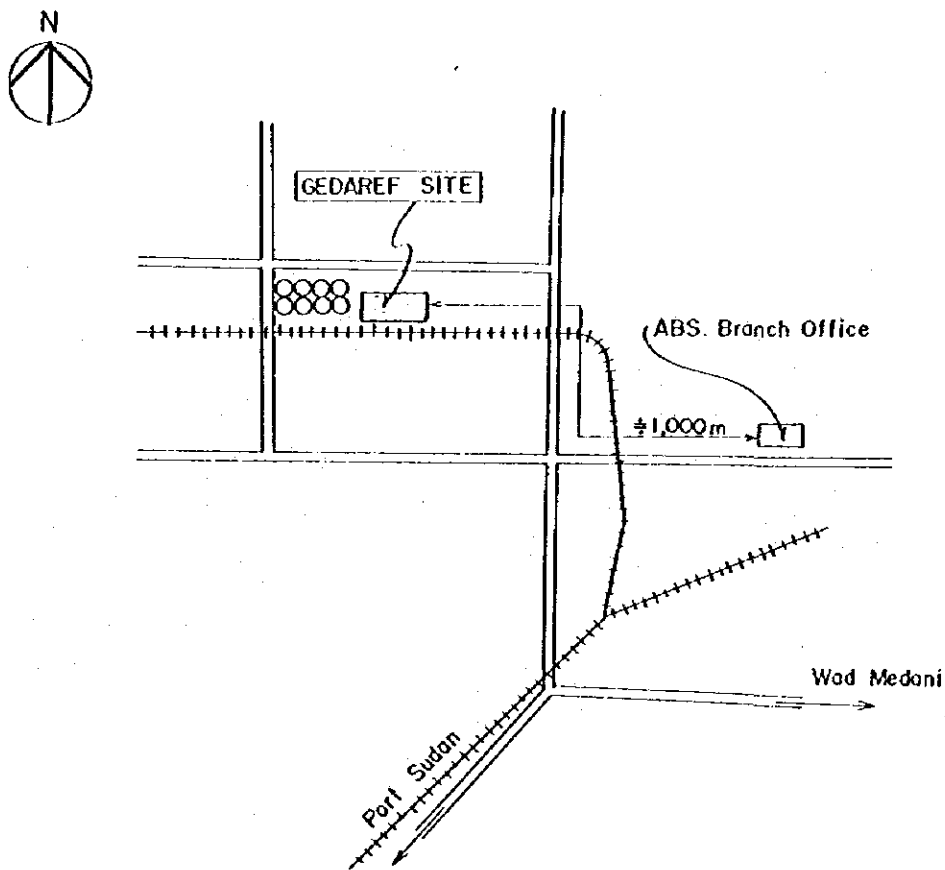
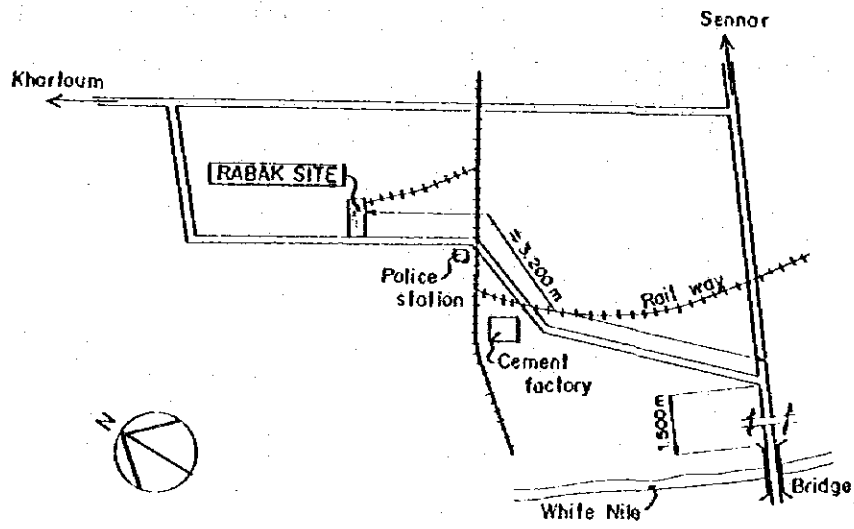


Fig . 4.2 LOCATION OF THE SITES
NOT TO SCALE

each stack. The main walking space will be 1.35 m in width, the sub walking space will be 0.9 m in width. The stack arrangement in a 10,000 tons of warehouse will be as shown below:

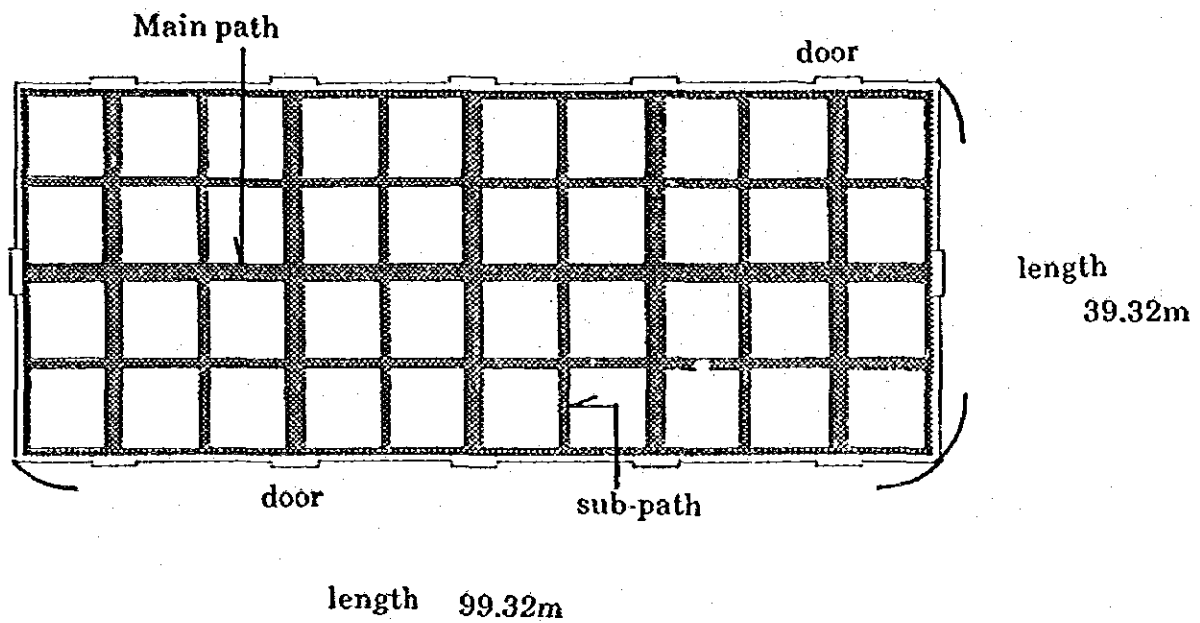


Fig. 4.3 Stack Arrangement Layout

The sizes of a truck, a truck with trailer used for sorghum transportation are mainly of 18 m x 2.5 m (600 bags, 54 tons), 19 m x 2.5 m (350 bags, 31.5 tons). The loading capacity of a railway wagon is about 300 bags. Loading and unloading of bagged sorghum will be done by labourers and their costs are born by the owner of the sorghum. Capacity of handling by a labourer work is about 30 bags/day.

CHAPTER 5 BASIC DESIGN

CHAPTER 5 BASIC DESIGN

5.1 Design Concepts for Warehouse Construction

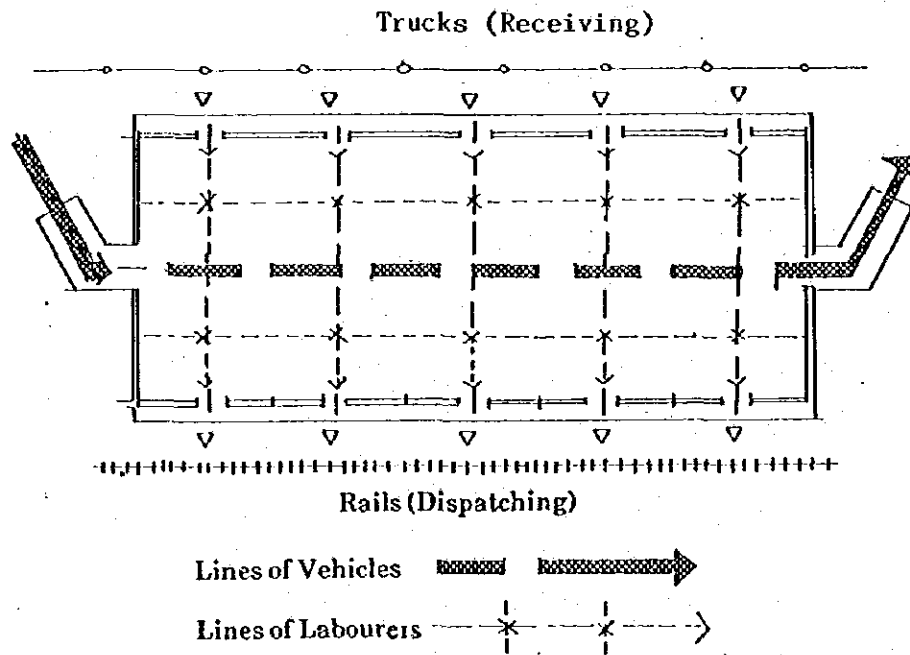
The design is to construct optimum warehouses suitable for the economic, climatic and natural conditions of the Sudan, as well as to minimize operation and maintenance costs. The design is carried out with an understanding of the background and the aims of the Project based on to the following design concepts:

- The facilities should be designed in consideration of the present situation and needs for quality control of the stored goods.
- The facilities should be designed in order to improve storage capability.
- Existing facilities, such as the existing warehouses, and railway sidings should be incorporated in the design.
- The design should be made in consideration of the future development plan of the site.
- Ventilation should be provided.
- As stacking will be done mainly by manpower, the warehouses should be of flat type.
- Natural lighting (skylights) should be made to reduce maintenance costs.
- Finishing materials should be durable and be resistant to fading.
- Local construction materials should be used primarily.
- Ancillary buildings and facilities should be designed based on a plan of ABS that no office work would not be done in warehouses.

5.2 Architectural Design

(1) Flow Planning

Sorghum will be transported from the production areas to the warehouses by trucks and will be despatched from the warehouses by railroad as stated in the preceding chapter. The warehouses will be constructed at places located between roads and railroads. Sliding doors will be provided in the walls in such a manner as to facilitate the loading and unloading of trucks inside the warehouses. Traffic lines of labourers and vehicles are shown in the figure below.



(2) Floor Planning

Proposed sites are Rabak and Gedaref and Sorghum warehouses with storage capacities of 20,000 tons and 10,000 tons respectively will be constructed as stated in Chapter 4. In Rabak, three buildings will be built, i.e. one of 10,000 tons and 2 of 5,000 tons of capacity, will be constructed due to the limitation of construction space available, and in Gedaref, a building with 10,000 tons capacity. Floor area consists of an area for handling paths (1.35 m width for main path, 0.9 m width for sub-path and 0.68 m

width between stacks and walls) and an area for stacks (Fig. 4.3, stack arrangement layout, page 74).

Area for stacks (S1)

$$\text{Length: } 99.32\text{m} - (1.35\text{m}(\text{width}) \times 5\text{paths} + 0.9\text{m}(\text{width}) \times 6\text{paths}) = 87.17\text{m}$$

$$\text{Width: } 39.32\text{m} - (1.35\text{m}(\text{width}) \times 1 \text{ path} + 0.9\text{m}(\text{width}) \times 4\text{paths}) = 34.37\text{m}$$

$$S1 = 87.17 \times 34.37 = 2,996 \text{ m}^2$$

Area for paths (S2)

$$\begin{aligned} & * 1.35\text{m}(\text{width}) \times 99.32\text{m}(\text{length}) \times 1\text{path} \\ & \quad + 0.9\text{m}(\text{width}) \times 99.32\text{m}(\text{length}) \times 4\text{paths} = 491.7 \text{ m}^2 \end{aligned}$$

$$\begin{aligned} & * 1.35\text{m}(\text{width}) \times 34.37\text{m}(\text{length}) \times 5\text{paths} \\ & \quad + 0.90\text{m}(\text{width}) \times 34.37\text{m}(\text{length}) \times 6\text{paths} = 417.6 \text{ m}^2 \end{aligned}$$

$$* 0.68\text{m}(\text{width}) \times 99.32\text{m}(\text{length}) = 67.6 \text{ m}^2$$

$$* 0.68\text{m}(\text{width}) \times 39.32\text{m}(\text{length}) = 27.7 \text{ m}^2$$

$$S2 = 491.7 + 417.6 + 67.6 + 27.7 = 1,004.2 \text{ m}^2$$

$$\text{Total floor area} = S1 + S2 = 4,000.2 \text{ m}^2$$

Effective area utilization ratio of the warehouse is calculated at 75%, $2,996.0 \text{ m}^2(\text{stack area}) / 4,000.2 \text{ m}^2(\text{total floor area})$, which coincides with the normal utilization ratio of 75% to 80%.

Basic unit of a stack consists of 4 bags, (1.6m x 1.6m), the total weight of which is estimated at $140.6\text{kg}/\text{m}^2$, $90\text{kg}/\text{bag} \times 4/1.6/1.6$. When a stack of 8.6m widths, 8.7m length, and 24 layers is constructed, the total weight of a stack is calculated at 252.48 tons. The total weight of stacks in the warehouse is calculated at 10,099 tons, $252.48 \text{ tons} \times 40 \text{ stacks}$.

Thus floor areas for warehouses of 10,000 tons capacity and 5,000 tons capacity are decided to be $4,000 \text{ m}^2(100\text{m} \times 40\text{m})$ and $2,000\text{m}^2(50\text{m} \times 40\text{m})$, respectively.

Places of doors for handling of sorghum were determined in a way to shorten the carrying distance and in accordance with the span of a truck aligned in a platform. Doors and ramps will be provided

in the middle of transverse walls for direct loading and unloading of trucks in the warehouses.

Pillars will not be provided because they will constitute obstacle to stacking operation and dangerous lateral loads against the pillars will occur when stacks collapse.

(3) Structural Planning

Direct foundation of reinforced concrete is adopted because foundation is clay with which a bearing capacity of 10 ton/m^2 would be expected. The floor will be reinforced concrete slab of 18 cm thick after enough rolling because loads of the grain will be about 3.4 ton/m^2 . As the total weight of each truck will be about 40 ton, truck path should be made of slab of a 5 m width and 30 cm thickness in order to spread the load. A steel structure will be adopted as a main structure considering its precision, cost, application and construction schedule.

Main frames such as columns and beams will be made of wide flange sections due to the 40 m long-span structure, and high tension bolts will be used for bolting joints since they are accurate and easy to be inspected. As for the safety of a long-span structure, the forces acting on the main frames will be small because of negligible horizontal forces due to small wind pressures about 1/4 of Japan as well as the absence of earthquakes, and the vertical load of light-weight finishing material. For information long spans in Japan for warehouses and factories are as long as 50 - 60 m in general.

(4) Selection of Construction Materials

a) Finishing Material and Others

Roof

Corrugated iron sheet and hard vinyl chloride sheet will be used for roof. Based on the basic policy mentioned above all the lighting is from natural light to save the operation cost. Light

will pass through the hard vinyl chloride sheets (transparent). Illumination from natural lighting on roof is three times as much as that on walls. Colour of roofs will be determined after consultation with the Government of the Sudan in detailed designing.

Walls

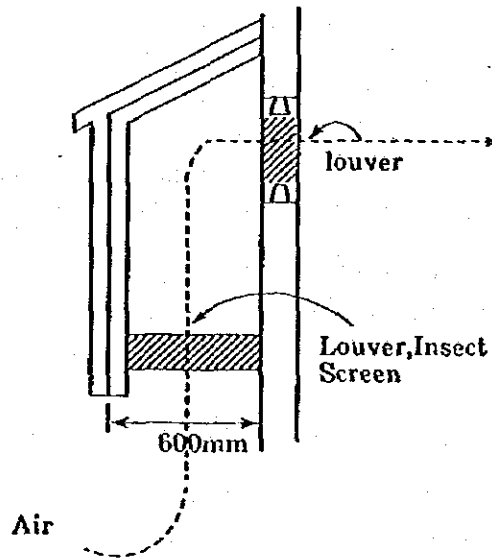
Skirting walls 2 m in height, will be made of brick with cement-mortar to protect from damage caused during handling of bags. The upper part of the walls will be of corrugated iron sheets. Colour of walls will be determined in detailed designing.

Doors

Steel hanger door will be adopted in due consideration of its convenience in handling, i.e., ample clearance, and easy operation. Rubber packing will be inserted in the edge to prevent sand. Colour of doors will be determined in detailed designing.

Ventilation

The warehouse will be ventilated through louvers which will be double-layered to prevent of sand and insects. (see figure)



b) Maintenance of steel materials (steel structure, steel sash)

Steel materials are subject to deterioration due to natural conditions such as wind and rainfall. Painting of steel material every 3 to 5 years will be necessary to prevent the deterioration.

(5) Guardhouse

Design of guardhouse was made on the basis that two guards will stay in the guardhouse all the day and night.

The following spaces will be required:

Office	: 5 m x 3 m	=	15 m ²
Sleeping room	: 3.5 m x 3 m	=	10.5 m ²
(locker room)			
Lavatory	: 1.5 m x 3 m	=	4.5 m ²

The following finishing work will be applied to guardhouses:

Exterior, roofs : cement mortar rendering
 walls : cement mortar rendering, vinyl paint
Interior, floor : cement mortar rendering
 walls : cement mortar rendering, vinyl paint
 ceiling : cement mortar rendering, vinyl paint

(6) Structural Design Conditions

In the Sudan, British standards are adopted for the structural design. Structural design conditions are determined as follows in due consideration of customs and the technological level of constructions.

Strength of concrete:	$F_c = 210 \text{ kg/cm}^2$
Strength of reinforcing: concrete	Allowable tensile stress, more than $1,600 \text{ kg/cm}^2$
Strength of steel:	Allowable tensile stress more than $1,600 \text{ kg/cm}^2$
Super-imposed load:	Floor, 3.5 tons/m^2 Truck pass, 9.0 tons/m^2
The external forces:	Seismic force, 0 Wind pressure, 50 kg/m^2 Bearing capacity, 10 ton/m^2

5.3 Utilities Design

(1) Facilities

a) Power source

Electric power is available both in Rabak and Gedaref through commercial electric distribution networks. However, no electric facilities are provided for the existing warehouse. In this project as electric facilities only slat-conveyors will be provided. Electric facilities for lighting is designed for the guard houses which will consume approximately 20 kW/month. Construction work for the substation necessary for electric power supply will be undertaken by the Government of the Sudan.

Indoor power distribution line

The indoor power distribution line will be by overhead conductors for 415 V/240 V, 50 Hz.

Lighting equipment for guard house

Fluorescent lamp will be used. Illumination of the lamp will be 150 lux.

(b) Telephone

No telephone system will be provided.

(2) Plumbing and Sanitary Facilities

a) Water source and water supply system

There is an existing water distribution system, hence, no problem in water supply. No plumbing system will be provided in the warehouse. However, the guard house will be provided with a water supply system. The cost for plumbing installation will be borne by the Government of Sudan.

b) Portable fire extinguisher will be provided

c) Drainage system

Sewage will be disposed in a septic tank. Rain water from building roofs will be led off the nearby bare soils and will be drained by percolation.

(3) Air conditioning facilities

No air conditioner will be given to the warehouses or guard houses. Ventilation of the warehouses will be carried out through louvers. No ventilating facility will be provided for the guard house.

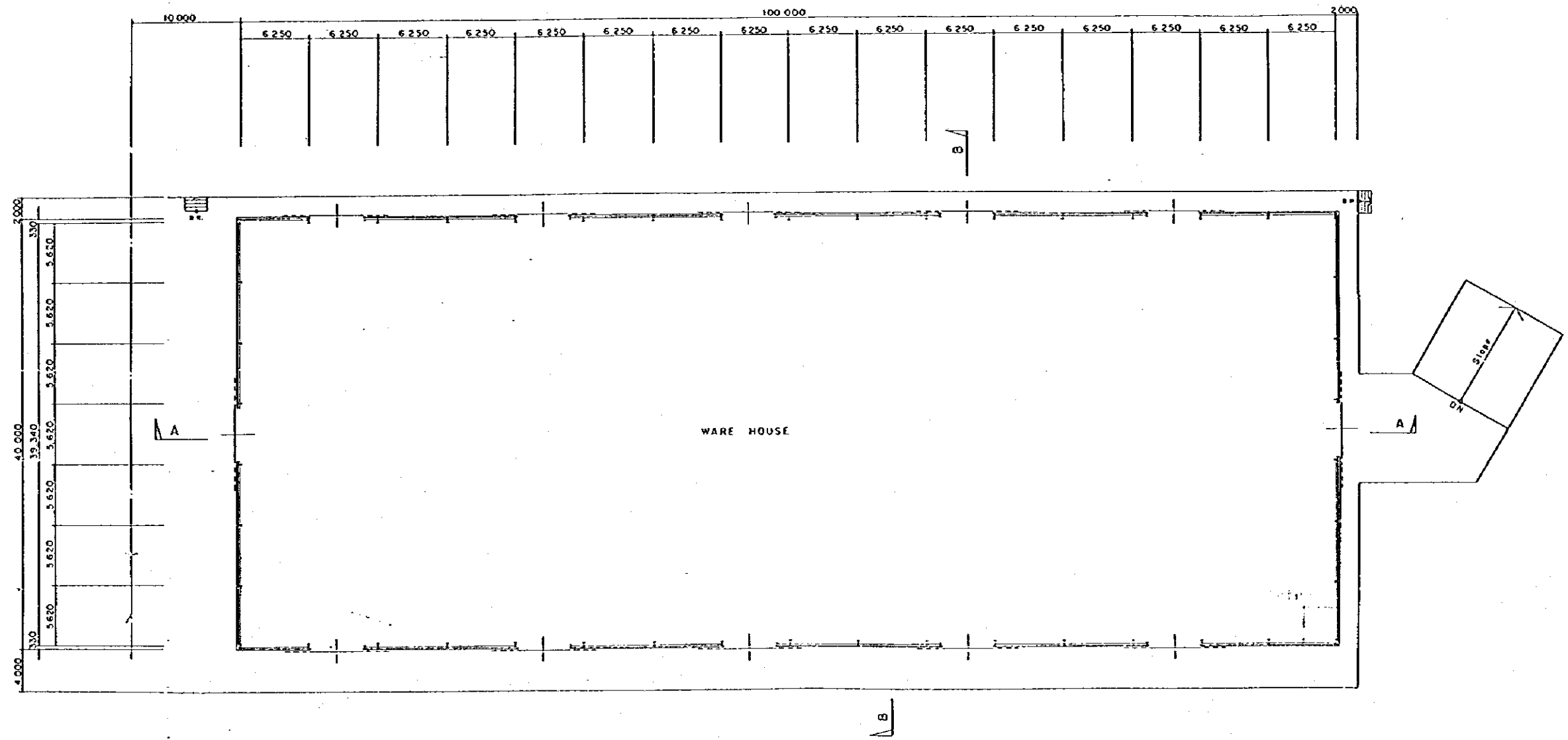
5.4 Ancillary Facilities of the Warehouses

Slat-conveyers will be provided to stack jute bags up to an economic height of 24 bags in a safe way. Electric motors will be used as the power for the slat-conveyers. Jute bags in the warehouses are handled manually at present and the labour cost of the work is rather expensive, LS 0.5/bag per a receiving or a dispatching. Therefore, mechanization in stacking of jute bags will bring about cost reduction and more flexibility against labour problems.

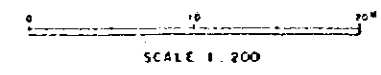
The number of slat-conveyers to be introduced will be 2 sets for each site, a set for receiving and a set for dispatching. The conveying capacity of a slat-conveyor was designed to be more than the daily maximum conveying requirement for receiving and dispatching. Main features of a slat-conveyor are: 55 tons/hour in conveying capacity, 8 m in length, 6.0 m in maximum rifting capacity.

Fumigation is usually conducted by the Plant Protection Department of the Ministry of Agriculture and Natural Resources. Hence the following minimum fumigation equipment will be provided for emergency uses when fumigation could not be performed timely by the Plant Protection Department.

- fumigation vinyl sheet : Gedaref; 6 sheets; Rabak; 12 sheets, for 3 days receiving, 17 m x 17 m, spares are included
- gas mask : 13 sets, for the fumigation team in Gedaref Silo, Supplied-air respirator
- gas tester : 4 sets



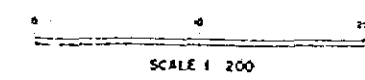
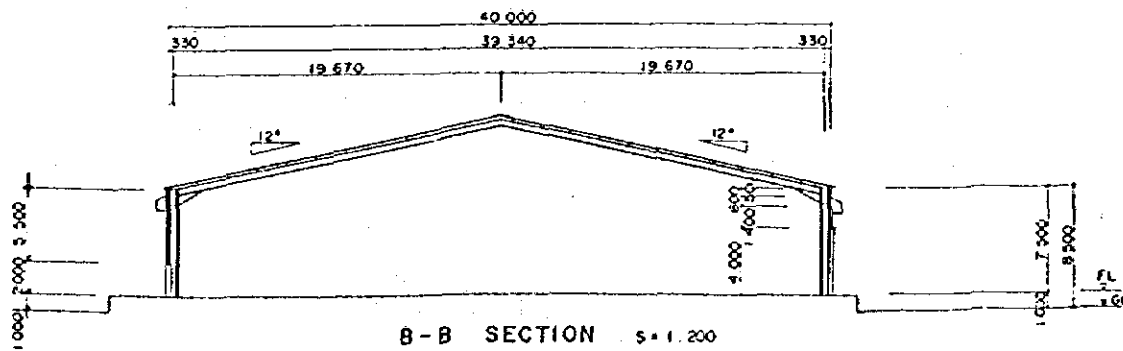
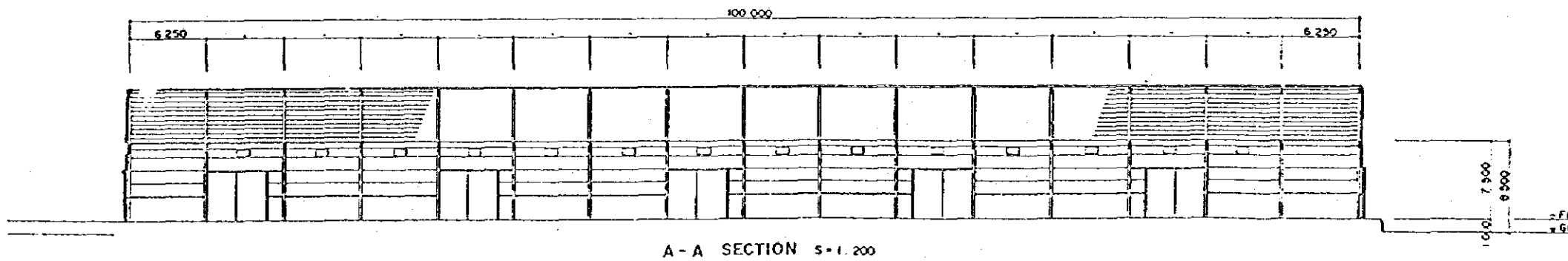
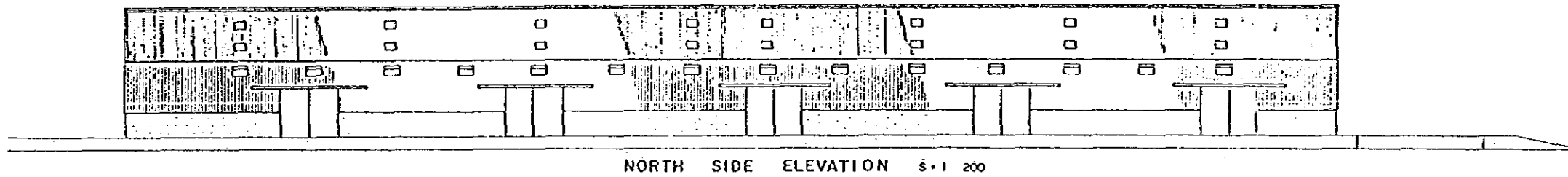
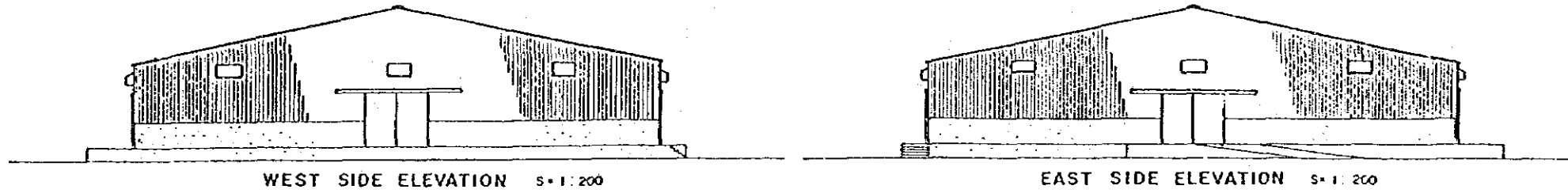
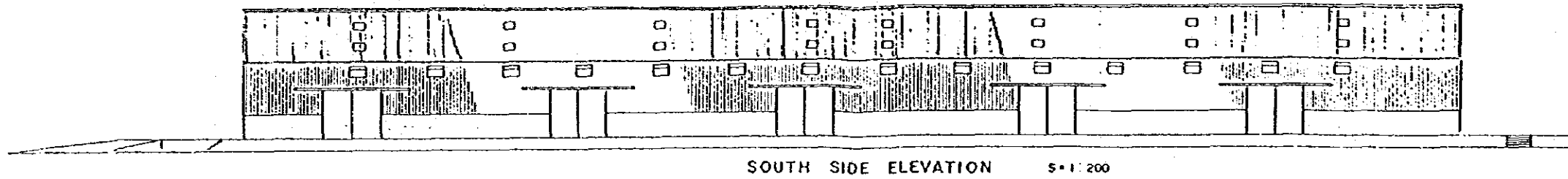
FLOOR PLAN 5-17-200



RABAK SORGHUM STORAGE

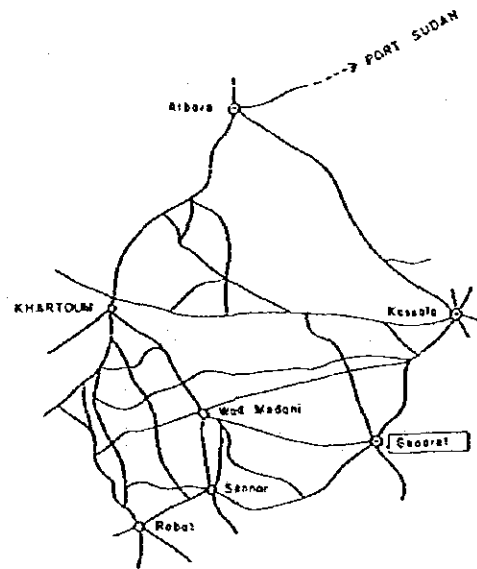
WARE HOUSE 2

263

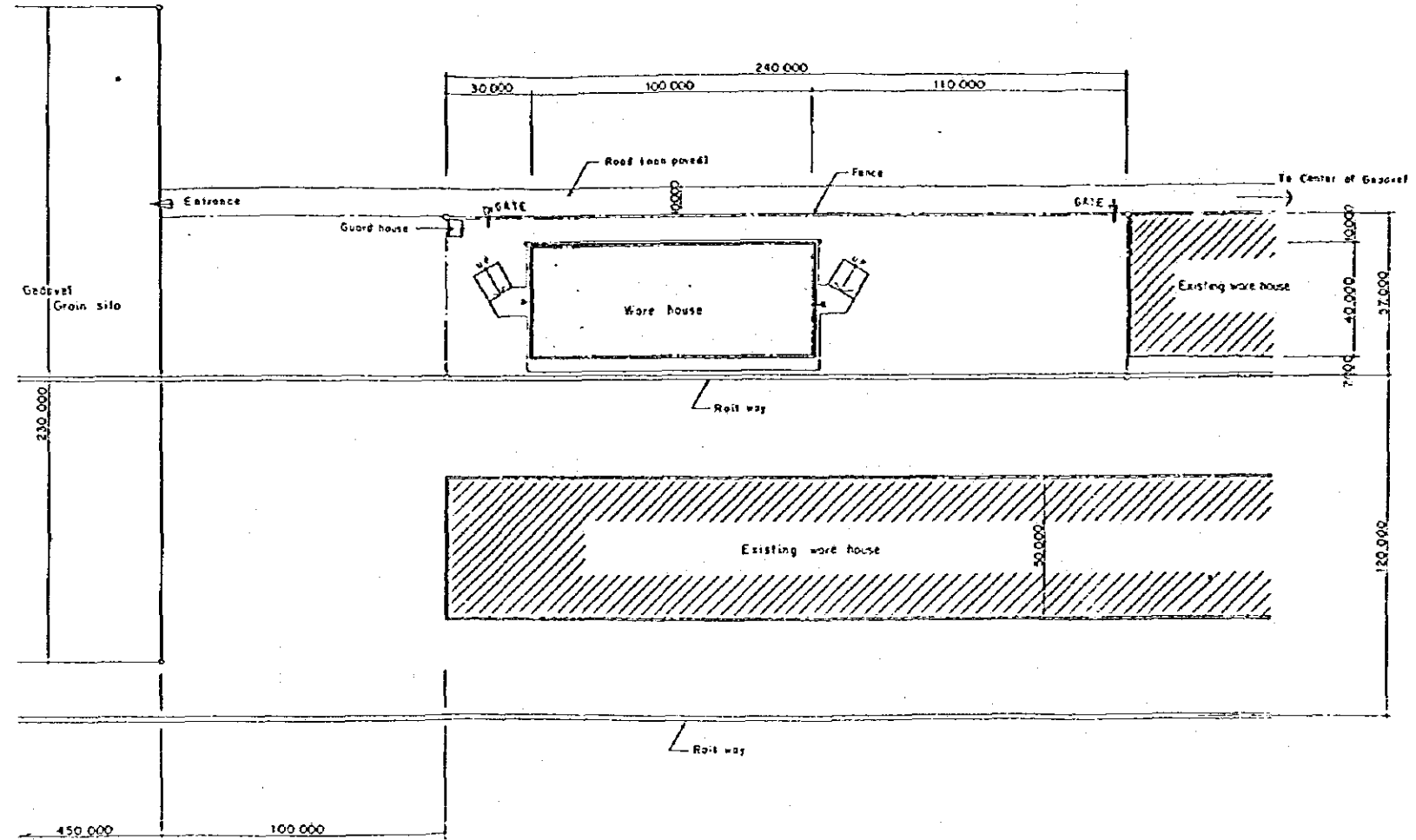


RABAK SORGHUM STORAGE

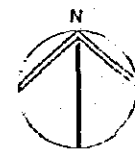
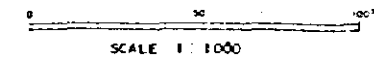
WARE HOUSE 3

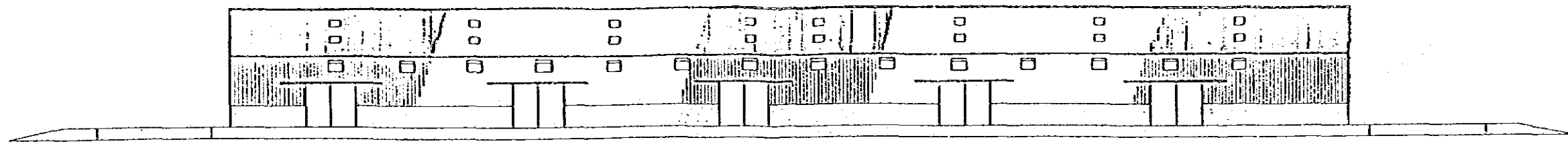


LOCATION MAP

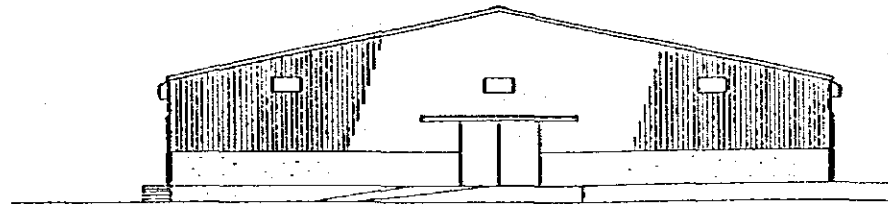


PLOT PLAN 5 • 1/1,000

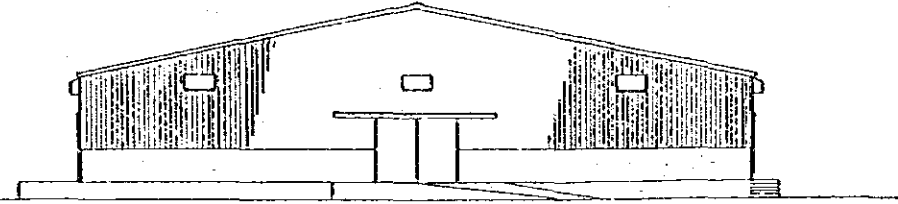




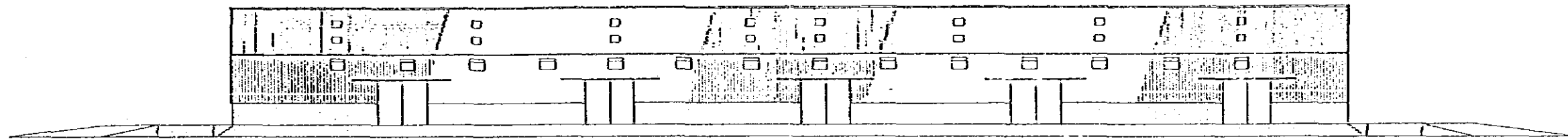
SOUTH SIDE ELEVATION S · 1 : 200



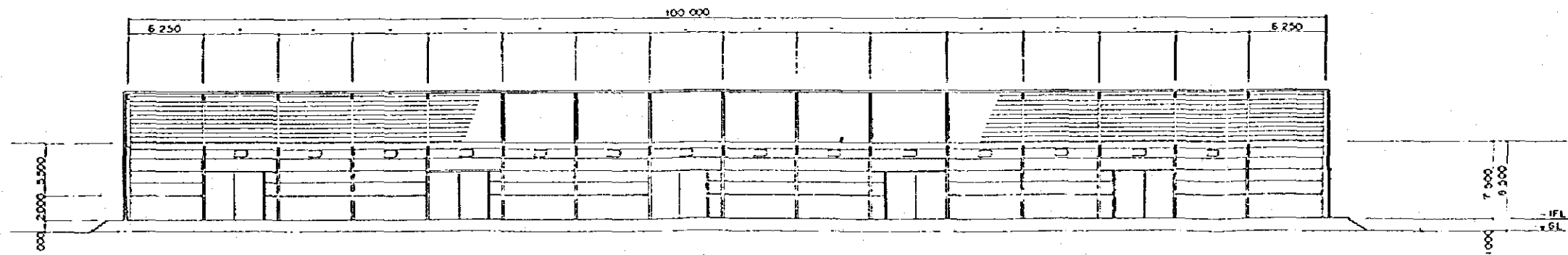
WEST SIDE ELEVATION S · 1 : 200



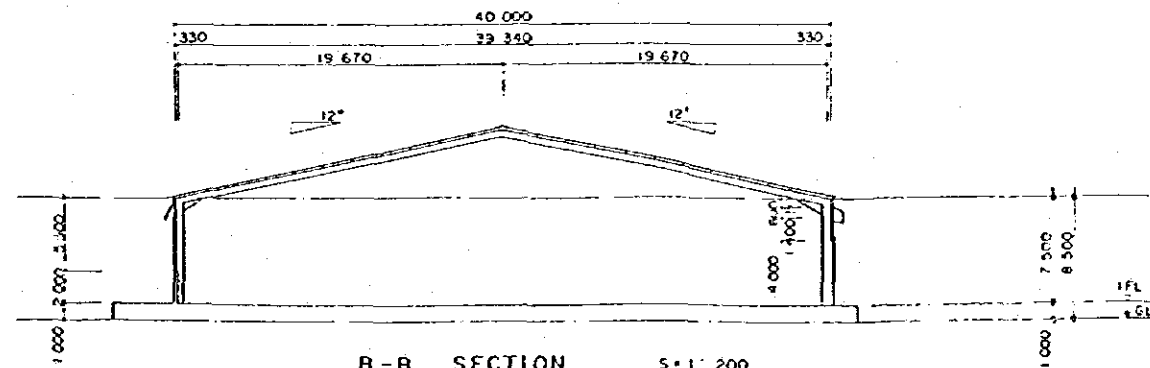
EAST SIDE ELEVATION S · 1 : 200



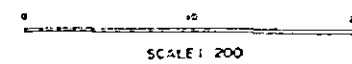
NORTH SIDE ELEVATION S · 1 : 200

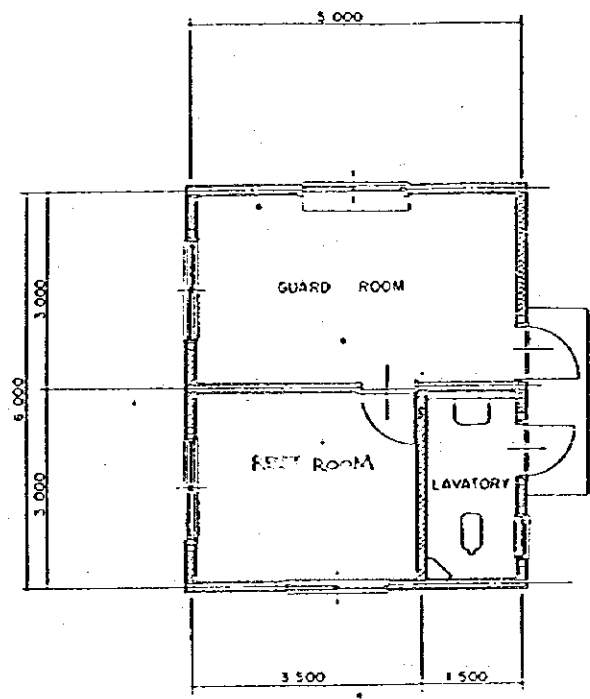


A - A SECTION S · 1 : 200

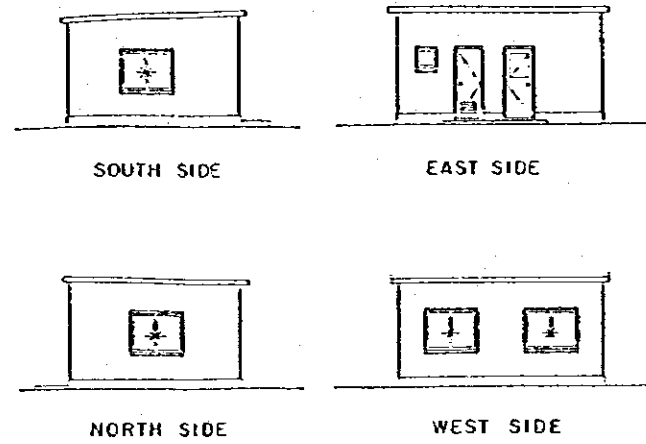
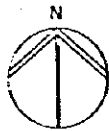


B - B SECTION S · 1 : 200

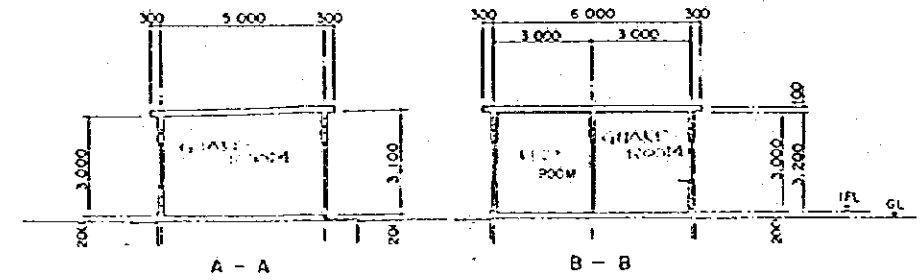




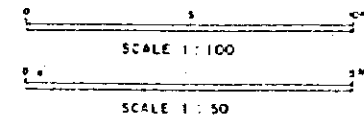
FLOOR PLAN 5-17/50



ELEVATION 5-17/100



SECTION 5-17/100



GEDAREF SORGHUM STORAGE

GUARD HOUSE 8

INTERIOR FINISH SCHEDULE

BUILDING	ROOM	FLOOR	SKIRTING	WALL	CEILING	REMARKS
WARE HOUSE	WARE HOUSE	Concrete trowel	Cement mortar H-2000	Iron sheet # 28	Iron sheet # 28	
GUARD HOUSE	GUARD ROOM	Cement mortar	Cement mortar H=100	Vinyl paint on cement mortar	Vinyl paint on cement mortar	
	REST ROOM	Do	Do	Do	Do	
	LAVATORY	Do	Do	Do	Do	

EXTERIOR FINISH SCHEDULE

ROOF	Galvanized iron sheet oil paint finish.
	Poly-Vinyl sheet.
WALL	Galvanized iron sheet oil paint finish.
WAINSCOT	Vinyl paint on cement mortar.
FLOOR	Reinforced concrete trowel.
DOOR & LOUVER	Steel flush hanger door.
	Aluminum louver w/ Insect screen.

STRUCTURE OUTLINE

MAIN FRAME	Steel
FOUNDATION	Reinforced concrete
WALL	Brick 200mm thk.

5.5 Project Costs to be Borne by the Sudanese Government

	<u>Rabak</u>	<u>Gedaref</u>	<u>Total</u>
- Fence & Gate	-----	LS19,530	LS19,530
- Service wire	LS20,000	LS20,000	LS40,000
- Water supply main	LS7,000	LS7,000	LS14,000
Total	LS27,000	LS46,530	LS73,530

CHAPTER 6 IMPLEMENTATION PROGRAM

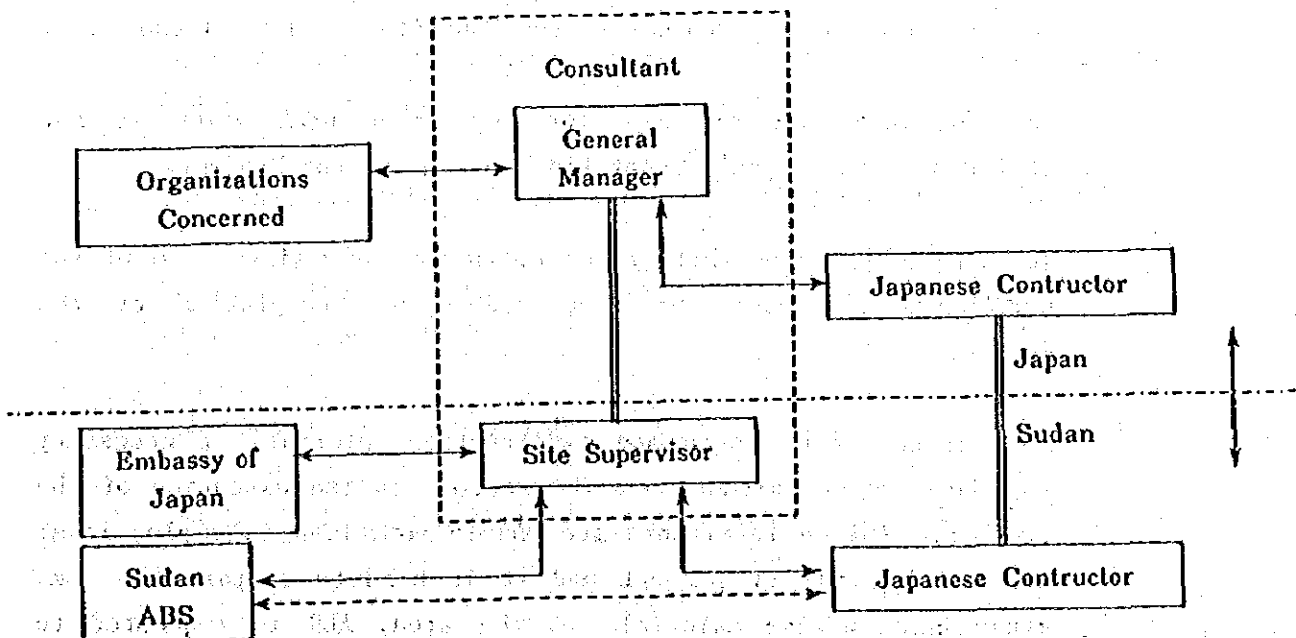
CHAPTER 6 IMPLEMENTATION PROGRAM

6.1 Organization for Project Execution

ABS will be the executing body of the Project during the construction as well as operation period. The highest executive of the Project during construction period and after its completion will be the Managing Director of ABS.

The present organizational structure of ABS is shown in Fig. 3.7. The Monitoring and Evaluation Department and Planning Department of ABS will be in charge of the construction of the Project. The Assistant Managing Director of Monitoring, Evaluation and Planning Departments will represent the Department. The Japanese Consultant will directly contact and negotiate with the Assistant Managing Director of Monitoring, Evaluation and Planning during the project construction. The operation of warehouses will be substantially controlled by each branch office.

The implementation of the Project will be carried out according to the following general organizational flow.



6.2 Scope of the Work

A detailed scope of the work to be undertaken by the Government of Japan is described in the Chapter 5. It is summarized as follows:

- Construction of warehouses and guard houses.
- Supply of ancillary equipment for the warehouses.

The undertakings by the Government of the Sudan for the Project are as followings.

- To prepare and supply necessary data, and information for the detailed design.
- To ensure smooth transportation in the Sudan, Smooth unloading and customs clearance at the port of disembarkation in the Sudan for the equipment, materials, vehicles and tools necessary for the Project including exemption of taxes and customs duties.
- To exempt Japanese nationals engaging in the execution of the Project, from payment of personal income taxes.
- To issue traffic certificates and other necessary certificates for the execution of the Project to the Consultant and the Contractor.
- To bear necessary expenses for any other work which is not included in the Japan's Grant Aid Program for the Project.
- To bear full responsibility for operation and maintenance of the warehouses and equipment concerned upon completion of the Project.
- To arrange labour force and construction materials if necessary for Japanese Consultants and Contractors in the execution of the Project. (Since foreigners are unable sometimes to employ local workers directly at present and it is hard to prepare the some kinds construction materials in the area, ABS is requested to

arrange the labour force and necessary construction materials for the Project.)

- To issue certificates for purchasing fuel for vehicles and machinery for Japanese Consultants and Contractors. (Since purchase of fuel for vehicles and machinery becomes difficult sometimes in some areas, ABS is requested to arrange if necessary for the purchase of necessary amount of fuel for the Japanese Consultant and the Contractor.)

The Consultant will assist ABS and provide engineering services for the Project based upon the guideline of the Japan's Grant Aid Program as described below:

- To prepare the detailed design, cost estimate and implementation program prior to the preparation of the tender documents.
- To prepare the tender documents, to make tender evaluation and to attend negotiation and contracting between ABS and the tenderer or the contractor.
- To approve the Contractor's drawings, to inspect the products before their shipment and to supervise the installation and erection at the site, adjustment and tests of equipment.
- To make consultation on matters related to the Project with ABS and the Contractor.
- To prepare reports and certificates on progress of the Project.
- To issue the completion certificate, to witness the handing-over of the completed work.
- To prepare a necessary manual for the operation of the Warehouses.

The Contractor will carry out the following undertakings.

- To undertake the packing of construction materials, equipment purchased in Japan for export, as well as their shipment and inland transportation to the site in the Sudan.
- To take full responsibility for the adequacy, stability, safety and sanitation of operations and methods of the construction.
- To take full responsibility for the prevention of disaster and environmental pollution.
- To prepare the time schedule and plan of operation for the project execution.
- To make adjustment and field tests of the equipment, to check the quality of construction materials and the completed work.
- To construct warehouses and a guard house.
- To prepare progress reports and records of the work and completion reports and drawings of the completed work.
- To supply and install equipment related to warehouses and a guard house to provide necessary inspections and operation guidance for the equipment.
- To guarantee quality of the completed warehouses and a guard house and equipment one (1) year after the handing-over.

6.3 Implementation Plan

(1) Construction Plan

It is scheduled that the contract signing for the Consulting Services for the Project be made immediately after the conclusion of E/N, and that meetings be held between ABS and the Consultant to make every pre-arrangement necessary for smooth commencement of the detailed design works in line with the principle presented in this

report. Simultaneously, ABS is requested to carry out the land clearing and levelling works for the project sites, which are to be executed with the Government budget, and to complete all of these preparatory works before the commencement of actual construction works. The pre-arrangement works are of vital importance for smooth implementation of the Project.

The proposed construction sites are located at Rabak and Gedaref. The former site is located within a distance of 20 to 30 minutes by car from Kosti, and the latter is at about 10 to 15 minutes by car from the ABS Gedaref branch office. Both of these sites have favourable conditions such as easy access and availability of construction materials and services. For execution of construction works, the construction plan and schedule will have to be made in due consideration of the followings:

- Procurement and transportation of construction materials and goods, especially the structural steels to be imported from Japan.
- Timing of installation of equipment as which are inter-related closely.
- Technical level of local engineers and laborers.
- Climatic condition at the sites which are characterized by high air temperature and extremely low humidity.

(2) Plan of Construction Supervision

For ensuring smooth implementation of the Project, it is of utmost importance to realize the development concept and principles presented in the basic design. In this sense, it is imperative to engage a consultant team permanently from the detailed design period to the end of the construction period. The consultant services during the construction period will consist broadly of progress control and scheduling, quality control and payment certification. These services will have to be executed in keeping close contact and

communications between the consultant team in the Sudan and the back-support group in Japan. Throughout the whole construction period, at least one (1) consultant will be stationed at the site continuously for the purpose of construction supervision. In addition, some short-term experts will have to be assigned in accordance with the progress of the construction works. All important matters related to the implementation of the Project will be reported promptly to the Government of Japan through the consultant, including such matters as progress rate and condition of Construction, payment procedure and certification, completion and commissioning, etc.

6.4 Plan of Procurement and Transportation of Construction Materials and Equipment

(1) Procurement Plan

Construction materials such as cement, sand, gravel, brick, terrazzo tile, paint, corrugated steel plate, etc are procurable in the Sudan. All the materials other than the above will have to be procured and imported from abroad. The equipment and related to the warehouses will also be imported from Japan. The Following is the procurement plan for major materials, equipment and apparatus as required for implementation of the Project.

Locally available materials	Materials imported from Japan
Cement	Reinforcement bar
Sand	Structural steels
Gravel	Double louver w/hood
Brick	Slat conveyor
Terrazzo tile	Fumigation sheet
Paint	Gas mask
Corrugated steel plate	Gas tester
	Wireless set
	Vehicles (Land cruiser)

(2) Transportation Plan

ABS will import necessary construction materials, and equipment for the Project as mentioned in the preceding paragraph from Japan. Goods required for the Project will be shipped from Japan and unloaded at Port Sudan. After customs clearance, the cargoes will be transported on trucks to Gedaref and Rabak (Kosti) through the national highways. The national highways are paved and have no constraints for transportation of the cargoes. The period of shipment from Japan to Port Sudan was estimated to be about 2.5 months and the time required for customs clearance at Port Sudan to be about 1 week.

Inland transportation of the cargoes from Port Sudan to the site will be made by local contractor and it would take about 4 days for the inland transportation from Port Sudan to Rabak (Kosti), the farthest place of the project site from Port Sudan, if the documents necessary for customs clearance are completely provided. Therefore the transportation period from Japan to the site was estimated to be about 3 months in this study.

6.5 Schedule of Execution

Detailed schedule of execution is shown in Fig. 6.1. The period from the commencement of detailed design to contract awarding will take 5.5 months: 2.5 months for detailed design and 2 months for preparation

of tender documents, tender evaluation and contract awarding. The construction period of the civil work will need 12 months.

6.6 Plan of Operation and Maintenance

The project implementation from construction to operation and maintenance will be made by ABS.

Operation and maintenance of the warehouses will be undertaken by the Marketing and Storage Section, Commercial Department, ABS (see Fig. 3.7), and main activities of operation and maintenance of the warehouses will be carried out by branch offices of the Regions Department, ABS. Because the condition of telecommunications between the head office and branch offices is poor, each of the branch offices are vested with a rather wide authority for decision-makings.

Chiefs of the branch offices are entitled to issue receiving and dispatching orders, while control and adjustment of stocks are entrusted to warehouse keepers. Accounting business, accompanying to warehouse management, is dealt with by accountants.

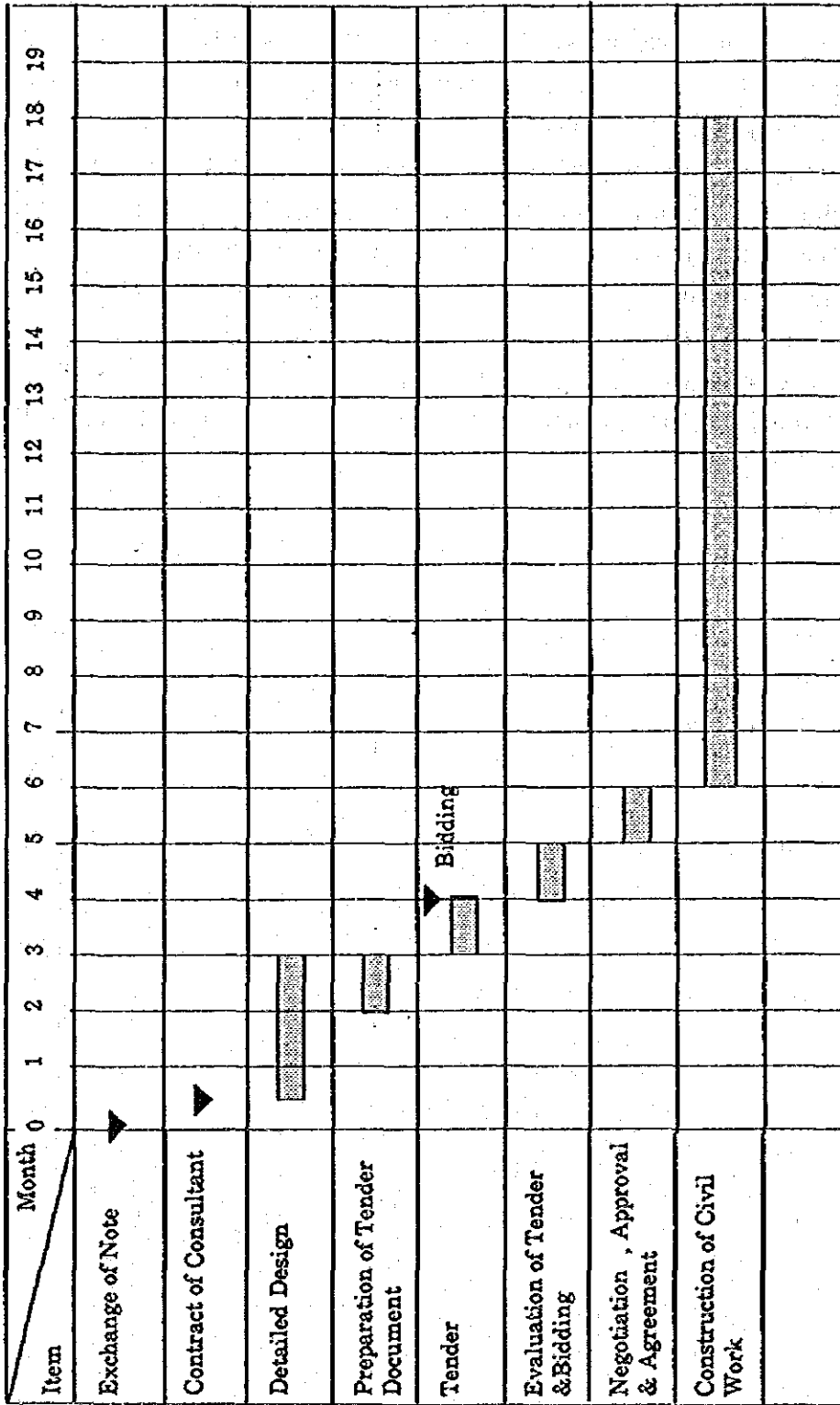
The proposed warehouses at Gedaref and at Rabak are to be managed respectively by the ABS's branch offices at Gedaref and at Kosti. Existing staffing for the warehouses is as below.

Staff	Warehouse at Gedaref	Warehouse at Rabak
Chief	1	1
Accountant	7	5
Clerk	3	3
Warehouse Keeper	3	3
Guardman	18	3
Total	32	15

Since the above staff is thought to be enough, additional recruitment of the staff will not be necessary for the Project.

The Stored Product Pest/Plant Quarantine Section, Plant Protection Department, Ministry of Agriculture has authority and full responsibility for fumigation of warehouses in the Sudan. ABS's silo fumigation team has authority and full responsibility for fumigation of silos only. However, in emergency case the Stored Product Pest/Plant Quarantine Section has no excess power to fumigate ABS warehouses. ABS's silo fumigation team can cooperate in fumigation of the warehouses. According to the annual budget of the Government of the Sudan, only 5% of budget for pest prevention (LS 2.3 million/year) is allocated for prevention of grain pest. The supply of fumigation sheet and fumigant is not sufficient.

Fig. --6.1 Implementation Schedule of the Project



Period of detailed design, Tender, Bidding and Commencement of civil work construction will be influenced by the data of E/N.

Therefore, for the Project, one fumigation equipment consisting of vinyl fumigation sheet, fumigant, etc. will be provided for each warehouse and the fumigation of the warehouses is scheduled to be carried out by the Stored Product Pest/Plant Quarantine Section, ABS. Fumigation cost per one grain bag (90 kg) is estimated to be LS 0.25, which will be borne by owner of the consignment (Sorghum).

Owners of the Sorghum have full responsibility for handling of bags. Labour cost for carrying in or bringing out is LS 0.5 per one bag. Monthly warehouse charge of ABS is LS 0.1 per one bag, which is about half the private warehouse charge.

The warehouses proposed for the Project will have simple structure. Operation of equipment excluding fumigation equipment will be rather simple and high technical knowledge and operational system will not be necessary. Moreover, the Plant Protection Department, Ministry of Agriculture and ABS's silo fumigation team have high technique and sufficient knowledge on fumigation at present.

CHAPTER 7 PROJECT EVALUATION

CHAPTER 7 PROJECT EVALUATION

Direct benefits of the Project will be the saving of storage losses, improvement in sorghum handling and sorghum price stabilization. Indirect benefits will be a stable supply of foodstuff, import substitution and increase in sorghum production.

(1) Saving in Storage Losses

The benefit of savings in storage losses will depend upon the purposes of the warehouses. If ABS considers the function of the warehouses to be buffering of sorghum influx for steady transportation in the harvesting season in the production area, the annual throughput may be calculated to be 42,000 tons by multiplying the storage space (30,000 tons) by the turnover (1.4). The storage loss in the with-project condition was estimated to be nil because the warehouses contemplated in this project will have no floor of bare soil to the ground, no crevices, and will get sound storage management.

The loss saving was calculated to be 4,200 tons by multiplying the annual throughput (42,000 tons) by a loss rate of 10%, which corresponds to the present average storage period of 3.8 months (Table 3-13). Assuming the economic useful life of the warehouses to be 35 years, the total loss saving will be 147,000 tons of sorghum which represent a value of LS 49,000,000 (Yen 2,080,000,000) estimated by the whole sale price of LS 30/bag (90 kg) at Gedaref in December 1985.

(2) Improvement in Sorghum Handling

Introduction of slat-conveyors will i) enable the stacking of bags to 24 layers to be done efficiently and safely, which will make the storage space utilization very economical, and ii) enable the number of labourers to be decreased and thus decrease the number of stock collapse incidents and damage to bags during handling by labourers, iii) will give employers some alternative method of bag handling which will sometimes be disturbed by labour disputes and iv) will ease the drudgery of lifting bags.

(3) Price Stabilization

Sorghum supply exceeds demand just after harvest making the price low but prices rise to 2 - 3 times the lowest prices just before harvesting season. In 1984/85 when starvation was at its worst, the price rose to 4.7 times of the lowest prices in that year. These sharp fluctuations of price give farmers low prices and, traders and consumers higher prices. Such conditions discourage farmers and bring excessive profits to traders. The warehouses planned in the present project will accommodate sorghum purchased by the Government to support prices when bumper production is realized, and also will accommodate buffer stock to lower extremely high prices in poor harvests. These functions will contribute to improvement of welfare and steady economic progress.

The above-mentioned benefits are direct benefits anticipated by the construction of grain warehouses. Besides, the Project would also bring about the following indirect benefits.

Stable Supply of Foodstuff

The specification proposed for these warehouses is suitable for long term storage such as for the sorghum security reserve owned by the Government. The only existing warehouses appropriate for long term storage are the seed warehouses in Yei, four warehouses in Rank, silos in Gedaref and Port Sudan only.

The warehouses planned in this project will play an important role in implementing the food security policy of the Sudan and in preventing starvation.

Import Substitution

The warehouses planned in this report will not only secure a steady supply of sorghum to consumers but also will promote the export of sorghum when a bumper harvest is realized. In a poor harvest, the warehouses will provide import substitution of sorghum by releasing stocks accumulated in bumper harvests. Savings in foreign currency will

improve the country's balance of payments and will contribute to economic development and social welfare of the country.

Increase in Sorghum Production

The warehouses planned in this report store safely the crop collateral of farmers for ABS agricultural loans. The increase in the loan amounts, which need storage space for crop collateral, will help farmers to be free from extortionate creditors, and will encourage them to increase production and thus contribute to economic development and improvement in social welfare.

CHAPTER 8 CONCLUSIONS AND RECOMMENDATIONS

CHAPTER 8 CONCLUSIONS AND RECOMMENDATIONS

The results of field surveys and studies in Japan confirmed that the request by the Government of the Sudan was made on the background that there exist huge amount of sorghum storage losses, seasonal sharp fluctuations in sorghum prices, insufficiency of strategic food reserves, shortage of grain storage space and a high possibility of recurrence of starvation in the country side.

It was also confirmed that ABS is an appropriate organization for the execution of the Project, having sound financial status and long experience in grain storage management. There would be no financial problems with regard to the operation and maintenance of the Project because no substantial expenses will be additionally required.

The Government of the Sudan has difficulty in financing this Project by its own budgets due to the serious financial condition of the country, which is caused partly by long-term trade imbalance, and due to its much dependence on foreign aids for the economic development.

Considering the above-mentioned circumstances, the request for this Project by the Government of the Sudan is judged as reasonable and recommended to be approved as the grant aid project by the Government of Japan, because this project will generate a high rate of return through storage loss prevention (direct benefit) and will enable saving in foreign currency by sorghum import substitution.

The implementation of the Project should be started as soon as possible because serious starvation might occur if crop production fails again under the present critical financial situation of the Government.

The total shortage in storage space was estimated by the present study at about 150,000 tons, of which 30,000 tons will be covered by the Project to meet the most urgent requirements.

ANNEXS

ANNEX A

MEMBERS OF THE STUDY TEAM

A. Mission for the basic design

Mr. Jooji. YANAUCHI	Team Leader Ministry of Agriculture, Forestry and Fisheries, Japan (MAFF)
Mr. Tadahito. MORISAWA	Coordinator MAFF
Mr. Hajime. ENDO	Co-leader/Planning Architect Nippon Koei Co., Ltd.
Mr. Siro. ITOH	Structural Design Architect Nippon Koei Co., Ltd.
Mr. Hisasi. IKEWADA	Grain Post Harvest Expert Nippon Koei Co., Ltd.
Mr. Koji. OKADA	Construction Cost Estimator Nippon Koei Co., Ltd.

B. Mission for the explanation of the draft final report

Mr. Homoki. TANEICHI	Team Leader Ministry of Foreign Affairs
Mr. Tadahito. MORISAWA	Coordinator MAFF
Mr. Hajime. ENDO	Planning Architect Nippon Koei Co., Ltd.
Mr. Hisasi. IKEWADA	Grain Post Harvest Expert Nippon Koei Co., Ltd.

ITINERARY OF THE FIELD SURVEY

A. Basic design study

(From March 27 to April 30, 1986)

No.	Date	Description
1.	Mar. 27 (Tue)	Departure from Tokyo for London of Messrs. Morisawa, Endo, Itoh, Ikewada and Okada
2.	Mar. 28 (Fri)	Arrival and stay in London
3.	Mar. 29 (Sat)	Departure from London and arrival in Khartoum, and Preliminary discussion with Embassy of Japan
4.	Mar. 30 (Sun)	First discussion with ABS, internal meeting on field surveys
5.	Mar. 31 (Mon)	Courtesy call to Ministry of Agriculture, detailed discussion on the field trip, and trip to Wad-Medani
6.	Apr. 1 (Tue)	Inspection of existing warehouses and candidate sites in Wad Medani and Sennar, and trip to Kosti

No.	Date	Description
7.	Apr. 2 (Wed)	Inspection of existing warehouses and candidate sites in Rabak and Kosti, and return to Khartoum. Arrival of Mr. Yamauchi (Team Leader) in Khartoum
8.	Apr. 3 (Thu)	Courtesy call to Japanese Embassy, data collection at ABS
9.	Apr. 4 (Fri)	Analysis and review of field trip and internal discussion on work schedule
10.	Apr. 5 (Sat)	Discussion about field trip from Apr. 7 to Apr. 10, data collection at ABS and agencies concerned
11.	Apr. 6 (Sun)	(National holiday) Analysis and study of collected data, internal discussion
12.	Apr. 7 (Mon)	(National holiday) - Trip to Kosti of Messrs. Yamauchi, Endo, Okada - Analysis and study of collected data by Messrs. Morisawa, Itoh, Ikewada
13.	Apr. 8 (Tue)	- Inspection of existing warehouses and candidate sites in Kosti, Rabak and Sennar by Messrs. Yamauchi and others - Data collection in Khartoum by Messrs. Morisawa and others
14.	Apr. 9 (Wed)	- Inspection of existing warehouse and candidate site in Wad-Medani, and trip to Gedaref, and discussion with Gedaref Branch, ABS by Messrs. Yamauchi & others - Data collection in Khartoum by Messrs. Morisawa & others
15.	Apr. 10 (Thu)	Inspections of existing warehouses, silos, open storage yards, candidate sites for the Project and traditional underground storages (Matsumura)
16.	Apr. 11 (Fri)	Analysis and arrangement of survey results, internal discussion
17.	Apr. 12 (Sat)	Preparation of discussion materials for the second meeting
18.	Apr. 13 (Sun)	Discussion with ABS based on the survey result and findings, and preparation of Minutes of Discussions

No.	Date	Description
19.	Apr. 14 (Mon)	Preparation and signing of the Minutes of Discussions
20.	Apr. 15 (Tue)	Visit to Embassy of Japan to report and discuss about the discussions with ABS, and data collection
21.	Apr. 16 (Wed)	- Departure from Khartoum for Tokyo of Messrs. Yamauchi and Morisawa - Data collection from concerned agencies by Messrs. Endo, Itoh, Ikewada and Okada
22.	Apr. 17 (Thu)	Additional data collection and study of collected data
23.	Apr. 18 (Fri)	Additional data collection and study of collected data
24.	Apr. 19 (Sat)	Additional data collection and study of collected data
25.	Apr. 20 (Sun)	Additional data collection and study of collected data
26.	Apr. 21 (Mon)	Additional data collection and study of collected data
27.	Apr. 22 (Tue)	Additional data collection and study of collected data
28.	Apr. 23 (Wed)	Analyses of collected data and preparation of Field Report
29.	Apr. 24 (Thu)	Analyses of collected data and preparation of Field Report
30.	Apr. 25 (Fri)	Analyses of collected data and preparation of Field Report
31.	Apr. 26 (Sat)	Explanation and discussion of Field Report with ABS
32.	Apr. 27 (Sun)	Visit to Embassy of Japan to report the result of field surveys in the Sudan
33.	Apr. 28 (Mon)	Departure from Khartoum and stay in London of the remaining members
34.	Apr. 29 (Tue)	Departure from London for Tokyo
35.	Apr. 30 (Wed)	Arrival in Tokyo

B. Explanation of the draft final report

(From July 21 to August 5, 1986)

No.	Date		Description
1.	July 21	(M)	Departure from Tokoy to Amsterdam of the mission, KL868
2.	22	(T)	Stay in Amsterdam
3.	23	(W)	Arriving at Khartoum
4.	24	(T)	Courtesy calls to Embassy of Japan and Ministry of Finance and Economic Planning
5.	25	(F)	Inner meeting
6.	26	(S)	1st meeting with ABS (Explanation of report and discussion of a schedule)
7.	27	(S)	2nd meeting with ABS (Comments/Answers/Preparation of Minutes)
8.	28	(M)	Field inspection to Rabak
9.	29	(T)	Travel to Khartoum from Rabak
10.	30	(W)	3rd meeting/Reporting to the Ministry of Finance and Economic Planning
11.	31	(T)	Signature of Minutes, party hosted by the mission
12.	Aug. 1	(F)	Internal meeting
13.	2	(S)	Reporting to Embassy of Japan, party hosted by ABS
14.	3	(S)	Departure from Khartoum
15.	4	(M)	Stay in Paris
16.	5	(T)	Arrival to Tokyo, JL440

ANNEX B

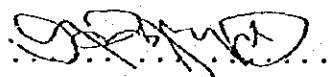
MINUTES OF DISCUSSIONS
ON
THE CONSTRUCTION PROJECT OF SORGHUM WAREHOUSES
IN THE REPUBLIC OF THE SUDAN

In response to the request of the Government of the Republic of the Sudan, Government of Japan decided to conduct a basic design study on the construction project of the Sorghum Warehouses (herein after referred to as "the Project"), and entrusted the study to the Japan International Co-operation Agency (JICA). JICA sent to the Sudan the Study Team headed by Mr. Jyoji Yamauchi, Director General's Secretariat, Food Agency from March 27 to April 30, 1986.

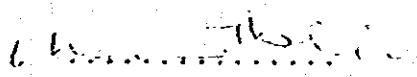
The team had a series of discussions on the Project with the Officials concerned of the Government of the Republic of the Sudan headed by Mr. Khalid M. Ibrahim, Assistant Managing Director, Agricultural Bank of Sudan and conducted a field survey in the Sudan.

As a result of the study, both parties agreed to recommend to their respective Governments that the major points of understanding reached between them, attached herewith, should be examined towards the realization of the Project.

April 14, 1986.




Mr. Jyoji Yamauchi
Leader
The Basic Design Study Team
JICA.

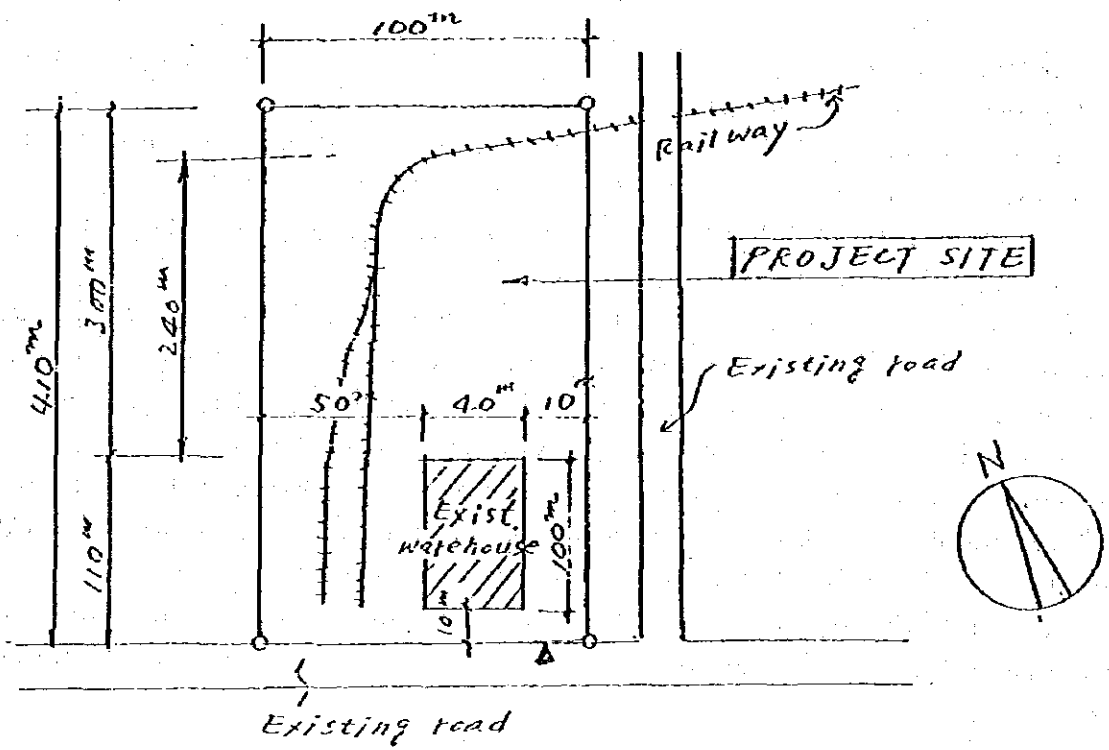


Mr. Sid Ahmed Osman Abdalla
Managing Director
Agricultural Bank of Sudan

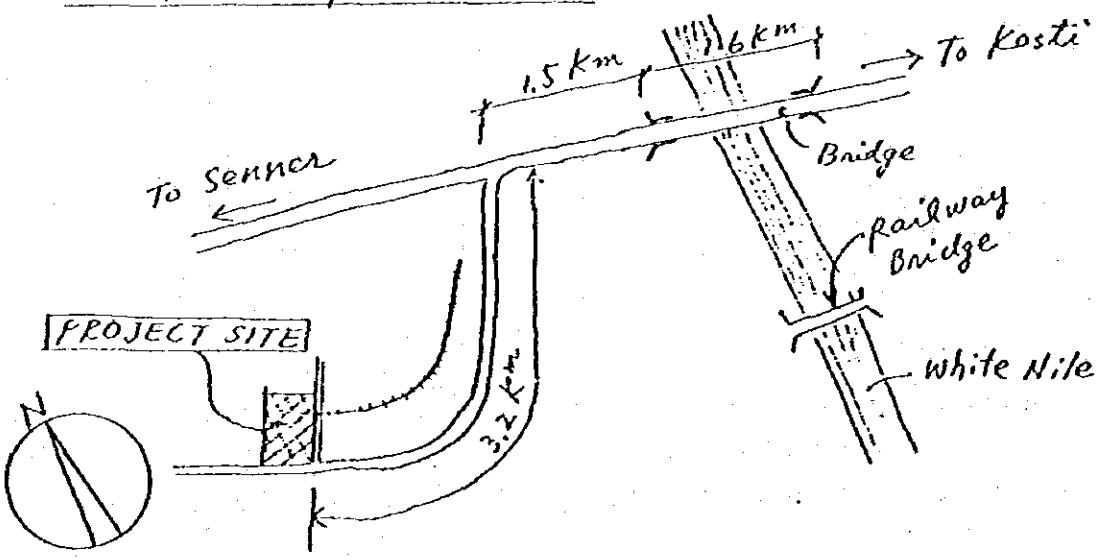
1. The objective of the Project is to improve the present conditions of storing and distribution and to consequently ensure the proper and effective function in the supply of sorghum to the consumers by accommodating facilities.
2. The scope of the Project covers construction of buildings and supply of pertinent equipment.
3. The sites of the Project requested by the Sudan Government are in Rabak, Sennar, Gedarif, and Medani as shown in Annex I.
4. The Agricultural Bank of Sudan is responsible for the administration & execution of the Project.
5. The Japanese Study Team will convey to the Government of Japan the desire of the Sudan Government that the former takes necessary measures by providing the building & other items within the scope of Japanese economic co-operation programme in Grant form.
6. The Sudan side has understood Japan's Grant Aid System explained by the Team which includes a principle of use of a Japanese Consultant Firm and Japanese General Contractor for the construction.
7. The Government of the Republic of the Sudan will take necessary measures listed in Annex II on condition that the Grant Aid would be extended to the Project.

Wain 

**THE PROJECT SITE
(RABAK)**



LOCATION OF THE SITE

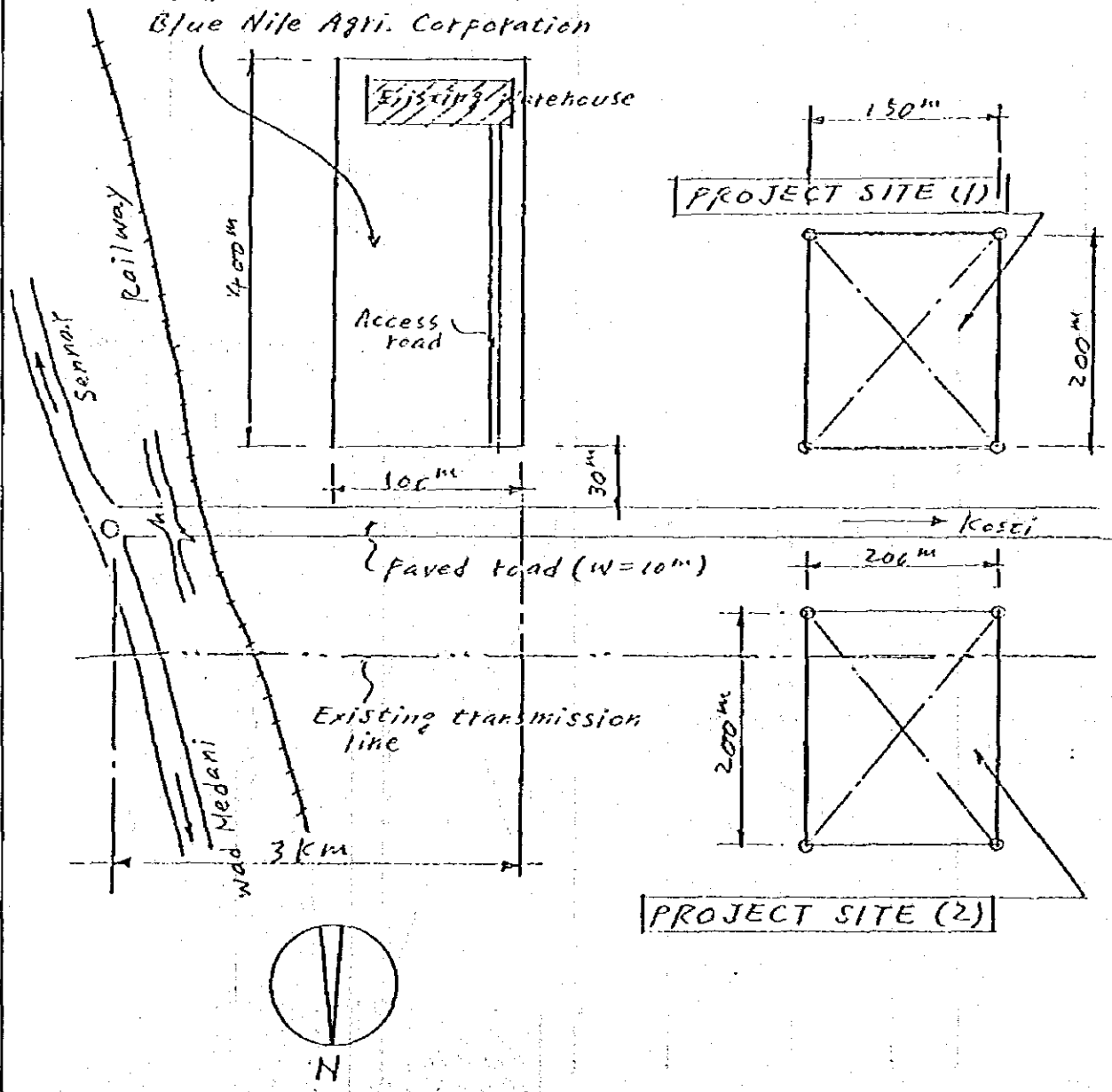


NO SCALED SHETCH : Dimensions indicated are approximate numbers

**THE PROJECT SITE
(SENNAR)**

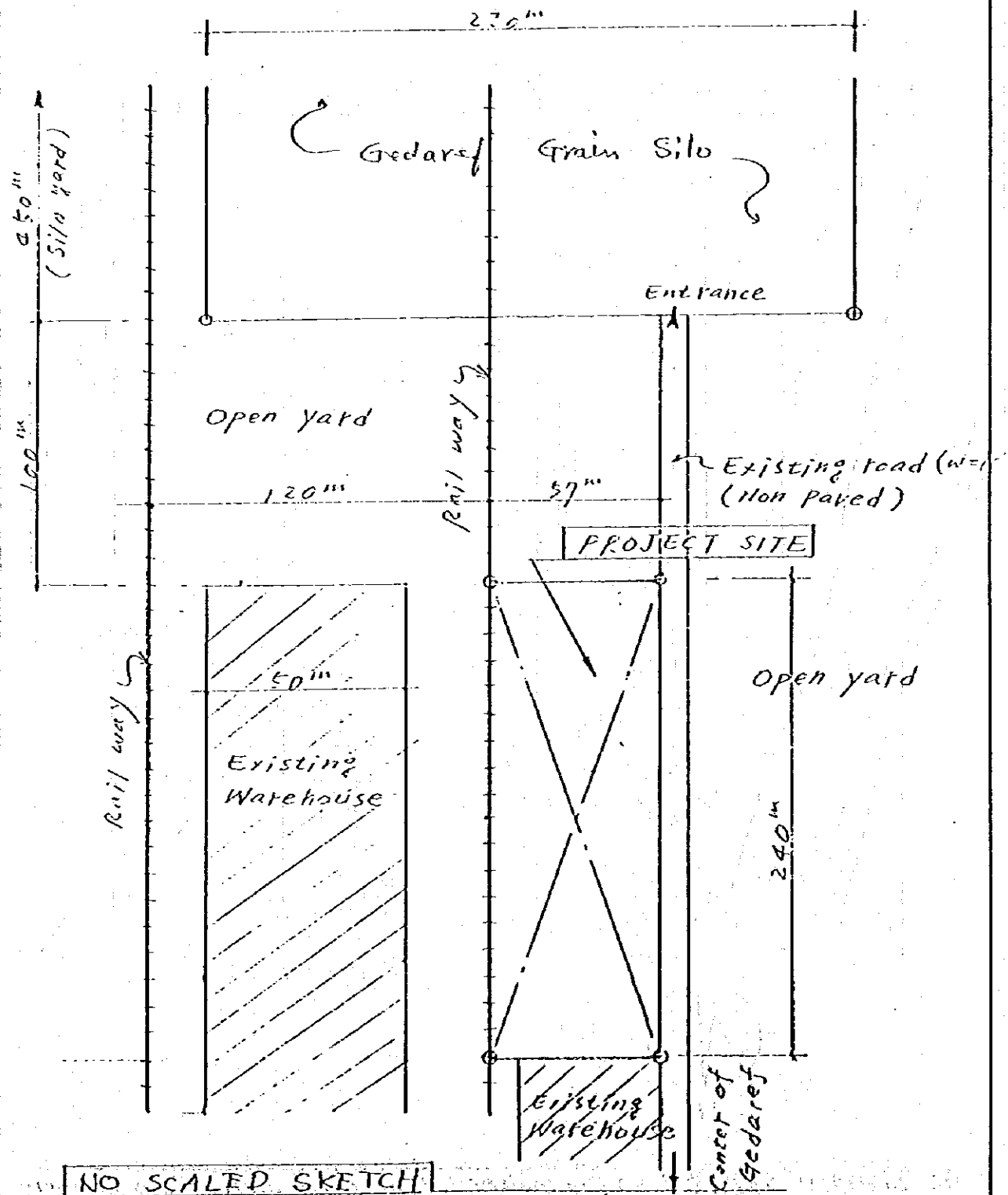
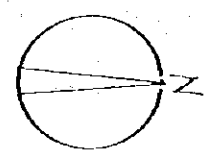
Existing electrical distribution line

Existing storage yard of
Blue Nile Agri. Corporation



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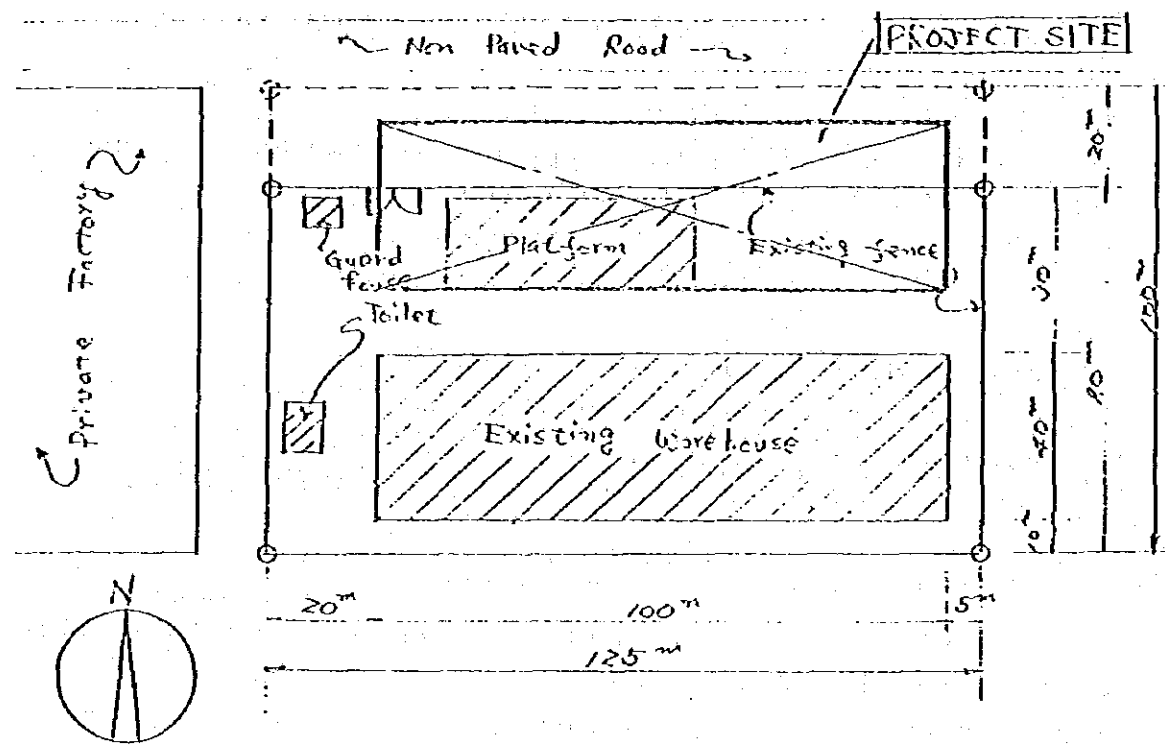
THE PROJECT SITE
(EL GEDAREF)



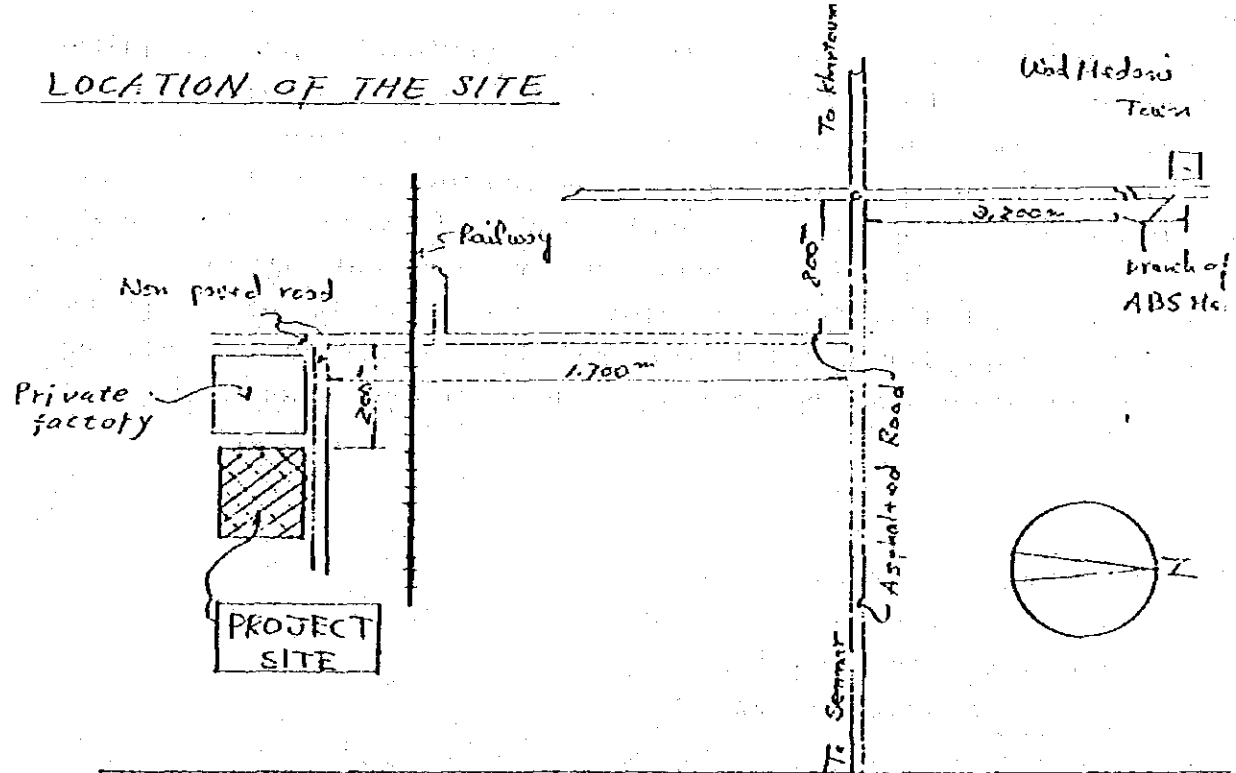
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**THE PROJECT SITE
(WAD MEDANI)**



LOCATION OF THE SITE



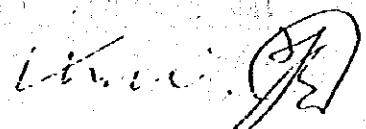
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Handwritten signature/initials

ANNEX II:

The Government of the Republic of the Sudan will take necessary measures on the following matters:

1. To secure approval of building plan.
2. To secure a lot of land for the Project.
3. To clear, fill and level the site before commencement of the construction.
4. To remove the existing buildings.
5. To undertake incidental outdoor works such as gardening, fencing, gates and exterior lighting in and around the site.
6. To provide facilities for distribution of electricity, water supply, telephone, drainage and other incidental facilities to the Project sites.
 - 1) Electricity distributing line to the sites.
 - 2) City water distribution main to the sites.
 - 3) Drainage city main to the sites.
 - 4) Telephone trunk line to the main distribution panel of building.
 - 5) General furniture and office equipment.
7. To bear commissions to the Japanese foreign bank for the banking services based upon the Banking Agreement.
8. To ensure prompt unloading, tax exemption, custom clearance at Port of disembarkation in the Sudan.
9. To accord Japanese Nationals whose services may be required in connection with the supply of products and the services under the verified contract such facilities as may be necessary for their entry into the Sudan and stay therein for the performance of their work.
10. To maintain and use properly and effectively the facilities constructed and equipment purchased under the Grant.
11. To bear all the expenses other than those to be borne by the Grant, necessary for construction of the facilities as well as for the transportation and the installation of the equipment.

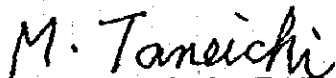


MINUTES OF DISCUSSIONS
ON
THE DRAFT FINAL REPORT OF THE BASIC DESIGN STUDY
ON
THE CONSTRUCTION PROJECT
OF
FOOD GRAIN WAREHOUSES
IN
THE REPUBLIC OF THE SUDAN

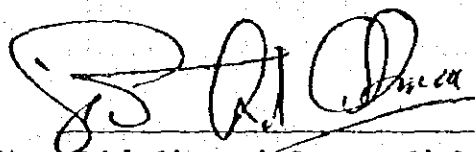
The Government of Japan has sent, through the Japan International Cooperation Agency (JICA), a Basic Design Study Team to the Republic of the Sudan from 21 July to 5 August 1986 for the purpose of presenting and explaining the Draft Final Report on the Basic Design Study of the Construction Project for Food Grain Warehouses.

After a series of discussions between the Basic Design Study Team and the authorities concerned of the Sudanese Government, both sides confirmed the following results attached herewith (ATTACHMENT).

July 31, 1986.



MR. Momoki Taneichi
Leader,
Basic Design Study Team,
Japan International
Cooperation Agency.



Mr. Sid Ahmed Osman Abdalla
Managing Director
Agricultural Bank of Sudan



Dr. Sayed Zaki Esheikh Elchikh Ahmed
For/ Undersecretary: Planning
Ministry of Finance and
Economic Planning

ATTACHMENT

1. Both sides agreed to reconfirm the Minutes of Discussions which were mutually signed on April 14, 1986.

2. The Sudanese side has agreed in principle to the basic design proposed in the Draft Final Report and the following points agreed by both sides in the course of discussions will be incorporated in the Final Report.

(a) The implementation schedule (Fig. -6.1) shall be changed as shown in attached sheet.

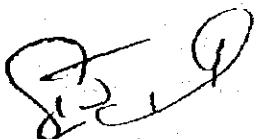
(b) A store keeper's room with a floor area of 9 square meters (3mX3m) and walls of 2.5m height shall be installed within each warehouse of 10,000ton capacity.

(c) Two off-road 4 wheel-driven vehicles and 3 wireless sets shall be added to the ancillary equipment of the warehouses.

3. The Sudanese side has accepted Japan's grant aid system and the arrangement to be taken by the Sudan side for realization of the Project.

4. The Sudanese side requested that the Japanese Government should take into consideration that there is still a remaining urgent shortage to be met. To this wish the mission replied that they are not in a position to express any commitment.

5. The Final Report (10 copies in English) will be submitted to the Sudan side before the end of October, 1986.


M.T.

IMPLEMENTATION SCHEDULE OF THE PROJECT

ITEM	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
MONTH																		
EXCHANGE OF NOTE	▼																	
CONTRACT OF CONSULTANT	▼																	
DETAILED DESIGN																		
PREPARATION OF TENDER DOCUMENT																		
TENDER & BIDDING																		
EVALUATION OF TENDER																		
NEGOTIATION, APPROVAL AND AGREEMENT																		
CONSTRUCTION OF CIVIL WORK																		

PERIOD OF DETAILED DESIGN, TENDER, BIDDING AND COMMENCEMENT OF CIVIL WORK CONSTRUCTION WILL BE INFLUENCED BY THE DATE OF E/N.

LIST OF PERSONNEL CONTACTED

1. Embassy of Japan in the Sudan

1. Mr. K. Yamano : Ambassador
2. Mr. H. Ushida : Councillor
3. Mr. T. Amari : First Secretary
4. Mr. M. Ochi : Second Secretary

2. Agricultural Bank of Sudan

1. Mr. Sid Ahmed Osman Abdalla : Managing Director
2. Mr. Khidir Abolel Halim : Deputy Managing Director
3. Mr. Khalid Mohamed Ibrahim : Assistant Managing Director
Monitoring, Evaluation and Planning
4. Mr. Abdel Aziz Shkak : Chief of Planning Section
(Counterpart)
5. Mr. Abdel Rahman Mustufa
Abashar : Chief Engineer of Civil Dept.
(Counterpart)
6. Mr. Abdel Rahman Mustufa
Eltayeb : Planning Inspector
(Counterpart)
7. Mr. Elsir Hagmusa : Civil Engineer (Counterpart)
8. Mr. Ismat Ahmed Abbashar : Agricultural Engineer for Grain
Storage (Counterpart)
9. Mr. Haroun Ali Diyab : Manager of Kosti Branch Office
10. Mr. Eltahir Elbashir : Manager of Sennar Branch Office
11. Mr. Ali Elobeid : Manager of Wad Medani Branch Office
12. Mr. Nasur Eldien Fadol Elseed : Manager of Gedaref Branch Office
13. Mr. Tag Elsir Mousa : Administrative Manager of Silo in
Gedaref
14. Mr. Siddig Mohamed Ahmed
Elagib : Technical Engineer of Silo in
Gedaref
15. Mr. Salah Elmubarak : Assistant Head of Civil Engineering
Department
16. Mr. Farouk Abdelhammeed Ali : Manager, Planning Department
17. Mr. Khalid M. Ibrahims : Assistant Manager, Planning
Department
18. Mr. Faisal Abdelrahman Zakria : Inspector, Planning Department
19. Mr. Ali El Nosh : Manager Commercial Department

3. Ministry of Agriculture

1. Mr. Abdel Muneim EL Sheikh : Director General for Planning
2. Mr. Mohamed Ahmed Mohamed Ali: Senior Agricultural Economist
3. Mr. Hassan Hamid Medani : Head of Stored Product Pests & plant Quarantine Section, Plant Protection Dept.

4. Ministry of Finance and Economic Planning

1. Mr. Elsheikh Elkhidr Ahmed : Senior Inspector, Planning Department
2. Mr. Babiker Abdlla : Planning Department
3. Mr. Fatih Mohamed Khalió : Assistant Undersecretary
4. Mr. Mohamed Saeid : Planning Department

Table--1 GDP by Sector (Current Prices)

(Unit: Million LS)

Item	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84
Primary								
Production	818	1,044	1,001	1,161	1,444	2,067	2,327	2,674
Agriculture	817	1,042	997	1,156	1,439	2,062	2,321	2,664
Mining	2	2	4	5	5	5	6	10
Secondary								
Production	269	304	370	516	665	866	1,170	1,479
Manufacturing	132	147	202	285	364	469	620	774
Construction	103	118	123	162	211	280	390	502
Public Utilities	34	39	45	69	90	117	160	203
Services	997	1,229	1,433	1,921	2,454	3,134	4,024	4,843
Transport	221	273	339	361	476	647	754	887
Commers	373	481	565	805	1,064	1,349	1,755	2,088
Banking,								
Insurance & Fin.	132	153	175	231	296	380	514	659
Gov. Service	220	266	282	430	501	610	806	969
Others	51	56	72	94	117	148	195	240
G.D.P.	2,084	2,577	2,804	3,598	4,563	6,067	7,521	8,996
(Factor Cost)								
Indirect Taxes								
& Others	256	306	358	400	460	597	886	985
G.D.P.	2,340	2,883	3,162	3,998	5,023	6,664	8,407	9,981
(Market Price)								
GDP Deflator	42.7	53.4	67.3	81.5	100.0	123.5	160.5	193.8

Source: Sudan, Prospects for Rehabilitation of the Sudanese Economy, Oct. 7 1985, World Bank.

Table-2 Value of Exports by Commodity

(Unit: Million US\$, %)

	Value of Exports by Commodity (Unit: Million US\$, %)										Share of Trade(%)	
	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84	1976/77~ 1978/79 Ave.	1981/8~2 1983/84 Ave.		
Exports (FOB)	595	551	527	594	588	432	573	732	100.0	100.0		
Cotton	286	296	321	330	182	69	169	344	54.0	33.5		
Food Grain	16	10	10	70	72	65	85	34	2.2	10.6		
(Sorghum)	(13)	(9)	(9)	(69)	(71)	(64)	(82)	(32)	(1.9)	(10.2)		
Gum Arabic	34	35	40	43	33	43	46	65	6.5	8.9		
Livestock	24	27	30	36	44	57	79	83	4.8	12.6		
Sesami	62	56	28	41	34	42	50	68	8.7	9.2		
Oils	32	17	48	27	33	26	24	35	5.8	4.9		
Ground Nut	108	80	26	13	66	48	15	17	12.5	4.6		
Other Exports	38	30	25	34	74	82	105	86	5.5	15.7		
Imports (CIF)	986	1,188	1,116	1,339	1,569	1,774	1,516	1,388	100.0	100.0		
Food	128	122	100	264	314	371	243	166	10.6	16.7		
(Sugar)	(59)	(44)	(28)	(121)	(184)	(158)	(44)	(24)	(4.0)	(4.8)		
(Tea)	(15)	(33)	(27)	(21)	(28)	(26)	(28)	(26)	(2.3)	(1.7)		
Beverages &												
Tobacco	16	18	12	10	22	24	22	24	1.4	1.5		
Petroleum	108	121	159	258	326	350	347	331	11.8	22.0		
Intermediate Good	286	371	340	394	472	441	380	350	30.3	25.0		
(Fertilizers)	(17)	(3)	(12)	(12)	(12)	(10)	(5)	(17)	(1.0)	(0.7)		
(Farm Chemicals)	(15)	(25)	(21)	(24)	(29)	(34)	(36)	(49)	(1.9)	(2.5)		
Transport												
Equipments	110	109	142	129	134	147	128	104	11.0	8.1		
Other Equipments	282	365	282	232	225	267	228	178	28.2	124.4		
Other Imports	56	82	81	52	76	174	168	285	6.7	12.3		
Balance of Trade	△ 391	△ 637	△ 589	△ 745	△ 1,031	△ 1,342	△ 943	△ 656	—	—		

Source: Bank of Sudan, Foreign Trade Statistics

Table-3 Balance of Payments

(Unit: Million US\$)

Item	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84
I Current Balance	<u>△ 303</u>	<u>△ 494</u>	<u>△ 451</u>	<u>△ 648</u>	<u>△ 881</u>	<u>△ 1,252</u>	<u>△ 829</u>	<u>△ 646</u>
(1) Resource Balance	<u>△ 391</u>	<u>△ 637</u>	<u>△ 589</u>	<u>△ 745</u>	<u>△ 1,031</u>	<u>△ 1,342</u>	<u>△ 943</u>	<u>△ 656</u>
- Exports	595	551	527	594	538	432	573	732
(Cotton)	(285.7)	(29.6)	(321)	(330)	(182)	(69)	(169)	(344)
- Imports	<u>△ 986</u>	<u>△ 1,188</u>	<u>△ 1,116</u>	<u>△ 1,339</u>	<u>△ 1,569</u>	<u>△ 1,774</u>	<u>△ 1,516</u>	<u>△ 1,388</u>
(Petroleum)	(△ 108)	(△ 122)	(△ 159)	(△ 258)	(△ 326)	(△ 350)	(△ 347)	(△ 331)
(Sugar)	(△ 59)	(△ 44)	(△ 28)	(△ 122)	(△ 184)	(△ 159)	(△ 44)	(△ 24)
(2) Net Factor Income	<u>△ 84</u>	<u>△ 76</u>	<u>△ 102</u>	<u>△ 112</u>	<u>△ 155</u>	<u>△ 260</u>	<u>△ 301</u>	<u>△ 370</u>
(Interested Paid)	(△ 45)	(△ 53)	(△ 72)	(△ 70)	(△ 105)	(△ 190)	(△ 191)	(△ 215)
(3) Current Private Transfers	172	221	240	209	305	350	415	380
II Official Transfer	<u>295</u>	<u>310</u>	<u>661</u>	<u>802</u>	<u>859</u>	<u>851</u>	<u>805</u>	<u>584</u>
(1) Official Transfer (Grant)	11	23	17	84	122	173	462	336
(2) Direct Investment	-	-	-	30	35	40	60	70
(3) Net M&L Loans	293	287	588	572	412	588	161	178
(4) Net Credit from IMF.	<u>△ 8</u>	<u>1</u>	<u>58</u>	<u>115</u>	<u>290</u>	<u>50</u>	<u>122</u>	<u>-</u>
(5) Other	<u>△ 1</u>	<u>△ 1</u>	<u>△ 2</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>
III Errors & Omissions	<u>2</u>	<u>103</u>	<u>△ 160</u>	<u>△ 229</u>	<u>△ 198</u>	<u>△ 117</u>	<u>△ 196</u>	<u>203</u>
IV Change in Net Reserves	<u>△ 6</u>	<u>△ 76</u>	<u>50</u>	<u>△ 75</u>	<u>220</u>	<u>△ 518</u>	<u>△ 220</u>	<u>141</u>

Source: Bank of Sudan, Ministry of Finance & National Economy. IMF Data.

Table 4 Central Government Operations

(Unit: Millions LS)

	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84
Revenues	384	459	504	587	732	885	1,275	1,469
(Tax Revenues)	(310)	(361)	(414)	(472)	(592)	(736)	(1,084)	(1,244)
(Non-Tax Revenues-)	(74)	(98)	(90)	(115)	(140)	(149)	(191)	(225)
Current Expenditures	Δ332	Δ423	Δ566	Δ645	Δ789	Δ870	Δ1,086	Δ1,300
Development Expenditures	Δ155	Δ186	Δ165	Δ221	Δ291	Δ315	Δ414	Δ483
(Agriculture)	(Δ42)	(Δ43)	(Δ55)	(Δ47)	(Δ60)	(Δ60)	(Δ127)	(n.a.)
(Industry)	(Δ32)	(Δ39)	(Δ34)	(Δ38)	(Δ32)	(Δ89)	(Δ72)	(n.a.)
(Transport & Communication)	(Δ39)	(Δ55)	(Δ26)	(Δ34)	(Δ40)	(Δ44)	(Δ78)	(n.a.)
(Other)	(Δ42)	(Δ49)	(Δ50)	(Δ102)	(Δ159)	(Δ122)	(Δ137)	(n.a.)
Other Expenditures	—	—	Δ75	Δ62	Δ184	Δ298	Δ340	Δ366
Overall Balance	Δ103	Δ150	Δ227	Δ279	Δ532	Δ598	Δ565	Δ680
Loans	136	201	296	371	530	597	5534	766
(Central Bank Fin.)	(96)	(173)	(150)	(143)	(289)	(33)	(44)	(98)
(External Financing)	(40)	(28)	(146)	9238	(241)	(564)	(490)	(668)

Source: Sudan, Prospects for Rehabilitation of the Sudanese Economy, Oct. 7 1985, WB.

Table-5 Grain and Oil Seeds Productions by Province (1/6)

Area	Sorghum (Unit : 1,000 ha)										
	Crooping Year										
	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86	Ave.
Northern	8	8	6	4	6	4	3	4	11	5	
Nile	10	3	15	13	13	5	3	4	6	17	9
Khartoum	4	7	8	4	6	4	2	0	0	0	4
Gezira	224	239	254	165	210	237	183	225	206	315	225
Blue Nile	533	526	453	417	498	977	774	740	736	1443	710
White Nile	207	179	160	113	168	191	204	196	179	693	229
Kassala	810	790	872	713	940	1280	856	1284	1104	1513	1,016
Red Sea	2	12	26	4	11	9	6	8	15	17	11
Northern Kordofan	265	273	252	162	193	202	188	187	127	84	193
Southern Kordofan	231	252	260	216	260	252	329	364	361	599	312
Northern Darfur	18	22	22	17	21	23	22	18	19	48	23
Southern Darfur	129	160	169	126	149	151	168	168	126	205	155
Upper Nile	182	89	179	168	111	202	0	0	157	286	137
Junglei		22									2
Bahr El Gazal	95	157	178	189							
Buheyral		93									
Eastern Equatoria		43			336	340	442	492	315	294	318
Western Equatoria	97	13	46	46							
Total	2,815	2,888	2,900	2,357	2,922	3,877	3,177	3,689	3,355	5,525	3,351

Production	Sorghum (Unit : 1,000 t)										
	Crooping Year										
	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86	Ave.
Northern	8	7	5	5	6	4	1	5	8	15	6
Nile	10	4	14	14	12	8	5	5	8	20	10
Khartoum	2	2	4	2	3	3	1	0	0	0	2
Gezira	195	203	251	134	135	242	154	242	268	426	225
Blue Nile	299	382	395	301	382	904	371	427	245	1047	475
White Nile	130	89	134	66	109	163	99	73	43	253	116
Kassala	526	562	526	476	793	1214	695	614	251	1100	676
Red Sea	1	14	32	1	10	7	5	7	14	16	11
Northern Kordofan	91	180	180	65	89	103	25	20	8	18	78
Southern Kordofan	216	179	214	91	180	191	267	147	77	324	189
Northern Darfur	5	7	10	2	7	12	5	1	1	21	7
Southern Darfur	91	162	120	65	82	100	120	55	40	107	94
Upper Nile	114	13	167	129	100	151	0	0	34	122	83
Junglei		11									1
Bahr El Gazal	45	131	108	92							
Buheyral		78									
Eastern Equatoria		29			160	170	190	210	100	126	156
Western Equatoria	58	9	30	20							
Total	1,791	2,062	2,190	1,463	2,068	3,272	1,938	1,806	1,097	3,595	2,128

Unit Yield	Sorghum (Unit : t/ha)										
	Crooping Year										
	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86	Ave.
Northern	1.00	0.88	0.83	1.25	1.00	1.00	0.00	1.67	2.00	1.36	1.19
Nile	1.00	1.33	0.93	1.08	0.92	1.60	1.67	1.25	1.33	1.18	1.12
Khartoum	0.50	0.29	0.50	0.50	0.50	0.75	0.50	0.00	0.00	0.00	0.49
Gezira	0.87	0.85	0.99	0.81	0.64	1.02	0.84	1.08	1.30	1.35	1.00
Blue Nile	0.56	0.73	0.87	0.72	0.77	0.93	0.48	0.58	0.33	0.73	0.67
White Nile	0.63	0.50	0.84	0.58	0.65	0.85	0.49	0.37	0.24	0.37	0.51
Kassala	0.65	0.71	0.60	0.67	0.84	0.95	0.81	0.48	0.23	0.73	0.66
Red Sea	0.50	1.17	1.23	0.25	0.91	0.78	0.83	0.88	0.93	0.94	0.97
Northern Kordofan	0.34	0.66	0.71	0.40	0.46	0.51	0.13	0.11	0.06	0.21	0.40
Southern Kordofan	0.94	0.71	0.82	0.42	0.69	0.76	0.81	0.40	0.21	0.54	0.60
Northern Darfur	0.28	0.32	0.45	0.12	0.33	0.52	0.23	0.06	0.05	0.44	0.31
Southern Darfur	0.71	1.01	0.71	0.52	0.55	0.66	0.71	0.33	0.32	0.52	0.61
Upper Nile	0.63	0.15	0.93	0.77	0.90	0.75	0.00	0.00	0.22	0.43	0.60
Junglei		0.50									0.50
Bahr El Gazal	0.47	0.83	0.61	0.49							
Buheyral		0.84									
Eastern Equatoria		0.67			0.48	0.50	0.43	0.43	0.32	0.43	0.49
Western Equatoria	0.60	0.69	0.65	0.43							
Total (ave.)	0.64	0.71	0.76	0.62	0.71	0.84	0.61	0.49	0.33	0.65	0.64

Source - Current Agricultural Statistics, Cas Vol I, No.4, Ministry of Agriculture.
 - Ministry of Agriculture and Natural Resources.
 - Agricultural Situation & Outlook, Vol III, No.2, Ministry of Agriculture and Natural Resources.

Table-5 Grain and Oil Seeds Productions by Province (2/6)

Area	Millet (Unit : 1,000 ha)										
	Crooping Year										
	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86	Ave.
Northern Nile											
Khartoum											
Gezira	2	2	3	2	3	3		3	26	2	5
Blue Nile	13	21	25	27	29	29		27	21	48	27
White Nile	50	63	57	27	34	36		34	25	17	38
Kassala	2	2	2	2	2	2		2	5	8	3
Red Sea		9	8	4	5	6	NO DATA	9	8	9	7
Northern Kordofan	526	483	525	344	378	507		504	644	840	528
Southern Kordofan	7	38	17	11	17	19		20	21	51	22
Northern Darfur	223	219	211	168	189	189		147	151	336	204
Southern Darfur	273	410	414	357	399	399		491	378	378	389
Upper Nile											
Junglet											
Bahr El Gazal	29	19	24	21							
Buheyral		17									
Eastern Equatoria		2			36	38		34	34	36	35
Western Equatoria	1	0	13	12							
Total	1,126	1,284	1,299	974	1,091	1,229		1,271	1,313	1,725	1,257

Production	Millet (Unit : 1,000 t)										
	Crooping Year										
	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86	Ave.
Northern Nile											
Khartoum											
Gezira	1	1	1	1	1	2		1	1	1	1
Blue Nile	5	11	10	10	12	15		10	4	21	11
White Nile	24	37	27	12	15	18		12	4	6	17
Kassala	1	1	1	1	1	1		1	1	3	1
Red Sea		9	8	2	4	5	NO DATA	13	10	7	6
Northern Kordofan	182	150	210	95	162	136		67	20	140	129
Southern Kordofan	3	18	9	5	7	9		9	4	22	10
Northern Darfur	89	61	90	52	85	90		14	13	80	64
Southern Darfur	130	191	182	120	190	215		176	90	135	159
Upper Nile											
Junglet											
Bahr El Gazal	14	11	10	7							
Buheyral		9									
Eastern Equatoria	1	1			14	18		11	11	13	14
Western Equatoria			5	4							
Total	450	500	553	309	491	509		314	158	428	412

Unit Yield	Millet (Unit : t/ha)										
	Crooping Year										
	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86	Ave.
Northern Nile											
Khartoum											
Gezira	0.48	0.48	0.40	0.48	0.40	0.60		0.40	0.04	0.48	0.22
Blue Nile	0.40	0.52	0.40	0.37	0.41	0.51		0.37	0.19	0.43	0.41
White Nile	0.48	0.59	0.47	0.44	0.45	0.50		0.36	0.16	0.36	0.45
Kassala	0.48	0.48	0.48	0.48	0.40	0.48		0.48	0.22	0.36	0.40
Red Sea		0.97	0.95	0.48	0.79	0.79	NO DATA	1.41	1.19	0.76	0.97
Northern Kordofan	0.35	0.34	0.40	0.28	0.43	0.27		0.13	0.03	0.17	0.24
Southern Kordofan	0.42	0.48	0.54	0.48	0.42	0.48		0.46	0.19	0.43	0.43
Northern Darfur	0.40	0.28	0.43	0.31	0.45	0.48		0.10	0.09	0.24	0.31
Southern Darfur	0.48	0.47	0.44	0.34	0.48	0.54		0.36	0.24	0.36	0.41
Upper Nile											
Junglet											
Bahr El Gazal	0.48	0.58	0.41	0.34							
Buheyral		0.54									
Eastern Equatoria		0.60			0.39	0.48		0.33	0.33	0.36	0.41
Western Equatoria			0.37	0.34							
Total (ave.)	0.40	0.39	0.43	0.32	0.45	0.41		0.25	0.12	0.25	0.33

Source - Current Agricultural Statistics, Cas Vol 1, No.4, Ministry of Agriculture.
 - Ministry of Agriculture and Natural Resources.
 - Agricultural Situation & Outlook, VolII, No2, Ministry of Agriculture and Natural Resources.

Table-5 Grain and Oil Seeds Productions by Province (3/6)

Area	Wheat (Unit : 1,000 ha)										
	Cropping Year										
	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86	Ave.
Northern Nile	10	7	10	5	11	8		12	19	21	11
Khartoum	2	3	3	3	2	4		2	2	4	3
Gezira	210	200	210	158	154	104		112		101	139
Blue Nile											
White Nile	11	5	1	2	1	3		3	27	13	7
Kassala	33	34	18	21	16	20		18		13	19
Red Sea							NODATA				
Northern Kordofan											
Southern Kordofan											
Northern Darfur											
Southern Darfur											
Upper Nile											
Junglei											
Bahr El Gazal											
Buheyra											
Eastern Equatoria											
Western Equatoria											
Total	265	247	241	189	184	138		147	48	151	179

Production	Wheat (Unit : 1,000 t)										
	Cropping Year										
	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86	Ave.
Northern Nile	13	10	11	9	16	16		25	31	40	19
Khartoum	3	4	4	5	3	6		4	3	6	4
Gezira	240	267	142	200	180	99		111		120	151
Blue Nile											
White Nile	12	3	1	3	1	2		4	45	15	10
Kassala	21	28	8	14	18	19		25		18	17
Red Sea							NODATA				
Northern Kordofan											
Southern Kordofan											
Northern Darfur											
Southern Darfur											
Upper Nile											
Junglei											
Bahr El Gazal											
Beheyra											
Eastern Equatoria											
Western Equatoria											
Total	289	312	166	231	218	142		169	79	199	201

Unit Yield	Wheat (Unit : t/ha)										
	Cropping Year										
	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86	Ave.
Northern Nile	1.35	1.49	1.09	1.65	1.52	2.12		2.05	1.64	1.90	1.68
Khartoum	1.43	1.59	1.59	1.49	1.43	1.43		1.90	1.43	1.43	1.51
Gezira	1.14	1.34	0.68	1.27	1.17	0.95		0.99		1.19	1.09
Blue Nile											
White Nile	1.10	0.65	1.19	1.43	0.79	0.79		1.36	1.65	1.19	1.32
Kassala	0.64	0.83	0.44	0.68	1.16	0.94		1.42		1.43	0.88
Red Sea							NODATA				
Northern Kordofan											
Southern Kordofan											
Northern Darfur											
Southern Darfur											
Upper Nile											
Junglei											
Bahr El Gazal											
Buheyra											
Eastern Equatoria											
Western Equatoria											
Total (ave.)	1.09	1.26	0.69	1.22	1.19	1.03		1.15	1.64	1.32	1.12

Source - Current Agricultural Statistics, Cas Vol I, No.4, Ministry of Agriculture.
 - Ministry of Agriculture and Natural Resources.
 - Agricultural Situation & Outlook, Vol II, No2, Ministry of Agriculture and Natural Resources.

Table-5 Grain and Oil Seeds Productions by Province (4/6)

Crooping Area	Groundnut (Unit : 1,000 ha)										
	Crooping Year										
	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86	Ave.
Northern Nile											
Khartoum											
Gezira	105	111	91	112	36	111		58	89	43	84
Blue Nile	25	26	36	52	44	53		34	37	19	36
White Nile	38	39	21	21	25	27		13	6	4	22
Kassala	16	26	14	18	15	19		17	14	1	16
Red Sea							NO DATA				
Northern Kordofan	188	357	311	324	315	328		210	160	55	250
Southern Kordofan	45	44	43	15	21	21		7	8	13	24
Northern Darfur	42	52	53	48	42	42		25	25	21	39
Southern Darfur	263	378	315	294	294	294		302	294	193	292
Upper Nile			6	7							1
Junglei		5									1
Bahr El Gazal	27	37	55	55							
Buheyral		16									
Eastern Equatoria		18			103	103		105	84	50	89
Western Equatoria	48	15	39	42							
Total	798	1,126	983	988	894	998		770	717	399	853

Production	Groundnut (Unit : 1,000 t)										
	Crooping Year										
	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86	Ave.
Northern Nile											
Khartoum											
Gezira	190	330	189	250	68	59		105	170	77	160
Blue Nile	38	43	48	112	76	90		60	69	17	61
White Nile	38	41	15	20	18	24		6	3	2	19
Kassala	26	59	17	52	30	41		21	20	1	30
Red Sea							NO DATA				
Northern Kordofan	123	210	200	175	225	302		42	11	26	146
Southern Kordofan	43	33	36	7	15	12		2	1	8	17
Northern Darfur	18	20	37	23	25	20		2	2	15	18
Southern Darfur	207	230	200	170	200	130		130	70	106	160
Upper Nile			3	1							0
Junglei		3									0
Bahr El Gazal	15	24	35	26							
Buheyral		10									
Eastern Equatoria		16			55	60		45	32	22	48
Western Equatoria	33	13	26	21							
Total	731	1,032	806	857	712	738		413	378	274	660

Unit Yield	Groundnut (Unit : t/ha)										
	Crooping Year										
	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86	Ave.
Northern Nile											
Khartoum											
Gezira	1.81	2.98	2.07	2.23	1.90	0.53		1.82	1.90	1.78	1.90
Blue Nile	1.51	1.63	1.34	2.17	1.74	1.70		1.74	1.89	0.88	1.70
White Nile	0.99	1.04	0.71	0.93	0.71	0.88		0.48	0.48	0.48	0.85
Kassala	1.63	2.27	1.23	2.88	2.04	2.12		1.25	1.40	1.19	1.91
Red Sea							NO DATA				
Northern Kordofan	0.65	0.59	0.64	0.54	0.71	0.92		0.20	0.07	0.48	0.58
Southern Kordofan	0.95	0.75	0.84	0.48	0.71	0.57		0.30	0.13	0.63	0.73
Northern Darfur	0.43	0.38	0.70	0.48	0.60	0.48		0.08	0.08	0.71	0.46
Southern Darfur	0.79	0.61	0.63	0.58	0.68	0.44		0.43	0.24	0.55	0.55
Upper Nile			0.48	0.15							0.31
Junglei		0.55									0.55
Bahr El Gazal	0.55	0.66	0.64	0.47							
Buheyral		0.61									
Eastern Equatoria		0.87			0.53	0.58		0.49	0.38	0.44	0.54
Western Equatoria	0.68	0.86	0.66	0.51							
Total (ave.)	0.92	0.92	0.82	0.87	0.80	0.74		0.54	0.53	0.69	0.77

Source - Current Agricultural Statistics, Cas Vol 1, No.4, Ministry of Agriculture.
 - Ministry of Agriculture and Natural Resources.
 - Agricultural Situation & Outlook, Vol III, No.2, Ministry of Agriculture and Natural Resources.

Table-5 Grain and Oil Seeds Productions by Province (5/6)

Cropping Area	Sesami (Unit : 1,000 ha)										
	Cropping Year										
	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86	Ave.
Northern Nile											0
Khartoum Gezira											
Blue Nile	179	195	155	163	164	190		193	116	349	189
White Nile	35	39	30	15	17	17		11	6	12	20
Kassala	168	144	81	143	133	106		179	144	181	142
Red Sea							NO DATA				0
Northern Kordofan	378	399	378	304	305	335		292	266	273	326
Southern Kordofan	48	31	48	32	52	52		82	84	116	61
Northern Darfur	8	7	7	5	5	5		4	4	17	7
Southern Darfur	53	110	74	76	74	74		78	76	42	73
Upper Nile	12	6	21	34	25	8		6	13	8	15
Junglei											0
Bahr El Gazal	37	34	45	42							
Buheyral		13									
Eastern Equatoria		7			71	71		69	59	42	62
Western Equatoria	26	6	19	18							
Total	944	992	857	831	845	858		914	768	1,039	894

Production	Sesami (Unit : 1,000 t)										
	Cropping Year										
	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86	Ave.
Northern Nile											
Khartoum Gezira											
Blue Nile	52	75	48	51	50	64		56	33	27	51
White Nile	10	14	11	9	6	6		3	1	1	7
Kassala	59	46	26	54	48	40		47	39	37	44
Red Sea							NO DATA				
Northern Kordofan	63	70	70	60	60	70		28	6	20	50
Southern Kordofan	15	9	14	11	15	17		29	8	25	16
Northern Darfur	2	2	2	1	1	1		1	1	3	2
Southern Darfur	17	15	12	10	12	17		20	21	8	15
Upper Nile	3	2	6	9	7	3		2	4		4
Junglei											
Bahr El Gazal	10	20	18	16							
Buheyral		5									
Eastern Equatoria		3			22	24		20	17	10	21
Western Equatoria	7	3	6	6							
Total	238	264	215	227	221	242		206	130	131	209

Unit Yield	Sesami (Unit : t/ha)										
	Cropping Year										
	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86	Ave.
Northern Nile											
Khartoum Gezira											
Blue Nile	0.29	0.38	0.31	0.31	0.31	0.34		0.29	0.29	0.08	0.27
White Nile	0.29	0.35	0.37	0.60	0.36	0.36		0.29	0.16	0.09	0.34
Kassala	0.35	0.32	0.32	0.38	0.36	0.38		0.26	0.27	0.20	0.31
Red Sea							NO DATA				
Northern Kordofan	0.17	0.18	0.19	0.20	0.20	0.21		0.10	0.02	0.07	0.15
Southern Kordofan	0.31	0.29	0.29	0.35	0.29	0.33		0.35	0.09	0.22	0.26
Northern Darfur	0.25	0.30	0.30	0.22	0.22	0.20		0.24	0.24	0.18	0.23
Southern Darfur	0.32	0.14	0.16	0.13	0.16	0.23		0.26	0.28	0.19	0.20
Upper Nile	0.26	0.32	0.29	0.26	0.28	0.36		0.32	0.32	0.60	0.27
Junglei											
Bahr El Gazal	0.27	0.59	0.40	0.38							
Buheyral		0.37									
Eastern Equatoria		0.45			0.31	0.34		0.29	0.29	0.24	0.34
Western Equatoria	0.26	0.48	0.41	0.34							
Total (ave.)	0.25	0.27	0.25	0.27	0.26	0.28		0.23	0.17	0.13	0.23

Source - Current Agricultural Statistics, Cas Vol I, No.4, Ministry of Agriculture.
 - Ministry of Agriculture and Natural Resources.
 - Agricultural Situation & Outlook, VolII, No2, Ministry of Agriculture and Natural Resources.

Table-5 Grain and Oil Seeds Productions by Province (6/6)

Area	Cotton (Lint)										(Unit : 1,000 ha)
	Crooping Year										
	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86	Ave.
Northern Nile	3	3	2	3	3	3			3	2	2
Khartoum											
Gezira	210	219	209	227	210	183		211	202	173	205
Blue Nile	50	73	87	89	98	108		90	92	84	86
White Nile	44	45	37	41	26	40		26	27	22	34
Kassala	57	53	42	30	26	29		40	39	29	39
Red Sea	5	19	9	5	6	8		11	4	13	9
Northern Kordofan							NO DATA				
Southern Kordofan	50	45	39	20	23	25		37	38	15	32
Northern Darfur											
Southern Darfur											
Upper Nile											
Junglei											
Bahr El Gazal											
Buheyrat											
Eastern Equatoria											
Western Equatoria	5	14			13	13		13	13	11	9
Total	424	470	425	415	404	408		428	417	348	415

Production	Cotton (Lint)										(Unit : 1,000 t)
	Crooping Year										
	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86	Ave.
Northern Nile	4	2	2	2	3	3			3		2
Khartoum											
Gezira	257	316	231	203	163	241		353	353		265
Blue Nile	75	116	84	85	71	151		176	176		117
White Nile	40	45	33	18	22	34		30	36		32
Kassala	60	60	24	10	16	33		50	53		38
Red Sea	3	2	3	2	3	4		5	1		3
Northern Kordofan							NO DATA				
Southern Kordofan	16	14	1	3	6	5		13	19		10
Northern Darfur											
Southern Darfur											
Upper Nile											
Junglei											
Bahr El Gazal											
Buheyrat											
Eastern Equatoria											
Western Equatoria	2	4			2	3		2	2		2
Total	457	559	378	323	286	474		629	643		469

Unit Yield	Cotton (Lint)										(Unit : t/ha)
	Crooping Year										
	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86	Ave.
Northern Nile	1.36	0.79	0.95	0.79	1.19	1.19			1.15		1.08
Khartoum											
Gezira	1.22	1.44	1.10	0.89	0.77	1.32		1.67	1.75		1.29
Blue Nile	1.50	1.59	0.97	0.95	0.73	1.40		1.95	1.91		1.36
White Nile	0.92	1.01	0.89	0.44	0.86	0.85		1.15	1.32		0.94
Kassala	1.06	1.12	0.58	0.33	0.62	1.12		1.24	1.36		1.00
Red Sea	0.55	0.10	0.32	0.37	0.51	0.48		0.48	0.24		0.32
Northern Kordofan							NO DATA				
Southern Kordofan	0.32	0.31	0.03	0.15	0.26	0.20		0.36	0.50		0.30
Northern Darfur											
Southern Darfur											
Upper Nile											
Junglei											
Bahr El Gazal											
Buheyrat											
Eastern Equatoria											
Western Equatoria	0.40	0.28			0.16	0.24		0.16	0.16		0.21
Total (ave.)	1.08	1.19	0.89	0.78	0.71	1.16		1.47	1.54		1.13

Source - Current Agricultural Statistics, Cas Vol I, No.4, Ministry of Agriculture.
 - Ministry of Agriculture and Natural Resources.
 - Agricultural Situation & Outlook, VolII, No2, Ministry of Agriculture and Natural Resources.

Table--6 Population by Province

(Unit: 1,000)

Province		1973	1983	Growth Rate (%)	1986 (Estimation)
Northern	Urban	70	118	5.36	138
	Rural	310	306	-0.13	305
Nile	Urban	108	175	4.94	202
	Rural	476	475	-0.02	475
Khartoum	Urban	823	1,342	5.01	1,554
	Rural	327	460	3.47	509
Gezira	Urban	273	476	7.22	676
	Rural	1,640	1,549	-0.57	1,523
Blue Nile	Urban	142	209	3.94	235
	Rural	856	847	-0.11	844
White Nile	Urban	127	152	1.81	160
	Rural	766	792	0.33	800
Kassala	Urban	235	371	4.67	324
	Rural	841	1,141	3.10	1,251
Red Sea	Urban	179	261	3.84	292
	Rural	317	435	3.22	479
Northern Kordofan	Urban	165	339	7.47	421
	Rural	1,122	1,467	2.72	1,590
Southern Kordofan	Urban	118	158	2.96	172
	Rural	798	1,130	3.54	1,254
Northern Darfur	Urban	85	153	6.05	182
	Rural	851	1,175	3.28	1,294
Southern Darfur	Urban	113	153	3.08	168
	Rural	1,132	1,613	3.60	1,793
Upper Nile	Urban	19	71	14.09	105
	Rural	396	789	7.14	971
Junglei	Urban	18	18	0	18
	Rural	366	779	7.85	978
Bahr El Gazal	Urban	83	112	3.04	123
	Rural	832	1,381	5.20	1,608
Buheyra	Urban	43	34	-2.32	32
	Rural	430	739	5.56	869
Western Equatoria	Urban	36	49	3.13	54
	Rural	158	310	6.97	379
Eastern Equatoria	Urban	104	128	2.10	136
	Rural	462	919	7.12	1,130
Total		14,821	20,626	—	23,044

(Source) : Sudan Second Population Census 1973, Vol.1, Department of Statistics.
Third Population Census 1983, Ministry of National Planning.

Table--7 Existing Grain Storage Space in the Sudan(1982) (1/3)

(Unit : ton)

Province / District / Council	GRAIN				OIL & FLOWER ¹ (Public & Private)	Total Storage Capacity
	Public			Private		
	ABS	Other	Total			
<u>NORTHERN</u>	<u>2,500</u>	-	<u>2,500</u>	<u>4,250</u>	-	<u>6,750</u>
- Sukhot and Mahas	-	-	-	1,600	-	1,600
- Dongola	2,500	-	2,500	1,400	-	3,900
- Marowe	-	-	-	1,250	-	1,250
<u>NILE</u>	-	<u>2,500</u>	<u>2,500</u>	<u>10,100</u>	<u>6,650</u>	<u>19,250</u>
- Berber Town	-	-	-	1,000	-	1,000
- Berber	-	-	-	1,050	-	1,050
- Atbara Town	-	-	-	4,500	6,650	11,150
- Ed Damer Town	-	-	-	1,400	-	1,400
- Shendi Town	-	2,500	2,500	1,700	-	4,200
- Shendi	-	-	-	450	-	450
<u>RED SEA</u>	<u>75,000</u>	-	<u>75,000</u>	<u>301,800</u>	<u>396,150</u>	<u>772,950</u>
- Port Sudan Town	75,000	-	75,000	300,000	396,150	771,150
- Bisharin and Amara	-	-	-	-	-	-
- Tokar	-	-	-	700	-	700
- Sinkat	-	-	-	1,100	-	1,100
<u>KASSALA</u>	<u>116,000</u>	<u>114,800</u>	<u>230,800</u>	<u>15,300</u>	<u>15,100</u>	<u>261,200</u>
- Kassala Town	-	-	-	4,800	-	4,800
- Kassala	-	-	-	-	-	-
- Aroma	-	-	-	1,200	-	1,200
- New Halfa	10,000	17,300	27,300	1,800	15,000	44,100
- Gedaref North	-	31,200	31,200	1,750	-	32,950
- Gedaref South	-	-	-	500	-	500
- Qalaa En Nahal	-	33,100	33,100	1,250	-	34,350
- Gedaref Town	106,000	33,200	139,200	4,000	100	143,300
<u>KHARTOUM</u>	<u>10,700</u>	-	<u>10,700</u>	<u>24,000</u>	<u>32,200</u>	<u>66,900</u>
- Khartoum North Town	10,100	-	10,100	5,000	30,400	45,500
- Khartoum Town	-	-	-	10,000	-	10,000
- Omdurman	-	-	-	9,000	1,800	10,800
- Khartoum Rural	600	-	600	-	-	600
<u>BLUE NILE</u>	<u>43,600</u>	<u>67,800</u>	<u>111,400</u>	<u>11,700</u>	<u>28,300</u>	<u>151,400</u>
- Sennar	31,600	9,600	41,200	4,000	26,900	72,100
- Abu Hugar	-	-	-	1,500	-	1,500
- Singa	-	-	-	3,300	1,400	4,700
- Rufa'a Sharg	-	-	-	400	-	400
- El Kurmuk	-	-	-	500	-	500
- El Roseires	12,000	58,200	70,200	2,000	-	72,200

Table-7 Existing Grain Storage Spase in the Sudan(1982) (2/3)

(Unit : ton)

Province / District / Council	GRAIN				OIL & FLOWER ¹ (Public & Private)	Total Storage Capacity
	Public			Private		
	ABS	Other	Total			
WHITE NILE	3,800	14,800	52,800	8,850	26,450	88,100
-Ed Dueim Town	-	-	-	1,850	11,300	13,150
-Ed Dueim	-	4,200	4,200	1,200	-	5,400
-Kosti Town	10,000	-	10,000	3,500	8,150	21,650
-Kosti	-	10,600	10,600	2,300	7,000	19,900
-Rabak	28,000	-	28,000	-	-	28,000
GEZIRA	12,000	50,100	62,100	15,850	41,150	119,100
-Wad Medani Town	12,000	20,700	32,700	5,000	29,000	58,600
-Rufa'a Town	-	16,600	16,600	1,000	-	17,600
-El Mi'eling	-	-	-	2,125	400	2,550
-El Meheiriba	-	9,800	9,800	400	16,650	26,850
-El Hasaheisa	-	-	-	2,450	2,500	4,950
-El Shukriya Rufa'ar	-	-	-	700	-	700
-El Managil	-	-	-	1,500	700	2,200
-El Medina Arab	-	3,000	3,000	2,250	-	5,250
-El Hosh	-	-	-	400	-	400
NORTHERN KORDOFAN	-	-	-	9,400	18,250	27,650
-En Nahud Town	-	-	-	1,700	1,800	3,500
-Hamar	-	-	-	500	-	500
-El Obeid Town	-	-	-	4,000	13,000	17,000
-Bederia	-	-	-	-	-	-
-Kababish	-	-	-	100	-	100
-Dar Hamid	-	-	-	700	-	700
-Eastern Kordofan	-	-	-	2,400	3,450	5,850
SOUTHERN KORDOFAN	-	32,000	32,000	7,500	200	39,700
-Meseiria	-	-	-	2,000	-	2,000
-Northern Jebels	-	32,000	32,000	1,400	-	33,400
-Southern Jebels	-	-	-	1,300	-	1,300
-Tagall	-	-	-	2,800	200	3,000
NORTHERN DARFUR	-	-	-	8,200	400	8,600
-Northern Darfur	-	-	-	800	200	1,000
-Dar Masallt	-	-	-	2,900	200	3,100
-El Fasher	-	-	-	3,700	-	3,700
-Eastern Darfur	-	-	-	800	-	800
SOUTHERN DARFUR	-	600	600	8,200	8,200	17,000
-Western Darfur	-	600	600	1,200	8,200	10,000
-Southern Darfur	-	-	-	7,000	-	7,000

Table-7 Existing Grain Storage Space in the Sudan(1982) (3/3)

(Unit : ton)

Province / District / Council	GRAIN				OIL & FLOWER* (Public & Private)	Total Storage Capacity
	Public			Private		
	ABS	Other	Total			
BAHR EL GAZAL	--	<u>4,200</u>	<u>4,200</u>	<u>5,500</u>	<u>800</u>	<u>10,500</u>
- Raja	--	--	--	600	200	800
- Aweil	--	2,100	2,100	1,300	200	3,600
- Gogrial	--	--	--	--	200	200
- Wau	--	2,100	2,100	3,600	200	5,900
BUHEYRAT	--	--	--	<u>3,100</u>	<u>600</u>	<u>3,700</u>
- Thiet	--	--	--	600	200	800
- Rumbek	--	--	--	1,500	200	1,700
- Yirol	--	--	--	1,000	200	1,200
UPPER NILE	<u>19,300</u>	<u>25,500</u>	<u>44,800</u>	<u>11,000</u>	<u>500</u>	<u>56,300</u>
- Malakal Town	--	--	--	3,000	500	3,500
- Shilluk	--	--	--	--	--	--
- Renk	19,300	25,500	44,800	8,000	--	52,800
- Bentiu	--	--	--	--	--	--
- Sobat	--	--	--	--	--	--
- El Nasir	--	--	--	--	--	--
JUNGLEI	--	--	--	--	--	--
- Zaraf	--	--	--	--	--	--
- Lau Nuer	--	--	--	--	--	--
- Bor	--	--	--	--	--	--
- Pibor	--	--	--	--	--	--
WESTERN EQUATORIA	--	--	--	<u>3,200</u>	<u>600</u>	<u>3,800</u>
- Tombura	--	--	--	900	200	1,100
- Yambio	--	--	--	1,600	200	1,800
- Maridi	--	--	--	700	200	900
EASTERN EQUATORIA	--	<u>3,700</u>	<u>3,700</u>	<u>5,700</u>	<u>600</u>	<u>10,000</u>
- Juba Town	--	3,700	3,700	3,500	200	7,400
- Juba	--	--	--	--	--	--
- Torit	--	--	--	1,000	200	1,200
- Eastern Equatoria	--	--	--	300	--	300
- Yei	--	--	--	900	200	1,100
TOTAL	317,100	316,000	633,100	453,650	576,150	1,662,900

*1 Grains for flower and oil mills

(Source) - Grain Storage Study Sudan, Federal Republic of German, December 1982.

-Data from ABS.

Table-8 Estimation of Additional Storage Space by Province

(1/2)

Description	Sorghum	Millet	Wheat	Oil-seed
1. Province	<u>Blue Nile</u>			
2. Harvested area (1,000 ha) *1	710	27	0	311
3. Unit yield (t/ha) *1	0.67	0.41	0.00	0.91
4. Total production (1,000 t) *1 (2 x 3)	475	11	0	284
5. Farm Population (1986) *2	844,000			
6. Per capita consumption + Storage *3 (kg/capita/year)	130	31	37	54
7. Total consumption (1,000 t) (5 x 6)	109	26	31	46
8. Seed / animal feed (1,000 t) *4	19.0	0.4	0.0	11.4
9. Transportation loss (1,000 t) *5	9.5	0.2	0.0	5.7
10. Storage loss in the farm store (1,000 t) *6	47.5	1.1	0.0	28.4
11. Total annual disposal (1,000 t) (7+8+9+10)	185	28	31	91
12. Marketable Surplus (1,000 t)	290	0	0	193
13. Storage requirement (1,000 t) *7	207	0	0	138

14. Total storage requirement (1,000 t)	345			
15. Existing storage capacity (1,000 t)	151			
16. Storage capacity to be planned (1,000 t)	0			
17. Shortage / Surplus of storage capacity	-194			

Description	Sorghum	Millet	Wheat	Oil-seed
1. Province	<u>White Nile</u>			
2. Harvested area (1,000 ha) *1	229	38	7	76
3. Unit yield (t/ha) *1	0.51	0.45	1.32	0.96
4. Total production (1,000 t) *1 (2 x 3)	116	17	10	73
5. Farm Population (1986) *2	646,000			
6. Per capita consumption + Storage *3 (kg/capita/year)	130	31	37	54
7. Total consumption (1,000 t) (5 x 6)	84	20	24	35
8. Seed / animal feed (1,000 t) *4	4.6	0.7	0.4	2.9
9. Transportation loss (1,000 t) *5	2.3	0.3	0.2	1.5
10. Storage loss in the farm store (1,000 t) *6	11.6	1.7	1.0	7.3
11. Total annual disposal (1,000 t) (7+8+9+10)	102	23	26	47
12. Marketable Surplus (1,000 t)	14	0	0	26
13. Storage requirement (1,000 t) *7	10	0	0	19

14. Total storage requirement (1,000 t)	29			
15. Existing storage capacity (1,000 t)	83			
16. Storage capacity to be planned (1,000 t)	0			
17. Shortage / Surplus of storage capacity	54			

*1 : Average value (1976/77 - 1985/86)

*2 : Estimated population

*3 : 20% of per capita consumption

*4 : 4 % of Total production

*5 : 2 % of Total production

*6 : 10 % of Total production

*7 : Turnover rate = 1.4

Table-8 Estimation of Additional Storage Space by Province

(2/2)

Description	Sorghum	Millet	Wheat	Oil-seed
1. Province	<u>Kassala</u>			
2. Harvested area (1,000 ha) *1	1,016	3	19	196
3. Unit yield (t/ha) *1	0.66	0.40	0.88	0.66
4. Total production (1,000 t) *1 (2 x 3)	676	1	17	130
5. Farm Population (1986) *2	1,251,000			
6. Per capita consumption + Storage *3 (kg/capita/year)	130	31	37	54
7. Total consumption (1,000 t) (5 x 6)	162	39	47	68
8. Seed / animal feed (1,000 t) *4	27.0	0.0	0.7	5.2
9. Transportation loss (1,000 t) *5	13.5	0.0	0.3	2.6
10. Storage loss in the farm store (1,000 t) *6	67.6	0.1	1.7	13.0
11. Total annual disposal (1,000 t) (7+8+9+10)	270	39	49	88
12. Marketable Surplus (1,000 t)	406	0	0	42
13. Storage requirement (1,000 t) *7	290	0	0	30

14. Total storage requirement (1,000 t)	320			
15. Existing storage capacity (1,000 t)	261			
16. Storage capacity to be planned (1,000 t)	3			
17. Shortage / Surplus of storage capacity	-56			

Description	Sorghum	Millet	Wheat	Oil-seed
1. Province	<u>Gezira</u>			
2. Harvested area (1,000 ha) *1	226	5	139	289
3. Unit yield (t/ha) *1	1.00	0.22	1.09	1.90
4. Total production (1,000 t) *1 (2 x 3)	225	1	151	550
5. Farm Population (1986) *2	1,708,000			
6. Per capita consumption + Storage *3 (kg/capita/year)	130	31	37	54
7. Total consumption (1,000 t) (5 x 6)	221	53	64	92
8. Seed / animal feed (1,000 t) *4	9.0	0.0	6.0	22.0
9. Transportation loss (1,000 t) *5	4.5	0.0	3.0	11.0
10. Storage loss in the farm store (1,000 t) *6	22.5	0.1	15.1	55.0
11. Total annual disposal (1,000 t) (7+8+9+10)	257	53	88	180
12. Marketable Surplus (1,000 t)	0	0	63	370
13. Storage requirement (1,000 t) *7	0	0	45	264

14. Total storage requirement (1,000 t)	309			
15. Existing storage capacity (1,000 t)	119			
16. Storage capacity to be planned (1,000 t)	0			
17. Shortage / Surplus of storage capacity	-190			

*1 : Average Value (1976/77 - 1985/86)

*2 : Estimated population

*3 : 20% of per capita consumption

*4 : 4 % of Total production

*5 : 2 % of Total production

*6 : 10 % of Total production

*7 : Turnover rate = 1.4

ANNEX E

GENERAL CONDITION OF SOCIO-ECONOMY

The Sudan is located in the northeast of Africa. It is the largest country in Africa with 250 km² of land (6.8 times the size of Japan). It is bounded by Egypt to the north, by Ethiopia to the east, by Kenya, Uganda and Zaire to the south, and by Central Africa, Chad and Libya to the west. The northeast of the country is bounded by the Red Sea. The only trade port in the Sudan, Port Sudan, is situated in this location. The Nile flows from south to north passing through the center of the country, and its two largest tributaries, the Blue Nile and the White Nile join at Khartoum, the capital of the country.

The population of Sudan in 1973 is 14,820,000 (Census) and that in 1983 is 20,630,000 (census). Calculating from the growth rate of 3.36% between 1973 and 1983, the population in 1986 is estimated at 23,040,000

Despite the fact that the Sudan has vast territory and that 27% is suitable for farming, agriculture is only practiced in 20% of the potential arable land. This is the reason why the Sudan is looked to as a granary of Arabia.

Present land use in the Sudan is summarized as follows:

Table A-1 Present Land Use in the Sudan

Category	Area (10 ⁶ ha)	Percentage (%)
(1) Potential arable land	<u>68.4</u>	<u>27.3</u>
(a) Un-used land	56.0	22.3
(b) Arable land	12.4	22.3
- Fallow	12.4	5.0
- Irrigated land	1.7	0.7
- Rain-fed agricultural land	9.9	4.0
(2) Grass land Puinate	<u>24.0</u>	<u>9.6</u>
(3) Forest	<u>48.0</u>	<u>19.2</u>
(4) Others (Non-arable land)	<u>97.2</u>	<u>38.7</u>
(5) Wet land	<u>13.0</u>	<u>5.2</u>
Total	250.6	100.0

Sources: Estimated from FAO Production Year Book, 1984.

Sudan is one of the least less developed countries and the most seriously affected countries by the Oil Crisis. Gross domestic product (GDP) in 1983/84 (in terms of factor cost) was estimated to be US\$6,900 million. (In the Sudan, there are two official rates, rates before and after devaluation. In this case US\$1.00 = LS 1.30 is used as the official rate before devaluation.) This corresponds to US\$340 of GDP per capita in 1983 when population was estimated at 20,630,000. However, this is equivalent to only US\$180 in terms of the actual exchange rate (US\$1 = LS2.50). External debt of the Sudan in 1984 was equivalent to US\$5,700 million, which exceeded GDP (US\$3,600 million) in real terms. Reschedulings have been done since 1981. According to the estimate of the World Bank, repayment for external debt will amount to US\$840 million in 1986. This is equivalent to 1.4 times the annual total export value of US\$600 million (average between 1981 and 1983). Rescheduling of the creditor countries and the creditor banks will be necessary since it is impossible for the Sudan to repay the debt. (Refer to Table A-2 and attached Tables 1 - 4.)

In 1978, the Sudan started reconstructing the national economy by cutting-down the national budget under the guidance of IMF/World Bank. Oil resources were exploited in the south to provide the possibility for the self-sufficiency of oil, since oil imports has caused deterioration in the balance of payments.

Table A-2 The Sudan - Country Data

Table A.2 the Sudan - Country Data

I.	Area :	2,505,800 km ²	(Existing and Potential Agricultural Land: 684,000 km ²)				
II.	Population						
	1) Population	:	20,564,000	(Rural Population: 75.9%)			
	2) Population in 2000	:	33,000,000				
	3) Growth Rate	:	3.1% p.a.	(Urban Area: 5.8% p.a.)			
	4) Population Density	:	7.8/km ²	(Existing Agricultural Area: 28.6/km ²)			
	5) Labor Force	:	6,311,000	(Agricultural: 78%, Industry: 10%)			
III.	Gross Domestic Product (GDP)						
	1) GDP at Factor Cost (1983/84)	:	LS 8,996 million	(Agriculture: 29.6%, Services: 23.2%)			
	2) Growth Rate at Constant Price (1976/78 - 1981/83 Average)	:	0.5%	(Agriculture: -3.4%, Services: 4.5%)			
IV.	Import and Export (1981/82 - 1983/84 Average, US\$, Million (%))						
	1) Export	:	579 (100.0)	2) Import	: 1,559 (100.0)		
	- Cotton	:	194 (33.5)	- Intermediate Goods	: 390 (25.0)		
	- Livestock	:	73 (12.6)	- Petroleum	: 343 (22.0)		
	- Food Grain	:	61 (10.2)	- Food	: 260 (16.7)		
	- Sesame	:	53 (9.2)	- (Sugar	: 75 (48.0))		
	- Gum Arabic	:	51 (8.9)	- Transport Equipment	: 126 (8.1)		
	3) Balance of trade						
	- 1979/80	:	-745				
	- 1980/81	:	-1,031				
	- 1981/82	:	-1,342				
	- 1982/83	:	-943				
	- 1983/84	:	-656				
V.	Balance of Payment (US\$Million)						
			1979/80	1980/81	1981/82	1982/83	1983/84
	Current Balance		-648	-881	-1,252	-829	-646
	Capital Balance		802	859	851	805	584
	Errors and Omissions		-119	-198	-117	-196	203
	Total Balance		-75	220	-518	-220	141
VI.	Control Government Operations (1983/84, L\$Millions)						
	Revenue	Current Expenditure	Current Balance	Development Expenditure and others	Financing		
	1,469	-1,300	169	-846	766		
VII.	External Debt						
			1980	1981	1982	1983	1984
	Debt disbursed and outstanding (US\$Million)		3,802	4,541	5,117	5,682	5,659
	Debt service ratio*		10.1	11.4	12.5	10.7	13.6
	* Total Debt Services/Exports of Goods & Services.						

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