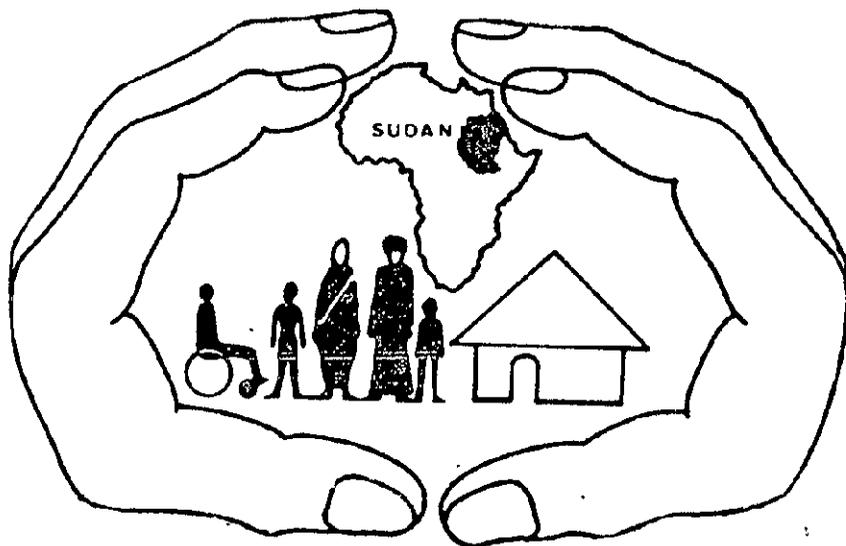


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LSN - 47710

NATIONAL COMMITTEE FOR AID TO REFUGEES



1980: THE YEAR OF THE
REFUGEE IN SUDAN

**Documentation For The
June 20-23
Conference , Khartoum , 1980**

BACKGROUND AND
PROJECT SUMMARIES

VOLUME 1

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PREFACE

The Sudan has given asylum to refugees from four of its neighbouring countries, in numbers which now approach half a million. The pressures thus imposed on a nation already affected by the hardships common to all less developed countries coincide in time with the further strain imposed by a world wide economic recession. The Sudan has extended its hospitality to the utmost, but the needs and numbers of its refugees have grown faster than its resources, or those traditionally made available by the United Nations. Now more help is needed and the Government of the Sudan turns to the International Community, inviting it to the conference to be held under the auspices of the National Committee for Aid to Refugees in Khartoum in 1980, the Year of the Refugee in Sudan; to begin on June 20, African Refugee Day.

It is the first initiative of its kind taken by a Third world Government, undertaken with the realization that a problem which is extraordinary in magnitude and complexity needs extraordinary solutions. As a first step it needs clarification. The Technical Committee, working under severe constraints of time and resources, has attempted to clarify some of the aspects, although much remains to be done. In its widest context the "refugee problem" is twofold; that of the world's problems in coping with its refugees, and the refugees' problem in coping with the world. The emphasis of the work done under the aegis of the Government of Sudan has by necessity been on the first aspect, which has been approached with a pragmatic, problem solving attitude based on the premise that enduring problems need durable solutions.

The documentation for the Conference will be presented in three volumes. The first gives brief background descriptions of the Sudan, the refugees situation, the agricultural sector, services like water supply, health and education, and provides short outlines of existing and proposed projects for assistance to refugees.

Volume II will contain a more detailed statement of current needs and how they can best be met; a description of the Government's policy and master strategy and details of the overall implementation plan for the extended settlement programme, and analysis of the economics of complementary project activities.

Volume III consists largely of detailed project descriptions and proposals for existing and planned settlements, as well as for projects outside the actual settlements intended to providing training and other services.

Acknowledgements

The National Committee for Aid to Refugees of the Government of the Republic of the Sudan acknowledges with grateful thanks the generous and effective help given by the local and external offices of the International Agencies. Special thanks are due to the following organisations for their help in producing this volume :-

United States Agency for International Development (USAID)

United Nations High Commissioner for Refugees (UNHCR)

Commission of the European Economic Community (EEC)

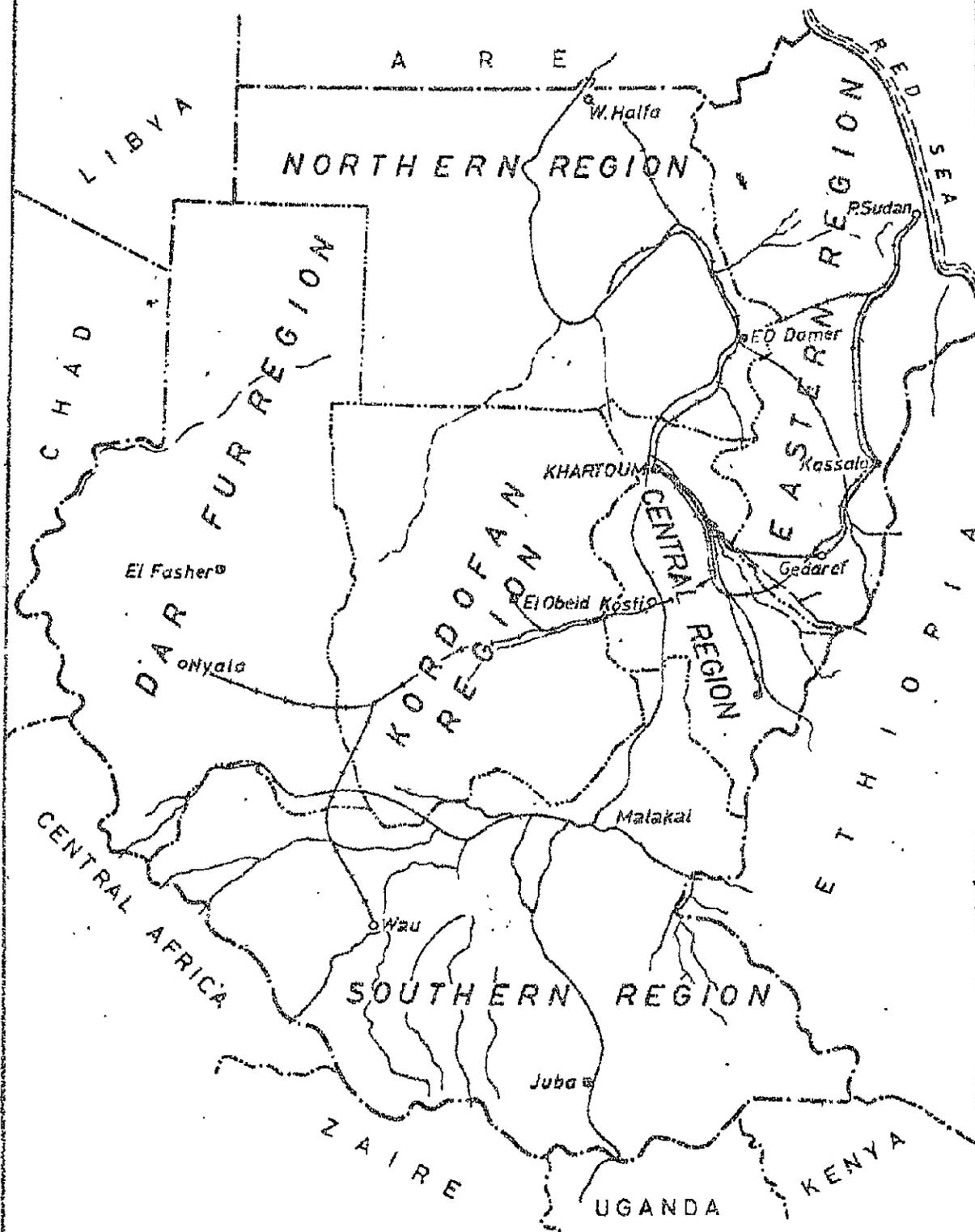
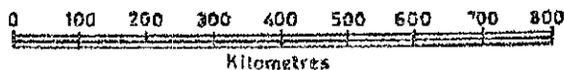
United Nations Development Program (UNDP)

International Council of Voluntary Agencies (ICVA)

United Nations Economic Commission for Africa (UNECA)

Democratic Republic Of The Sudan

REGIONS OF THE SUDAN



- Regional capital ◻
- Paved road ———
- Railway ———
- Regional boundary - - - - -
- International boundary - - - - -

INTRODUCTION TO THE SUDAN

GEOGRAPHICAL SURVEY

The Sudan is the largest country in Africa and the tenth largest country in the world. Its area is 2,505,813 square kilometers, equal to the combined expanse of Britain and Ireland, France, Italy, Norway, Sweden, Spain, Portugal, Belgium and Denmark. The country stretches into the heart of Africa; from its northern limits to its southern boundaries with Uganda and Zaire the distance is as much as 2,300 kilometers, whilst its width from east to west in certain places is about 1,600 kilometers.

Sudan's boundaries vary in character; some pass through desert areas; others bisect territories inhabited by tribes which are almost unaffected by the boundary; some are closely regulated by political authorities. The Sudan adjoins eight countries. To the north lie Egypt and Libya. In the east the frontier between the Sudan and Ethiopia stretches from Halaib at the north-east corner to the Boma plateau dividing the Beni Amir and Fabab tribes and then southwards through the land of the Anuak tribe on the Baro river. Astronomical coordinates determine the boundaries between Kenya and the Sudan in the extreme south-east. The border between the Sudan and Uganda divides the Acholi tribe and then runs westward following the water-shed of the Nile and the Congo water system thus dividing the Azande between the Sudan, Zaire and the Central African Republic. The boundary between the Sudan and Chad is determined by a number of water courses and then runs northwards following map coordinates through empty desert until it joins the northern frontier with Libya at the north-west corner.

From the north down to the south, the land provides a cross-section of varied physical settings with the Nile as a base line. This physical setting which can be divided into three geographical zones determines to a large extent the type of settlement and mode of life. North of the Atbara river is the desert where rain is scanty. South of the Atbara, the desert gives way to undulating sand passing from semi-desert to savannah extending from the White Nile through Kordofan and Darfur and beyond.

South of the sandy zone is the clay belt, which extends from the southern part of the Red Sea Hills near Kassala westwards, across the country through Kordofan to the southern part of Darfur. Agriculture by irrigation and rain is practised and within this belt the great irrigational and mechanised crop production schemes are developed in which sorghum, wheat, cotton, groundnuts and sesame are cultivated. The region is populated by sedentary and nomadic peoples.

South of this belt lies the region of the tropics which contains both a clay zone in the east and an area dominated by ironstone in the west. The vegetation turns into tall grass with the trees becoming numerous and taking the shape of tropical forests near the country's southern borders. Pastoralists and sedentary peoples practising shifting cultivation inhabit the region.

POPULATION

Generally the Sudan is more of a political unit than an ethnological one. Within its vast area live multitudes of tribes and peoples differing in appearance as well as in modes of life. It has been affected by the migration of tribes and peoples at different times and in different places. Admixture has been going on for a long time and the result of this is a multiracial society of a wide spectrum of colours and features. The population census carried out in 1973 revealed that the number was 14.9 million. Given the stable growth rate of 2.5% - low compared to neighbouring countries - today's population is estimated at 17,832,000 in 1980 according to official statistics. Out of this number, some two million illegal immigrants from West Africa reside in the country.

Arabic is the leading language in the whole of the Sudan and is the lingua franca everywhere. English is the official language in the Southern Region.

HISTORICAL AND POLITICAL BACKGROUND

Cultural contacts between the Northern Sudan and the old civilisation of Egypt have existed since the year 3000 B.C. Around 750 B.C., the kingdom of Kush was established in the present Northern Sudan which was later

succeeded by the Merowitic Kingdom 150 miles north of the present capital, Khartoum.

Christianity gained access to the Sudan in the sixth century A.D. By the seventh century Christian Nubia was bound to be affected by the rise of Islam. Migration by the Arabs to the Sudan took several routes and in 1504 the Funj Kingdom was founded which lasted till 1820 when it was overrun by the Turko-Egyptian invasion.

The oppressive rule of the government at that time created discontent which took the form of a popular revolt led by Al-Mahdi.

The Mahdist state continued until 1898 when it fell after the battle of Omdurman. The Sudan came under the Condominium rule, but was actually under the control of the British. The turn of the century saw the establishment of the present international boundaries. The growth of the national movement led by the Graduates Congress in the thirties resulted in the emergence of political parties. By the end of the Second World War, the right of self-determination became a public demand, and full national independence was achieved in 1956.

The Sudan had to face hordes of problems relating to its national unity and economic development. On the eve of independence, the rebellion in the Southern Provinces began. The prolonged state of insecurity led to considerable loss in lives, and hundreds of thousands sought refuge in neighbouring countries. This grave national problem was brought to an end by the conclusion of the Addis Ababa Agreement in March 1972. The Agreement recognised the special ethnical and cultural characteristics of the people of Southern Sudan and provided for autonomous rule within a unified government.

POLITICAL AND ADMINISTRATIVE STRUCTURE

The May Revolution of 1969 marked a new political era in which a single party presidential system was instituted with the Sudanese Socialist Union (SSU) as a mass political party.

The country is administratively divided into fifteen provinces. At the provincial level, the Commissioner of the province is the Secretary General

of the SSU. Recently the system of Regional Government has been applied to the whole country. The Governor of the region is appointed by the President. In addition to the Southern Region which has existed since 1972, the rest of the country has been divided into the Eastern Region, the Northern Region, the Central Region, Kordofan and Darfur Region. Regional Governments will enjoy a wide degree of autonomy.

THE ECONOMY

The vastness of the country provides extensive land for agriculture and grazing upon which the great majority of the population depend.

Agriculture accounts for 40% of the country's gross domestic product (GDP) and about 80% of the employment. Just under one third of the Sudan's 555 million feddans is suitable for agriculture. Of this about 120 million feddans are arable while 80 million feddans are used as range land. Currently, about 26 million feddans of the arable land are farmed with four million of these under irrigation. The Sudan is one of the twentyfive least developed countries. Its per capita income is estimated in 1979 at US\$ 300. Yet, because of its vast potentials, the country has been labelled as the future bread basket for the Middle East and even for the world.

Agriculture, the growth sector, witnessed a growth rate of 4.2% while GDP increased by 2.1% during the 1960s. During the 1970s the GDP increased by 3.4% while the agricultural sector increased by 2.3%. This was due to the increase in the rate of growth of food production and processing industries share in the GDP. In the 1960s progress in agriculture was strongly assisted by the completion of some large irrigation projects while in the 1970s progress has been based on substantial extension of mechanised farming in rain fed areas as well as increased cultivation of cash crops in the traditional agricultural sector. Although the Sudan has great potential for a rapid increase in the output of crops, the production of certain crops in 1978/79 witnessed a decline due to the problems associated with flood and rain wash.

Livestock for 1978/79 is estimated at 49 million heads and meat production at 388 thousand tons. Fishery products are estimated at 25 thousand tons. Forests cover 23.3% of the total area of the Sudan. Their main products are Gum Arabic (32 thousand tons) and wood products which could be exploited at an annual rate of about 67 million cubic meters.

In the field of manufacturing, the Sudan has neither arrived very far in import substitution nor exploited much of its possibilities to process domestic raw materials, first of all agricultural commodities. The Sudan will change from an importer of sugar to an exporter when the factories under construction are completed. The new twenty textile mills will significantly contribute to a wider geographical distribution of the benefits of economic growth besides reducing textile imports and raising the domestic value added to the cotton crop. Another important domestic raw material is oil seeds which to an increasing degree are processed into oils.

Mining activities will undoubtedly also be expanded although hitherto no spectacular finds of valuable minerals have been made. Relatively rich mineral deposit will remain unutilized because of costs of building and operating the needed transport system.

Oil exploration is going on, and oil has been found although not yet in significantly large quantities. There is undoubtedly a need to accelerate efforts to find mineral wealth in Sudan, but development prospects in other economic activities are more reliable in the short run.

Two particularly critical sectors are transport and production of electricity which must expand in line with the increased output of goods. For the time being both sectors represent severe bottlenecks in the Sudanese economy. The ageing river transport system linking north and south is one of the great constraints affecting the flow of goods and relief.

The construction industry is also a key sector whose output seems to be slowed down by shortages of building materials, or transport bottlenecks. The Government is, however, fully aware of the importance of strengthening

the construction industry itself, through training of manpower and other measures.

Current foreign exchange earnings from export of goods and services or immigrant remittances and other invisibles are not rising fast enough to pay for the rapidly rising import requirements for capital equipments, raw materials, semi-manufactured goods, fuel and spare parts to operate the growing modern sector of the economy at full capacity. In addition, servicing of growing external debt will, in many developing countries, rise much faster than export earnings, and the Sudan is no exception. Large amounts of foreign capital are needed to maintain an import level which on the one hand permits a continued implementation of development projects and the fullest possible operation of existing installations, and on the other hand an adequate import of necessities and critical consumer goods in order to avoid inflationary pressures, black marketing, hoarding and speculation. During the period 1969/70 - 74/75 imports of goods rose from £S 91 to £S 281 million, while exports only increased from £S 101 to £S 158 million. A surplus of £S 10 million was turned into a trade deficit of £S 120 million in the course of five years. During the same period the deficit in the invisible balance rose from £S 11 to £S 39 million.

Internal financial constraints have turned out to be as decisive as the external ones. The public savings consist primarily of public tax revenues in excess of recurrent government expenditure plus surplus from public enterprises and other non-tax revenues. However, recurrent government expenditure has grown faster than total government revenue. Hence the government development expenditure is either financed by foreign capital inflow or by deficit financing. The Government is compelled to reduce locally financed development expenditure which makes local financing the ultimate constraint on government expenditure. A large proportion of official development assistance, as well as a large proportion of foreign loans for development projects and programmes, are tied to specific projects or programmes which have exhausted

most of the available local financial resources so that very little is left for projects and programmes that do not require large amounts of foreign exchange.

The fiscal year 1979/80 represents the third year of the Six Year Plan for economic and social development. It is the first phase of a perspective plan extending over eighteen years (1977/78 - 94/95). It sets quantitative targets for 1982/83 in terms of output of major goods and services, total GDP broken down by major sectors and the use of the DGP and imports for consumption investments, and exports. Furthermore, it shows the amounts of public investment (ES 1,570 million of which ES 570 million in foreign currency) and private investments (ES 1,100 of which ES 550 million as foreign currency) which are projected to be needed to reach the physical targets, as well as the manner in which these investments are planned to be financed.

Nevertheless, at the beginning of the third plan-year two of the assumptions were not fulfilled. During the first two years, various external and internal factors have combined to create serious financial problems resulting in the measures taken in June 1978 to achieve financial reform and economic consolidation. Secondly, this situation did not arise only from problems of financial control but also from fundamental structural deficiencies, notably demand for infrastructural services outstripping supply. It therefore became to reconsider the first years of the plan, in order to reduce the public sector development programme to a level for which local finance could be found without relying to an excessive extent on deficit financing.

A Three Year Development Programme (78/79 - 80/81) was set to overcome these difficulties of investment. The choice of projects in this programme was based on the following short term strategies:-

- (i) Completion of projects already under implementation as quickly as possible.
- (ii) Rehabilitation of already completed (especially export oriented) projects whose productivity is declining.

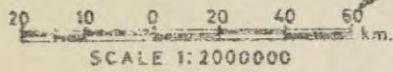
- (iii) Expansion of the national infrastructure, especially power and transport.
- (iv) Allocation of new soft loans and grants to (ii) and (iii) and gap financing to (i).

The Three Years Programme is a temporary feature, but it will necessarily strongly influence the outcome of the Six Year Plan.

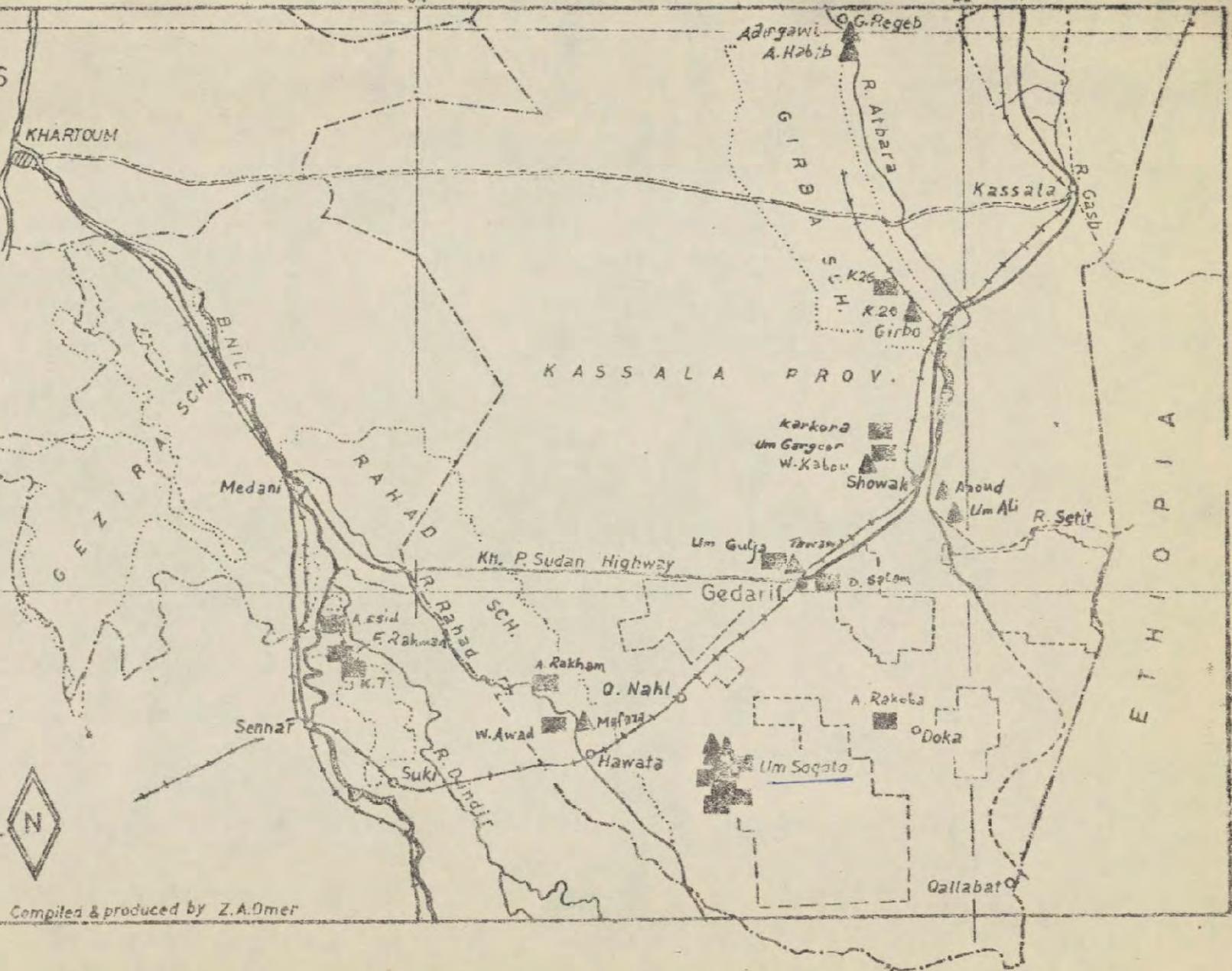
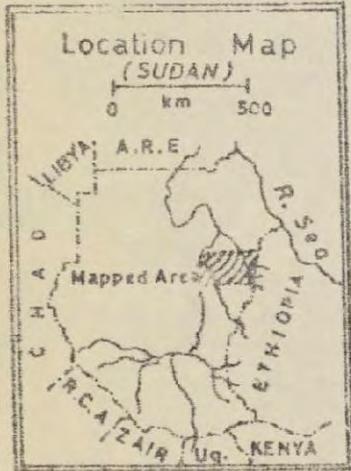
REFUGEE SETTLEMENTS

Kassala Province

(EASTERN REGION)



- Town ----- ○
- Railway ----- ⊏
- Paved road ----- ⊏
- Seasonal road ----- ⊏
- Prov. boundary ----- ⊏
- Irrigated schemes ----- ⊏
- Rain fed " " ----- ⊏
- Existing Ref. settl. ----- ■
- Prop. " " ----- ▲



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SECTION 2

THE REFUGEE SITUATION IN THE SUDAN

Introduction

Similar to many developing countries, the Sudan has been affected by the flow of people across the borders as a result of political instability and internal conflicts in neighbouring countries. In particular, the Sudan has experienced the refugee problem in its two dimensions: as a refugee producing country, and as a haven for refugees from neighbouring countries.

During the formative years as a new state, the country was faced with the Southern Sudan problem. Awareness of the refugee question was more or less limited to the security implications and more emphasis was laid on the inter-state relations and state integrity.

With the arrival of the first waves of refugees, the human aspect of the refugee problem projected itself to the Government and the population. In the different regions where the refugees have stayed, they depended on the hospitality of the Sudanese. In many instances, the inhabitants had spontaneously formed committees and collected donations in cash and in kind for the relief of refugees. Ever since, the latter have relied on the sympathy and understanding of the people which enabled the refugees to enjoy a peaceful stay in the country.

HISTORY OF THE REFUGEE GROUPS IN THE SUDAN

Zaire

The recent history of the refugee problem in the post independence period begins with the influx of the Congolese refugees in Equatoria Province in 1965. Some 7,000 of the Simba entered the country after the defeat of their rebellion in the Congo (now Zaire). They were received by the authorities, disarmed, given asylum, and were allowed to stay as refugees. A second wave of refugees followed in 1968 bringing the total number to about 9,000. During the years 1966-1970, some 4,000 refugees repatriated voluntarily and the rest remained mostly in Eastern Equatoria.

Ethiopia

The first massive influx of refugees of Eritrean origin occurred in March 1967. Within a few weeks some 26,000 refugees crossed the border, many of them women and children, and were settled in camps south of the town of Kassala and along the Gash seasonal river. A smaller influx of 4,000 refugees took place in April that year at Wad el Hileiw, in Gedaref district, Kassala Province. The refugees were largely from the tribes of the lowland: the Beni 'Amir, the Baria, Maria, Habab and Sawerta, and ended up in areas largely inhabited by the same ethnic groups.

Since that time the refugee trickle continued across the eastern border. However, major influxes resumed their flow in 1970, 1972 and 1975. The 1970 influx took place in the Southern area of Tokar district in the Red Sea Province. At the same time another influx but of a lesser scale flowed towards Kassala. By September 1970, the number of the newly-arrived refugees rose to 17,000. They came from different regions; from the lowlands east of the Sudan border; from the hilly places around Asmara and from the eastern part of Eritrea.

Minor influxes followed in the ensuing years but a sweeping influx started in 1975 through the two routes of Kassala and Wad el Hileiw. The influx brought in rural and urban people, Christians and Muslims, lowland as well as highland dwellers. At the same time, it marked the flow of urban refugees in the country. The proportion and complexity of this influx was felt all over the region; from the border with Kassala and Gedaref all the way to Khartoum Province, presenting a variety of problems for which few solutions were available.

Successive groups of refugees followed into the two provinces. The year 1979 witnessed the influx of a special group of refugees of 9,000 of whom 3,000 were children and 1,000 were handicapped.

The same year also witnessed new influxes on other provinces on the eastern border. Refugees from border areas near Asosa and from places further afield found their way towards Muguf, Kurmuk and Gissan and small villages around the border of the Blue Nile Province. Some refugees moved labor to the town of Roseiris and Damazine.

Further south, in July 1979, about 4,000 refugee groups from the Anuak and Nuer tribes of the Ethiopian lowlands moved onto the border areas of Akebo, Nasir and Jikau in the Upper Nile Province. Of these, about 80 students are currently in Malakal town.

In the same year, a fresh flow of refugees from the extreme South/West of Ethiopia crossed the border over Jebel Boma in Junglei Province. The refugees are from the Bogol tribe. This influx which continued till April 1980 has now reached 3,000 refugees.

Uganda

In 1972, some refugees from the Acholi and Lango tribes of Uganda entered Equatoria in opposition to the rule of Amin. Later, their number increased to nearly 4,000 refugees. Yet an overwhelming number of Ugandan refugees was to follow in 1979 in consequence to the fall of Amin's rule. Between March and June 1979, Ugandans from the Kakwa and Madi tribes, and Muslim Nubies as well as Christians, crossed the border into Eastern and Western Equatoria Provinces. They are largely agriculturalists, though some refugees came from urban areas close to Kampala. They have spread themselves on the border and along the road from Nimule to Juba.

Chad

The state of unrest in Chad which prevailed during 1970-1974 triggered a refugee movement of tribal groups largely similar to those residing on Sudan's side of the border. Others came from areas beyond, all of a total number estimated at 7,000. They succeeded in merging themselves with the local people in the Southern part of Geneina district.

In 1979, a small influx of about 400, largely government employees, took asylum in the Geneina and Kabkabiya areas.

Statistics

Until January 1980 the overall number of refugees in the Sudan stood at 441,000. The breakdown by nationality is as follows:-

Ethiopians	:	30,000	Eritreans	:	360,000
Ugandans	:	39,000	Zairians	:	5,000
Chadians	:	7,000			

Breakdown by location in the country:

Red Sea Province	55,000
Kassala Province	250,000
Blue Nile Province	15,000
Khartoum Province	40,000
Other towns in Kassala and Gezira Provinces	30,000
The Southern Region	44,000
Northern Darfur	7,000

During the past months, refugees have arrived in the Provinces of Kassala, the Southern part of the Blue Nile, Upper Nile and Jonglei. Their numbers are still being assessed.

The Policy Towards Refugees

By the time the Eritrean influx began, the Government had already formulated a policy based on the experience with the Congolese influx and the problem of Sudanese refugees in neighbouring countries. Bilateral agreements were concluded with the Governments of the Congo, Uganda and Ethiopia with a view to control the problem and to facilitate voluntary repatriation. Guidelines for the treatment of refugees were derived from the general principles of international conventions, mainly:-

- (1) that asylum is a peaceful and humanitarian act.
- (2) that voluntary repatriation is the ideal solution to refugee problems.
- (3) in the absence of any foreseeable repatriation, refugees are to be

settled away from border areas with the aim of helping them to become self-supporting.

The adherence to these principles on the part of the Sudan developed into official accession to the international instruments relating to refugees. In 1972, the Government became party to:-

- (1) The 1951 UN Convention Relating to Refugees
- (2) The 1967 UN Protocol Relating to the Status of Refugees
- (3) The 1969 OAU Convention Governing the Specific Aspects of the Refugee Problems in Africa.

On the other hand, Article 44 of the Permanent Constitution of the Sudan states that political refugees shall not be extradited to another State except within the limits permitted by international law and the laws of the Sudan.

In 1974, a local legislation, the Regulation of Asylum Act 1974, was passed which included the eligibility procedures and defined the authority responsible for granting asylum.

The policy of acceptance of refugees and protecting them involved also the extension of relief assistance, shelter, medical treatment, transfer to places away from border areas; all which required a lot of public spending. With the failure of plans for voluntary repatriation, the economic burden of supporting refugees was more than what the Government resources could bear. The financial stringency and the enormity of the figures of the Eritrean influx brought the realization that such a problem could only be overcome with assistance from outside. In April 1968, the United Nations High Commissioner for Refugees (UNHCR) was approached for assistance. In May, US \$ 10,000 were released from the Emergency Fund to provide emergency assistance for the second influx of Congolese refugees who entered the country in January 1968.

This request marked the beginning of the relations between the Government and UNHCR. In September 1968, a Branch Office for UNHCR was established in Khartoum. In the same year emergency assistance from UNHCR amounting to US \$ 30,000 was paid to the Government for the Eritrean influx. Similar assistance in the form of food supplies was given from the World Food Programme (WFP). Since then, the Government has concluded several agreements with UNHCR and WFP for assistance to refugees which mostly covered the two stages of emergency and resettlement. Assistance also followed from some voluntary agencies which provided help especially in the fields of relief and health.

The Administration of Refugees

With the arrival of the Zairean and Eritrean influxes the problem of refugees assumed greater importance. The Office of the Commissioner for Refugees was established in 1967 and was assigned the following tasks:-

- (1) The administration of refugee matters in cooperation with the Commissioners of the provinces and other related Government Ministries and departments.
- (2) To determine the status of groups and individuals seeking asylum in the country and to recommend policies for the minister concerned.
- (3) To seek outside assistance for refugees and to coordinate government efforts with those of U.N. agencies and voluntary organizations.

Since its inception, the Commissioner's Office maintained close ties with UNHCR, WFP, and various non-governmental organizations. It acted as the implementing agency for all settlement projects and programmes relating to refugees.

The Commissioner is also the correspondent of the OAU Bureau for Placement and Education of African Refugees.

PATTERNS OF SETTLEMENT

Organized Settlements

With assistance in accordance with the agreements signed with UNHCR, and subsequently with VFP, the Government established a number of settlements which aimed at providing the refugees with means of living in order to render them self-supporting. Since the groups of refugees who flocked into the country were of rural background, the mode of settlement for them were the agriculturally based settlements. Two types of these settlements are involved; the land settlement and the wage-earning settlement. In the former, refugees are provided with plots of land for cultivation ranging from five to ten feddans and land for grazing their animals, and are expected to supplement those earnings by working as seasonal labourers during the period January-April in surrounding agricultural schemes which suffer from perennial shortages of labour.

Wage-earning settlements are situated inside or on the boundaries of highly developed agricultural schemes which demand labour for various agricultural operations at different times in the year.

Land Settlements

The Gala-en-Nahal Settlement

The agreement signed between the Government and UNHCR in 1968, defined the obligations of each part with regard to the settlement of the Eritrean groups who took asylum in Kassala Province in 1967-1968. The Government was to allocate an area of 103,000 feddans for the occupation and provision of land for cultivation. Expenses relating to security, health services, transportation of goods by rail and other expenses were to be met by the Government. The High Commissioner provided funds for the building of the infrastructure; mainly, water-supply, roads, village establishment, education and the expenses of administration.

Today, the settlement accommodates 30,000 refugees in the villages of Um Saggata, Salmin, Um Burush, Adingrar, El Zarzur and Dahoima. Each family is allocated 10 feddans for cultivation of dura and sesame. Refugees have reached self-sufficiency with the exception of a few small groups among them. All the running expenses of the project are borne by the Government.

Showak Area

Two land settlements, Um Gargur with some 5,000 refugees, and Karkora, an ongoing settlement for 1,000 have been established in 1977-78.

Rajaf Settlement

Rajaf is the second oldest settlement which was started in 1970 for the accommodation of the Congolese refugees on the eastern bank of the White Nile south of Juba. The number of refugees is about 4,000, all self-supporting.

Wage Earning Settlements

Es Suki Agricultural Scheme

Three villages were established in 1978-79 at Awad Es Sid, Fath-el-Rahman and kilometer 7. The total population in the three settlements is 9,000 refugees.

Khashm-El-Girba Agricultural Scheme

One settlement is established at kilometer 26 on the western major canal of the Scheme. The number of refugees at present is 4,600. The second settlement is at Khashm-El-Girba which absorbs 5,000 Refugees.

Rahad Agricultural Scheme

The settlement of Abu Rakham was started in 1979 when 2,000 refugees were settled. Transfer of refugees from border areas

was resumed in 1980 and the settlement has now been completed to 4,000. Agricultural land will be made available for the settlers as from this year.

The 1980 Settlements

Under the Local Settlement Programme for 1980, two suburban settlements for urban refugees, each for 6,000 refugees in the town of Port Sudan and Gedaref, are in the process of being established. In Eastern Equatoria, five settlements each for 3,000 will be established for Ugandan refugees. Three rural land settlements are now being implemented at Wad Awad in the Rahad Scheme, Um Gulja near Gedaref and Um Rakoba in Southern Gedaref, Kassala Province. In the Red Sea Province, a settlement for 9,000 refugees is due to start in Tokar district.

Spontaneous Settlement

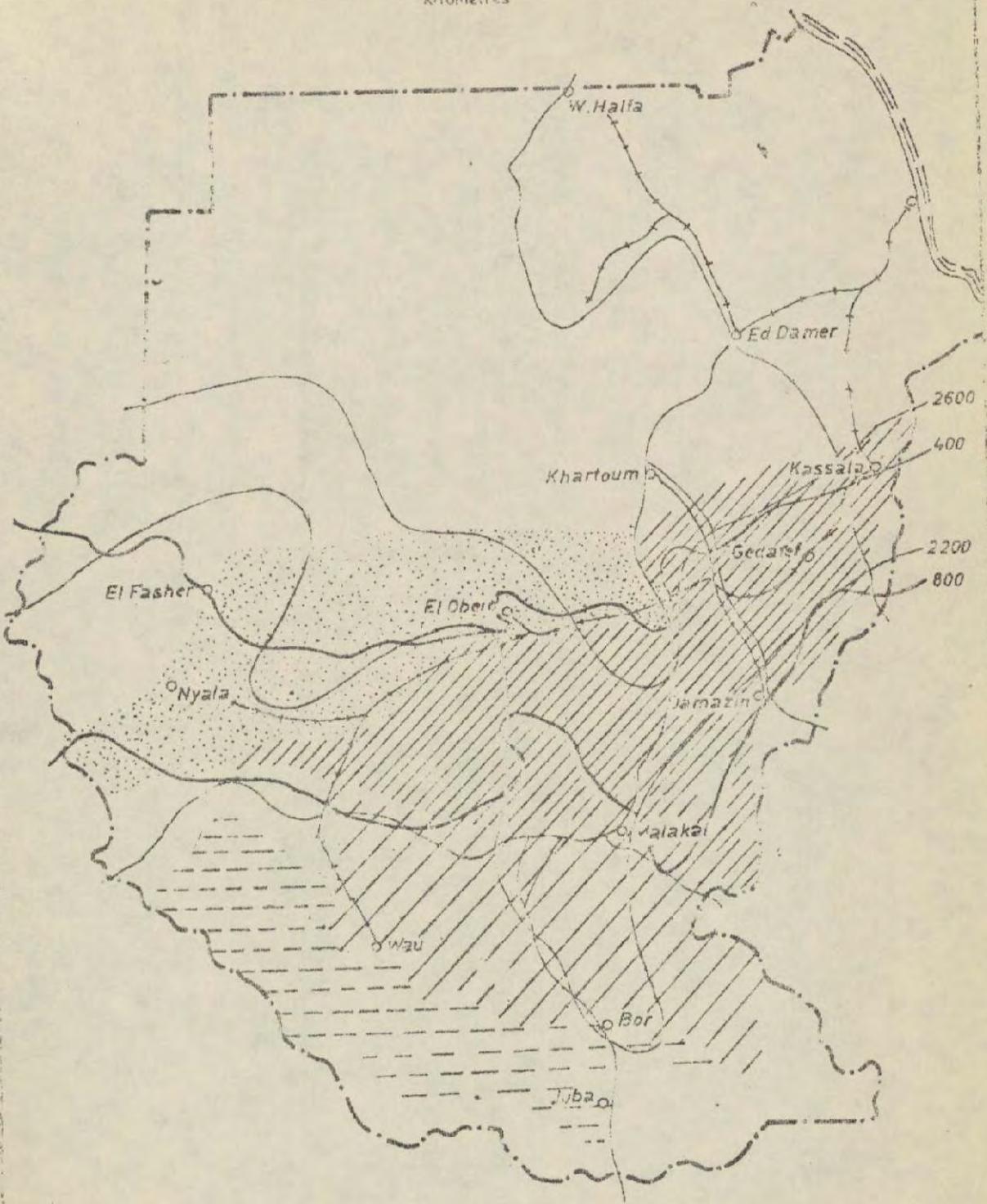
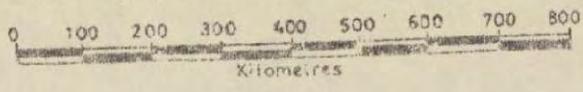
Regular settlements, including the 1980 settlements, will accommodate about 98,000 refugees. Taking into account that as a result of recent influxes, the refugee population is now approaching 500,000, it becomes evident that spontaneous settlement is the dominant pattern. Since the year 1974, tribal groups as well as urban dwellers have spontaneously settled themselves upon arrival in rural and urban areas. The prevalence of this kind of settlement has resulted into two main drawbacks. First, that pressure on the already overstrained and inadequate services in rural and urban areas has led to friction and resentment, and secondly, that refugees are unable to become self-supporting and are largely deprived of the basic social rights specified in the convention.

A general appraisal of the situation has revealed that a creative approach to the problem should be adopted; that refugees should be settled in an orderly manner; that economic viability in existing and proposed settlements should be attained; that adequate services should be extended to

all categories of refugees including urban refugees and vulnerable groups, and that measures should be taken to harmonize the refugees with the nationals of the country.

The Sudan has offered to the refugees all the hospitality it has been within its power to provide. It now needs the assistance of the international community to meet the further needs of refugees.

Democratic Republic Of The Sudan
 AGRICULTURAL RESOURCES



- Central clay plain-----//
- Western sands-----
- Southern marches----- / / / /
- Iron stone region-----
- Isohyte -----
- Evapotranspiration----- ✓

Zein A. Omer

Section 3

THE AGRICULTURAL RESOURCES AND SIGNIFICANCE

Agriculture provides about 40% of the GDP, employs over three quarters of the population and provides about half of the treasury returns. Much of the industrial sector is also involved in direct and indirect support for agriculture.

About 26 million feddans of arable land are cultivated in the country out of a potential 85 million of arable land. There are also about 240 million feddans of grazing land and 60 million of natural forest.

About 4 million feddan are cultivated under some form of irrigation, 5.5 million are under rainfed mechanised cultivation with the balance under traditional agriculture. The proposed resettlement of some 200,000 refugees will have the effect of transferring about 250,000 feddans to the rainfed mechanised sector, mainly from grazing land in the semi-arid north-east.

The northern desert

The northern soils of the arid zones are primarily desert with aeolian drift overlying, older alluvial strata. Within this area the only important agricultural areas are the irrigated flood plains of the Nile, Atbara, Gash and Tokar rivers.

The central clay plain

Just south of the line Khartoum-Kassala the agriculturally important central clay plains occur between the White Nile and the Ethiopian foothills. South of Kosti these clay plains extend in a belt stretching westward as far as Darfur. The main irrigated areas of the Sudan occur south of the confluence of the Blue and White Nile in this soil type. Large scale mechanised rain fed agriculture was originally developed in the clay plains and expansion of this type of cultivation is continuing.

The western sands

North of the clay plain west of the Nile a belt of sandy soils occurs which are mainly used for grazing. The light and uncertain rainfall permits some groundnut and dukhn (pearl millet) production by traditional agriculturalists.

The southern marshes

South of the clay plains an area of lighter alluvial soils occurs which is subject to seasonal flooding. This area is potentially of great agricultural importance but cannot be intensively developed until the seasonal flooding is controlled. The Jonglei canal now under construction from the confluence of the river Sobat and the White Nile is intended to bypass the main area of marshes around the Bahr El Ghazal and Bahr el Jebel. This will have the twofold effect of increasing the available supply for the White Nile irrigation schemes while reclaiming a large area of permanent marshland for productive agriculture.

The ironstone region

The southwestern boundary zone of the Sudan with a rainfall in excess of 1000 mm. has a belt of red loamy soils. These are almost entirely devoted to traditional agriculture at present.

THE AGRICULTURAL SYSTEMS

The traditional systems

At least 12 million Sudanese are assumed to be engaged in traditional agriculture on an area often estimated to be 8.5 million feddans. There is evidence that the total area within the traditional system (including bush fallows) is much greater, possibly twice as much.

There are many different traditional agricultural systems which were originally well adapted to the local ecology. The provision of public health and veterinary programmes has caused increases in both human and grazing animal populations which in turn have increased the pressure on the natural resources of land, water and vegetation. Even the least developed areas are somewhat affected and all the traditional systems are consequently evolving. Usually the changes are towards greater intensity of production which is often accompanied by a decline in fertility. Nevertheless, the traditional sector is still making a major contribution to the total agricultural production. Much of the subsistence production is inevitably not recorded and it is also significant that the agricultural surpluses which are marketed are produced with little or no inputs of imported fossil fuels or high technology.

Livestock production

The traditional agricultural system is also closely integrated with

traditional livestock production by pastoralists or semi-settled farmers who practice some form of transhumance. The estimated production is about 400,000 metric tons of meat, about 2 million tons of milk and about 18,000 metric tons of eggs.

The main types of traditional cropping systems are summarised below.

The millet groundnut system on sandy loams

These two major crops predominate in a wide belt of "Western Sands". Minor crops are sesame (simcin), sorghum (dura), lubia and roselle (kerkadeh). The main limiting factor to crop yields is the variability of the rainfall (rather than its low average value). Other important yield limiting factors are weeds especially "buda" (*Striga hemmonthica*), bird damage, stemborer and American bollworm. Millet yields are therefore poor, reportedly averaging less than 200 kg. per feddan. Groundnuts are reported to average 400 kg. of nuts in shell/feddan.

Most of the arable land is farmed for only a limited number of seasons and is rotated in bush fallow. The fallows are regularly grazed by transhumant pastoralists.

An important cash crop in this area is gum arabic. The two species of Acacia from which it is harvested are also valuable fallow components.

The dura-sesame system on the central clay plains

The heaviest clay areas are reported to be too laborious to be cultivated by hand and remained only thinly farmed until opened up by tractor mechanisation. There are however large areas of fertile slightly lighter soils which have been in stable shifting cultivation for many centuries and support closer settlement than the sandy loams.

Dura is the main crop in this system. The other important cash crops are simsim and short staple cotton. The latter is mainly confined to the higher rainfall area of the Nuba mountains. Groundnuts are a minor crop and gum acacia is much less important on these soils.

Simsim is grown widely throughout the clay plains and there are many well adapted local varieties.

The southern grazing marshes

The southern marshes are mainly utilised for grazing by local stock owners who practise a local transhumance between the neighbouring uplands where they grow their crops and pasture their stock during the rains and the marshes where their stock graze during the dry season.

If the river flow is prolonged and the marshes remain flooded into the dry season, the cattle may exhaust the upland grazing before they can utilise the marshes. One of the objectives of the Jonglei scheme is to regulate the annual flood to prevent this.

The ironstone savannah

This area of higher and more prolonged rainfall is distinguished by a greater reliance on planted crops such as yams and cassava. It also grows a very wide variety of annual crops and tree.

At present it is little developed, thinly populated and has probably suffered less from the pressures of development than the other traditional systems.

The irrigated systems

To date the Sudan is using about 80% of the 20.4 km³/year share of the Nile Waters allocated under the 1959 Nile Water Sharing Agreement with Egypt. This irrigates nearly 4.0 million feddan.

About 200,000 feddan are irrigated from seasonal spates in the semi-arid zone, the two largest areas being the Gash and Tokar deltas.

There are also small areas totalling 18,000 acres which are irrigated from groundwater.

Irrigated land produces about 660 thousand metric tons of seed cotton, 600 thousand tons of dura, 102 thousand tons of wheat, 278 thousand tons of groundnuts, 1,100 thousand tons of sugar-cane, plus smaller tonnages of many other crops.

The irrigated sector has not contributed as much to the total agricultural production as had been originally planned. This is due almost

entirely to low production and static or declining crop yields. The major problems in existing schemes are insufficient water at peak demand periods combined with less than optimum crop protection. Both difficulties are susceptible to improvement by better management. It is a reasonable hope that this will be developed by the training programme now underway.

A major current problem in cotton production is an acute shortage of labour for picking seed cotton. As a consequence, an estimated 30% of the Rahad scheme crop was not picked during the 1979-80 season.

The rainfed mechanised crop production system

Large scale mechanisation is now being developed in many regions of the Sudan and on most soil types. The following detailed description of the system used in Kassala and Blue Nile provinces is of particular relevance to the main areas of refugee settlement.

Extensive mechanized rain-fed farming was begun in Godaref area under private auspices just after World War II on large areas of land leased by the state.

By 1979, 215,000 feddans had been leased in 1,500 feddan plots to 158 entrepreneurs. The rents were set at rates sufficient to cover land clearing costs plus 6.25 per cent interest over 25 years. This period was designed to provide security of tenure to the lessees and to enhance their commitment to the project. The Mechanized Farming Corporation would loan money to the entrepreneurs on easy terms to purchase tractors and other equipment. The total cost of the project came out to \$32 per feddan including the tenants' equipment.

Originally long fallow periods were emphasized and the land was to be sown with dura, sesame and cotton. Cotton was abandoned (except in very few places) and fallows were severely curtailed; the tenants appeared unconcerned by the risks of soil depletion. They aimed at a maximum "mining" of the soil over ten years and then abandoning it. Yet "so long as land is sufficiently plentiful and capital and labour sufficiently scarce, continuous cropping, soil depletion and shifting cultivation are the most economic response to prevailing prices". (American economist).

The large scale farming operations

The first rains often occur in May but it is customary to delay the first cultivation until a substantial weed germination is observed.

In the lowest rainfall areas (400 - 600 mm), a single disc cultivation to destroy weed growth and sow dura is carried out using a "wide level disc seeder" unit.

In the wetter areas where it is possible to grow sesame, the first cultivation is performed without sowing the crop. The second cultivation and seeding is done when further rain has produced a second flush of weeds.

Sesame is always sown first about the end of June or early July. The sowing of dura follows as soon as the rainfall permits in July or early August.

The choice of sowing date is an important managerial decision each year. Too early sowing does not control weeds adequately and increases the cost of hoe weeding. Some loss of potential yield also occurs.

Sowing too late involves the risk of losing yield if the season ends unusually early.

Both crops are weeded once or twice by hand. Ideally, the weeding should be done in the 4th, 5th or 6th week after sowing but this depends on obtaining enough daily wage labour at the critical time.

Sesame is harvested by hand in October while there is still moisture in the soil and the atmosphere is detectably humid. This maximises the safe harvesting period and reduces crop losses from shedding. The timely availability of sufficient labour is critical to the success of the operation.

Dura is harvested after the rains by hand or combine harvester. The timing is less critical and fewer labourers are employed.

Cropping rotations

Where dura monoculture is practiced, the land must be fallowed for 4-5 years out of 10 to maintain long term yields.

The high price of sesame makes it a very profitable crop but on large farms there is a risk of serious losses if sufficient labour is not available during the critical harvesting period. This is the main reason for the low proportion (15%) of sesame in the typical dura-sesame cropping rotation. There is often up to 60% dura with the remainder left fallow.

Large scale rainfed logistics

The standard equipment used for cultivation and seeding is a four wheeled tractor of 73-99 hp pulling a "Wide Level Disc Harrow" fitted with a broadcast seeding unit. The units are either 3.66 or 4.57m. wide, operating at an angle to the line of advance with effective working widths of 3.17 and 3.96m. respectively.

These units working at a forward speed of about 6.6 km/hr. have outputs of 5 and 6.2 feddans/hr. Used in two shifts each day (with one refuelling stop in each shift) daily outputs of 73-93 feddans can be achieved during the crop establishment period. Each unit is expected to cultivate and sow 800 - 1000 feddans each year.

Fuel consumption is reported to be about 2.7 litre/feddan while oil and grease are used at 40 kg./1000 feddan. The seed rate is 2-3 kg/feddan.

The tractors are operated by two drivers supported by two greasers on each unit. A mechanic is employed for every five units.

This equipment is normally depreciated at 20% per year.

The economic cost of mechanisation per feddan was LS.12.5 in the 1979 season.

Hand labour costs were LS. 4.0 for weeding and LS.3.5 for harvesting dura.

The total cost per feddan was therefore LS.20.0. At the quoted price of LS.6.0/90 kg. bag, a yield of 3.3 bags of dura was needed to break even.

The minimum yield in mechanised agriculture is normally at least 4 bags/feddan.

REFUGEES IN AGRICULTURE

The greatest number of refugees are at present in the north-east of the country within a belt of land parallel to the Ethiopian border.

i) The arid zone. Less than 400 mm rainfall. Less than a month reliable cropping season.

North of Gedaref, the rainfall becomes progressively less reliable for rainfed crop production. Crop production is confined to "single flood" irrigated areas in the Gash and Tokar deltas with some occasional crop production by nomads on sites where the runoff from a larger area can be conserved by small bunds to ensure sufficient stored moisture to produce a quick maturing crop of dura. There are therefore very few agricultural based refugee settlements in this zone.

The Qoz Regeb settlement group on the Atbara River is being developed on the basis of irrigated family smallholdings producing vegetables and fodder for livestock. The unirrigated grazings surrounding this settlement group are already fully utilised by indigenous pastoralists and are therefore not available for the refugee livestock.

ii) The semi-arid zone. 400 - 800 mm rainfall, 2 months reliable cropping season.

South and west of Gedaref the rainfall is generally reliable enough for the regular annual production of the refugees, staple food crop of dura. This more reliable rainfall also permits the development of large scale mechanised crop production of dura and simsim by private producers or publicly owned corporations. These large estates require large numbers of seasonal labourers during the rains. Further demands for cotton pickers during the dry season on the Khashm el Girba and Rahad irrigation schemes ensure employment opportunities for about six months of the year in this area. The greatest number of refugees are therefore being settled in this zone on farming settlements which are based either on dura plus simsim production in the wetter southern area or on dura production supplemented by livestock production on the dryer northern area, which cannot reliably produce simsim.

iii) The dry monsoon zone. 800 - 1000mm rainfall with 3-4 reliable cropping season.

The longer growing season makes it possible to grow a wide variety of tropical crops and it is easier to subsist on the produce of a small area in this zone. This zone has comparatively few refugees at present even though it covers most of the Sudan south of Roseires (excluding the swamps of the Sudd). There are fewer refugees per unit area and few climatic constraints affecting their location.

The refugee mechanised farming system

The mechanised farming system currently used and projected for future refugee settlements in the semi-arid zone is broadly similar to the rainfed mechanised crop production system developed on the large farms in this zone. The different objectives of the two systems do however enforce certain detailed differences in execution. The large scale schemes are primarily concerned with low cost mass production for sale and can tolerate occasional poor harvests and can afford to abandon an overcropped area if production becomes consistently unprofitable. The most important and valuable crop is usually simsim which therefore receives agronomic priority in the farming operations. In contrast the refugee settlements have the main objective of producing a reliable subsistence crop of dura from the same small areas of land for an indefinite period. Hence the dura crop should receive priority even when simsim can be successfully grown.

Table I 3.1 Comparison of mechanised crop production operations

<u>Operation</u>	<u>Large scale mechanised</u>	<u>Refugee settlement</u>
Crop establishment by cultivation with wide level disc and integral broadcaster.	Twice after rain with long runs on large fields. Crop broadcast mechanically on second cultivation.	Once after rain with 145m. runs on small square fields. Crop may be hand broadcast.
Simsim sowing date.	Sown first, June-July.	Sown second or omitted.
Dura sowing date.	Sown second, July-August.	Always sown first, June-July.
Hoe weeding.	4-6 weeks after sowing.	Starts about 3 weeks after dura sowing.
Simsim harvest.	Timing and labour availability critical.	Adequate family labour always available.

The information in table I 3.1 shows that while the present practice of cultivating the small square plots of refugee land separately makes the tractor operations less productive than those on the large scale, the greater timeliness and flexibility possible with the refugee family labour may confer advantages in hoe weeding and simsim harvesting.

Environmental viability of resettlement sites

The fundamental requirement for successful refugee farm settlement is that the settlers should be able to produce their subsistence requirements of dura grain reliably in all seasons. A sample of the way in which rainfall records can be used to measure the probable success of a site is presented in Table I 3.2.

Table I 3.2 Dura crops reliability assessment

Month in which growing season starts	Growing season duration in month	% of total seasons	Potential dura yield if sown	
			after rain starts	dry at end of June
<u>Kassala</u> (60% maximum potential in an arid zone site)				
June or July	3	29	100%	-
July or August	2	31	50-70%	100 %
June or July	1 + 1	4	40-60%	50 - 70%
July, August or September	1	31	Forage only	Forage only
No start	0	4	Nothing	Forage only
<u>Gedaraf</u> (100% reliability in a semi-arid zone site)				
June	4, 5, 6	37	100%	-
July	3, 4	63	100%	100%

Dura needs a two months continuous growing season after crop emergence. In 40% of the seasons at Kassala, complete or partial crop failure will occur because the season is too short or is not continuous. Crop yields will also be reduced in a further 31% of seasons unless all of the rainfall is utilised by sowing the crop "dry" at the end of June. Clearly a hypothetical refugee settlement at Kassala could not reliably produce the dura staple subsistence diet whereas at Gedaraf the records indicate that this would be possible in all the seasons on record. Reliability coefficients will be presented for every new settlement using the best meteorological data available. A rainfall

reliability coefficient of less than 100% does not necessarily indicate that a proposed settlement is variable but indicates the need for additional sources of income or modified agricultural techniques. When therefore the basic "dura reliability potential" has been assured, there is still a need to determine the agricultural potential in more detail for allocation of land for specific use.

As a first step physical factors which influence the agricultural potential are examined.

Van der Kevie and Buraymah (1976) worked out a broad qualitative evaluation of the agricultural potentials in Kassala Province where most of the proposed settlements are situated. The whole area is suitable for dura production except where the rainfall is too unreliable. These exceptions to the general homogeneity are the Maharigat area where a separate ranching project is formulated and the Qoz Rogeb area where small scale irrigation is proposed.

In the Blue Nile Province the soil and climate are rather more favourable to rainfed dura production at such centres as Damazin and Suki.

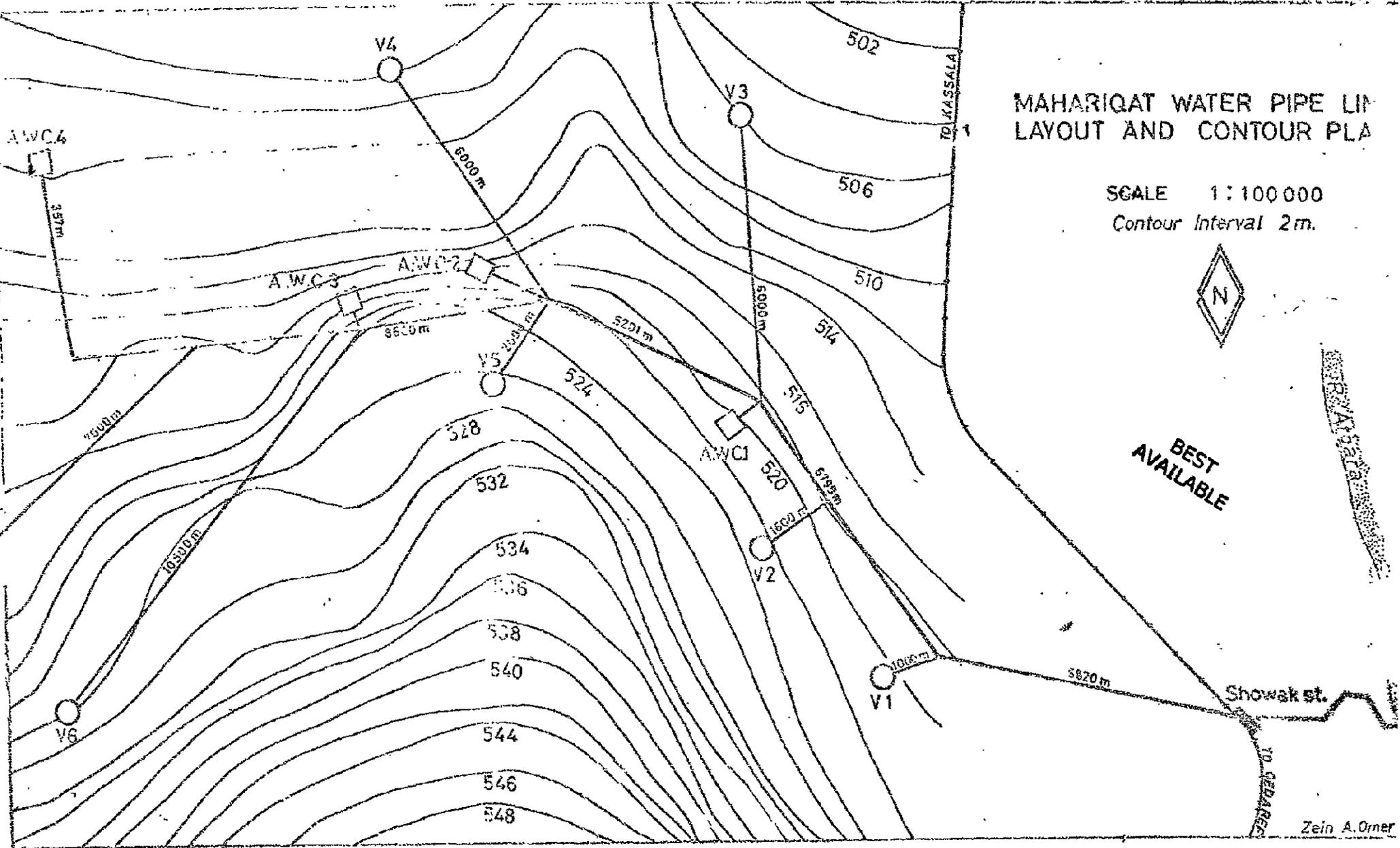
It is hoped that detailed input output studies will be completed before each project is implemented.

MAHARIQAT WATER PIPE LAYOUT AND CONTOUR PLAN

SCALE 1:100 000
Contour Interval 2m.



BEST AVAILABLE



SECTION 4

**BEST
AVAILABLE**

WATER RESOURCES AND SUPPLY SYSTEMS

This section describes the sources of water and supply systems currently used and planned in the refugee settlements. The majority of the existing and planned refugee settlements are in Kassala Province. These settlements are planned to use surface and ground water through pumps, pipes, elevated tanks and public distribution tap systems. Water is expected to be available for domestic usage, livestock consumption, and gardening. The Rural Water Corporation standards are being used to calculate a water allowance of about 26 litre/head/day including livestock consumption.

WATER RESOURCES IN THE SETTLEMENT AREAS

In the Kassala and Red Sea Provinces the major source of water is the surface water. According to the Sudan Meteorological 30 years Records (1931 - 1960) the annual rainfall ranges from below 100 to above 1000 mm range. As the available geological data show that the non-water-bearing formation is the prevailing structure, rain water becomes the vital source on which human and animal life depends. Natural seasonal streams cover the region. Atbara river with its tributary Sotit and Rahad rivers are the major streams with seasonal runoffs originating from the Ethiopian Plateau. The discharge of the Atbara varies from a maximum of approximately 2 million cubic meter (m^3) per day to a minimum of $0.01 m^3$. At Showak it periodically dries completely, however leaving ponds of adequate capacity to be a reliable source of water during the short periods (2 months) of severe

drought before the rains start again. Most existing and planned water supply systems for the refugee settlements are therefore composed of systems either of pumping and storage, or direct methods of pumping treatment and use of surface water.

WATER SUPPLY SYSTEMS FOR THE REFUGEE SETTLEMENTS

The water supply systems for existing (1980) settlements are presented below including a detailed discussion of the Qala-en-Nahal system. The planned settlements for 1981 - 1982 will be similarly presented in the next sub-section.

1. Existing Settlements

Kassala Province

A.	Qala en Nahal	No. of Refugees	Water Source System
	Um Saggata	5,000	
	Salmin	5,000	Qala en Nahal
	Um Burush	5,000	Water Supply System
	Madgingira	5,000	Detailed below
	El Zarzur	5,000	
	Dohaina	5,000	
B.	Shawal (Mharigat)		
	Um Gargur	4,000	Bore wells, service limited to water yards, unsatisfactory quantities & distribution, will be included in the proposed Mharigat system.

BEST
AVAILABLE

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	Kankosa	1,000	Bore wells, limited service
C.	Rahad Scheme		
	Abu Rakham	4,000	River Rahad. Pumping, filtration, distribution to service platforms.
D.	Land Settlements		
	Um Gulja	6,000	Bore wells - distribution from elevated tanks to service platforms
	Abu Rakham (2)	4,000	Main Canal of Rahad Scheme, filtration to elevated tanks, distribution to service platforms
E.	Wage Earning Settlements		
	Khashm El Girba	5,000	
	Kilo 26 (New Halfa)	4,600	Main Canal of New Halfa Agricultural scheme, pumping to slow sand filtration distribution from elevated tanks to service platforms.
F.	Tawawa (Gedaref)		
	Urban Settlement	6,000	Extended pipelines from Gedaref Town supply.

The Blue Nile Province

A.	El Suki Agricultural scheme		
	Awad El Sid	2,500	Bore wells, distribution from elevated tanks to service platforms
	Fat'h El Rahman	2,500	" "
	Kilo 7	3,000	" "

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Red Sea Province

Marafit (Tokar)	9,000	Shallow wells, no pumping, offtake by rope and bucket.
Asutriba (Port Sudan)	6,000	Extended pipelines from Port Sudan Town Supply.

Southern Sudan

Rajaf Settlement	4,000	Boze wells, distribution limited to water yard service system.
5 Settlements Kit 1,)	15,000	Ugandans Boze wells, distribution limited to water yard system.
Kit 2, Opari Torit,)		
and Torc 11)		

Gala-on-Mahal Water Supply System

The refugee settlements lie some 40 km to the south of the village of Gala on Mahal which is located on the Godaref -Sennar railway lines and the Wavata - Godaref road, about 60 km south-west of Godaref. As the area is unsuitable for borehole supplies and there are no suitable catchments in the immediate vicinity of the villages which can provide sufficient yield to satisfy the demand for water in the settlement, it has been necessary to obtain water further afield. The Rahad river is the most suitable source and as it flows for only about three months of the year, it was necessary to provide storage for the remainder of the year. A suitable site was found at Abu Mahal where two river-side earth impounding reservoirs (hafirs) of 407,000 m³ total capacity were constructed. Water is gravitated and pumped from the river into the hafirs, and then pumped along a 34 km steel pumping main to four 10,000 m³ service hafirs. These service hafirs are sited at varying distance along the main pipeline to serve the six villages of: Um Burush, Zarzur, Adingzar, Dehoima, Um Saggata and Salamin.

Water is pumped from the service hafirs via asbestos cement distribution mains to elevated steel storage tanks in the water yards in each of the villages.

Operation of the System

Rainfall occurs in the area for a period of approximately three months from July to September. The river rises in July and usually reaches the level of the inlet pipe connecting the river with the hafirs in the mid July, and continues to rise to a peak level in the first week of August. By the end of September the river drops to a level below that of the inlet pipe and finally stops flowing completely by the end of December. A few pools remain until the end of February.

If the level of water in the hafir is lower than the river level, water is gravitated to the hafirs. If the level in the hafir is higher than the river, the water is pumped to the hafirs by means of three low lift pumps in parallel. In normal years it is possible to fill the hafirs using the three low-lift pumps during the two and half month period when the river is above the inlet pipe connecting the rivers with hafirs. However, the river flow tends to vary considerably from year to year.

System Capacity

The full capacity of number one hafir is $235,000 \text{ m}^3$ and that of number two hafir is $172,000 \text{ m}^3$ bringing the total full capacity up to $407,000 \text{ m}^3$ of which $389,000 \text{ m}^3$ are usable after siltation losses.

Assuming 25% evaporation losses during 9 months and 5% losses for main pipelines, evaporation losses of the service hafirs, and distribution main losses of about 40%, a total of 158, 160 m³ is available for consumption from the entire system.

Proposed 1981 - 1982 Settlements

Settlement	Number of Refugees	Water Source System
<u>Kassala Province</u>		
Kilo 20	60,000	Main Canal New Kalfa Agricultural scheme. Pumping to slow sand filter, distribution from elevated tanks to service platforms.
Gedarof (Hawawa)	5,000	Gedarof town supply, extended pipeline direct to distribution service platforms.
Gedarof (N.E.)	12,000	Gedarof town supply, extended pipe-line to distribution service platforms.
Um Ali	6,000	Bore wells, distribution from elevated tanks to service platforms
Abouda	6,000	River Atbara. Direct daily pumping, slow sand filtration, distribution from elevated tanks to service platforms.
Showak (south)	5,000	River Atbara. Extended pipeline to slow sand filtration, distribution from elevated tanks to service platforms.

Mafaza	5,000	River Rahad. Pumping and storage, (because the river dries out completely in summer) filtration from elevated tanks to service platforms.
Minidba	5,000	Rahad Agricultural scheme, Canal System filtration to elevated tanks and distribution system.
Adergawi ¹	5,000	River Atbara, pumping to slow sand filter, distribution from elevated tanks to service platforms.
Adergawi (2)	5,000	River Atbara, pumping to slow sand filter, distribution from elevated tanks to service platforms.
Goz Ragab	5,000	Bore wells, distribution from elevated tanks to service platform.
Maharigat (7 villages)	35,000	River Atbara, direct daily pumping to filtration system in every village, distribution from elevated tanks to service platforms (Detailed below).
Qala En Nahal (3 new villages)	15,000	River Rahad, raising capacity of existing settlement storage supply systems, extending lines, filtration, distribution from elevated tanks to service platforms.
Fau	4,000	River Rahad, pumping and storage, filtration, distribution from elevated tanks to service platforms.

Blue Nile Province

Agadi (3 settlements)	15,000	Raising the surface water runoff storage system, filtration, distribution from elevated tanks to service platforms.
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Red Sea Province

Asutriba	}	4,000	Port Sudan town supply,
Asutriba (S.W.)		9,000	extended pipe lines, direct
Port Sudan West		9,000	to service platforms.
Suakin		5,000	Fishing settlement in old pilgrim town using existing water supply system.

East and West Equatoria Provinces

8 settlements for Ugandans 24,000

Proposed Water Supply for Maharigat Settlements

The Maharigat water supply system is the largest system in the proposed refugees settlement areas. It is designed to support 35,000 refugees in seven proposed villages with four animal watering centres, A W C serving a minimum of 6,000 head of cattle in an organized animal husbandry scheme.

Source of Water

The main source of water is the river Atbara. The off-take site is chosen approximately 1.5 kilometer down-stream and north of Showak town. The river floods begin in January each year reaching

a maximum discharge in August, September or early October depending on the intensity and timing of precipitation on the Ethiopian Plateau. Setit connects to the main river about 5 kilometer upstream from Showak town. The minimum discharge occurs during the month of May. The maximum discharge at the Ministry of Irrigation research gauging station is stated as 2.08 million m³ per day with minimum discharge in May of 10,000 m³ per day.

Description of the Water Supply System

The proposed main pipeline of 6 to 12 inches steel pipes starts from river Atbara about 3 kilometer east of Showak Railway station and extends in a west to north-west direction from Showak concerning Maharigat refugee settlement proposed area. Seven steel distribution mains of different diameters branch on both sides from the main pipelines to the settlement villages. At the end of each distribution main a slow sand filter provides sufficient daily requirement of clear water to be pumped by a low lift pump to two elevated tanks of 50 m³ capacity each.

The four distribution mains for the animals discharge directly into the two elevated tanks per center, where the unfiltered water is to be distributed by gravity to a number of animal watering troughs operating under control valve and fence systems.

System Capacity

The maximum capacity of the pumping station is approximately 2,000 m³ per 16 hours which is the designed working hours of the station. The pumping sets, two electric and a diesel for power failure emergencies are to be erected on the western bank of the river Atbara.

CURRENT AND POTENTIAL USAGE OF WATER IN THE REFUGEE SETTLEMENTS

Rural Water Corporation standards have been applied to establish estimates of the daily consumption/head as follows :

Human Consumption	20
Cattle consumption	25
Sheep and goat consumption	10

Given the current number of animals in the refugee settlements in Qala En Nahal, an allowance of 26 l/head/day including an allowance for animals seems adequate. However with expected developments and activities such as gardening the consumption of water should increase.

SECTION 5

HEALTH SERVICES FOR THE REFUGEES IN THE SUDAN

Faithful to its policy of providing services for the population the Government of the Democratic Republic of the Sudan has assumed full responsibility for the health care sector. The Ministry of Health, together with the World Health Organization, has put together a comprehensive National Health Programme which includes eight specific sub-programmes, planned for the period 1976- 77 to 1983 - 84.

The main constraints to improvement of the health care programme can be divided into five categories: Socioeconomic conditions, lack of facilities, inadequate training, inadequate information and reporting systems, and lack of finances. The presence of some 440,000 refugees has added greatly to the severity of these constraints.

MAIN HEALTH PROBLEMS

Malaria has been identified as the number one health hazard. It is endemic in the entire country, and hyperendemic in parts of the Southern Region. However, irrigated areas in the North also provide an environment which is hospitable to the Anopheles gambiae mosquito. Although eradication of malaria has not been feasible, malaria control can be achieved through energetic efforts. Important aspects of these efforts are health education, training in agricultural techniques which would reduce the prevalence of breeding areas for the larvae, and improved nutritional status among the local population in order to prevent latent malaria from becoming manifest.

Another category of disease which the Government has placed high on its list are those caused by poor sanitary conditions, in particular parasites, gastroenteritis and related epidemic diseases. This category, especially serious to children, is of major concern for primary health care and sanitation programmes. Waterborne diseases such as schistosomiasis and river blindness with their debilitating effects necessitate effective intervention.

9 Anemia, malnutrition, protein and vitamin deficiencies are especially serious in semiarid areas in Kassala and Red Sea Provinces, and prevalent among practically all the refugees, seriously impairing their capacity to work in the agricultural schemes. These deficiencies add to the vulnerability to communicable and infectious diseases like the different types of tuberculosis, polio, typhoid, kala-azar, diphtheria, whooping cough, measles, meningitis and Bubonic plague.

It can hardly be overemphasized that most of the Sudan's health problems are linked to socioeconomic conditions. It is axiomatic that poor health and poverty reinforce each other, but it is necessary to go beyond this to identify the socioeconomic and cultural conditions which create poverty and aggravate health. Such conditions include, in various parts of the Sudan: Severe climatic and environmental conditions; low levels of education and consciousness among the population pertaining to health sanitation and nutrition; cultural and religious attitudes which severely limit the utilization of potentially beneficial nutrients, as well as modern preventive and curative medical practices; modernization techniques like irrigation which create or aggravate health hazard; and the very vastness of the country which effectively prevents a large part of the rural population from access to health services.

EXISTING HEALTH SERVICES:

Medical facilities in the country include 171 Hospitals, some 300 health centres, 1,000 dispensaries and some 1,500 dressing stations. Although the ratios of hospitals and doctors to the population, 1:1,000,000 and 1:25,000 respectively, compare favourably with many other African countries, the advantage is reduced by the low population density, high population mobility,

difficult and costly transport, and uneven distribution of the medical facilities.

The Government aims at the establishment, in 1984, of 1,247 Primary Health Care Units (PHCU), each manned by a single Primary Health Care Worker (PHCW). The intent is to provide one PHCU per 4,000 people, in an area of ca. 75 km². Each five PHCU are grouped under a dispensary run by a medical assistant, in his turn supervised by a medical Officer Stationed in a rural hospital. Patients from the rural hospital can be referred to provincial and/or regional hospitals. In spite of efforts to achieve national equity there is still an uneven distribution of services, and serious emigration of trained medical staff to other countries.

In the Eastern Region, i.e. Kassala and Red Sea Provinces, with a total population of two million there are 13 hospitals, with a number of beds equivalent to one per 1,000. Nine of the Hospitals have only one doctor, and specialized services are only available at four; in Port Sudan, Kassala, New Halfa and Gedaref. In addition there are 79 dispensaries, 145 dressing stations and, at present, 98 PHCUs.

IMPACT OF REFUGEES ON HEALTH SERVICES

There is no doubt that the influx of refugees has overstrained the existing health services, both in the Eastern Region and in East and West Equatoria Provinces. Limited facilities which were hardly enough for the Sudanese have been made available to the refugees, whose health situation has been serious in itself and thus added further hazards to that of the indigenous population.

In Kassala Hospital it was found that 24 percent of the beds were occupied by refugees, who certain times exceeded the nationals in number. The out-patient clinic was attended by about 200 refugees every day. At costs of 15 Sudanese pounds per day for inpatients and an average 5-S per outpatient, the financial burden is heavy.

In Port Sudan, where voluntary agencies run four clinics for the refugees the patient/are referred to the civil hospital for X-Ray, and laboratory tests and for admission. This lays an additional burden on the hospital which is already providing services for the whole town and the surrounding areas. Similarly, in Gedaref, it was found that 69,590 refugees attended the hospital's outpatient clinic during 1979. The same year about 2,615 refugees were admitted as inpatients, 949 of them for surgery and the others mainly for malaria, bilharzia, TB, malnutrition, Kala.azar and eye diseases.

The influx of refugees has also affected the smaller units in the Region, especially the rural hospitals in Doka, Hawata, Taktook, New Halfa and es Suki, and the dispensaries and dressing stations. Given their limited facilities it has not been possible for the existing health services to cope with the situation and there is a real need for improvement, upgrading and extension of the health care programme.

In the Southern Region where the infrastructure of the health services had been greatly weakened during the long civil disturbances the services were overwhelmed by the recent influx of refugees. This is further aggravated by the fact that the refugees from Uganda have brought serious infectious diseases which have now spread throughout the whole country.

In Darfur in the Western Region some 7,500 refugees from Tchad have greatly affected the health services and the situation calls for emergency measures.

NECESSARY EXTENSION OF HEALTH CARE PROGRAMME

In order to cope with the extra strains on the existing health care programme which the refugees influx has imposed, several lines of action must be followed. They are presented here as outlines for project activities, to be formulated in detail at a later stage.

1. Sanitation: Environmental sanitation plays a key role in the control of endemic and epidemic diseases. In addition to the provision of basic equipment such as refuse carts, tools for latrine digging etc, there will be adequate supervision in each settlement, carried out by the sanitary overseer on the spot. In addition the PHCU will carry out health promotion activities such as advising the settlers on sanitation, hygiene, safe water, nutrition and other relevant community development activities.
2. Mobile Health Units: Inevitably the refugees have brought with them manifest and latent diseases which add to the ordinary health hazards already facing the Sudanese population in the influx areas. Migration in search of wage labour further extends the area affected by the disease carried by the refugees. It is therefore necessary to include areas larger than the refugee settlements in the health programme related to the refugees. Hence an adequate health programme demands two additional components; a mobile medical clinic using three Landrovers based

respectively in Port Sudan , Kassala and Fas, and a similarly organized mobile health education unit, The latter, using the community development centres in the settlements as physical location for some of its work, will focus on sanitation and provide the necessary followup of the working of that service, teach and improve proper water use and control of waterborne diseases, and perform essential monitoring functions in and outside the settlements.

3. Nutrition Programme: In view of the multitude of health problems improvement of the nutritional status is of primary importance and to be regarded as a crucial aspect of preventive health care. This is especially the case with the refugees whose change of environment has deprived them of foodstuffs they have traditionally used, without necessarily providing adequate substitutes. The programme needs adequate surveying of food preferences and taboos; of availability and potential for cultivation of nutritionally important agricultural and horticultural crops; of the feasibility of animal husbandry ranging from camels to rabbits to fishfarming in order to provide adequate protein; and of teaching methods for introduction of new foodstuffs and methods to prepare and store them which are appropriate within the relevant religious and cultural contexts. The implementation of the programme calls for ingenuity and staying power, and may be entrusted to voluntary agencies working within the combined framework of the Ministries of Health and Education. The PHCUs and the community development centres in the settlements provide a physical setting.

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4. Monitoring: Extension of the health care programme will create greater demands on the reporting and information systems. Expansion of facilities over larger areas will presumably necessitate a greater decentralization of information system operations. Personnel will have to be trained in basic data collection and record keeping. It will be essential to set up a system for two way communications, enabling PHCWs to pass on vital data along the already existing chain of command to regional and national headquarters, and allowing them also to receive information which is necessary for their performance of their duties.

5. Training Programmes: Medical doctors are training at the University of Khartoum which produces about 200 medical graduates per year. However, a major problem is that many of these doctors migrate abroad to earn higher incomes.

Khartoum has one nursing college which produces about 430 to 40 nurses per year and the different hospitals also train qualified nurses, some with specialized skills.. In addition some 1,000 assistant male and female nurses are trained every year, the best of whom become medical assistants. Assistant nurses have a background of junior high school and receive three years of in-service training, with limited training in community health care. The community health workers are recruited among junior secondary school graduates. They receive a nine month training course, mainly geared towards preventive and promotive health care, with limited curative skills. The most promising among them will be upgraded eventually to medical assistants after appropriate training.

It is suggested that the capacity of the existing training institutions be increased in order to allow them to meet the demands imposed by the refugee situation. Planning is under way both for extension of the existing institutions and for establishing new ones which will also accommodate PCHWs, midwives and sanitary overseers.

6. Health Projects within Settlements: To promote health services within the existing settlements, it is proposed to upgrade the existing 12 bed dispensary at Um Saqqata in the Qala en Nahal project to a full hospital with 40 beds.

In Qala en Nahal there are six villages with a capacity to accommodate 30,000 refugees. It is proposed to expand the settlement in 1981 through the establishment of three more villages, raising the total capacity to 45,000. At present the nearest hospitals are in Hawata, at a distance of 66 km, and in Gedaref 115 km from Um Saqqata. The upgrading of the dispensary to a hospital will also render adequate medical services to the agricultural workers in ^{the} 500,000 feddan Sam Sam mechanized crop production scheme, as well as to Sudanese villages in the neighbourhood, thereby promoting the integration of refugees with nationals.

7. Health Projects Outside Settlements: In the towns of Kassala and Port Sudan two new hospitals, each with 60 beds, X-Ray units and adequate laboratory facilities are proposed. The congested condition of the two hospitals already in existence makes it impossible to add more buildings or provide the necessary facilities. The new Kassala hospital is proposed for the western half of the town. The proposed new hospital for Port Sudan is in fact an upgrading of a health centre at Korea in the Southern part of the Town. The chosen area is close to Asutriba where quarters for 28,000 refugees will be established.

In the town of Gedaref, where the general health situation is affected both by the refugees and by large numbers of migrant labour from all over the country, it is proposed that a regional public health laboratory be set up for the provision of improved medical services and for necessary control of the disease situation in the area.

In the town of Esh Showak plans are under way for the upgrading of the dispensary to a 20 bed rural hospital, funded by donations from people in the area and the Government, and a 10,000£ contribution from the Swedish Church Relief made through the Sudan Council of Churches. However, the needs imposed by the new settlements planned for the Showak area will make it necessary to further expand the hospital facilities to 60 beds and an X-Ray Unit, in part for the purpose of relieving pressure on the hospital in Gedaref.

For similar reasons it is further proposed to make additions to eight more hospitals, namely: Doka Hospital, one ward, Hawata Hospital, two wards, surgical theatre and X-Ray Unit; Wad Takrook Hospital in the es Suki scheme, two wards, surgical theatre; Suki Hospital, one ward; New Halfa Hospital, one ward, X-Ray Unit; Geneina Hospital, one ward; Juba Hospital, one ward, and Yei Hospital, one ward. (All wards are for 20 beds).

•. Medical rehabilitation: The large number of people suffering from war wounds and amputations imposes special problems. A separate activity is proposed for their rehabilitation, with one centre at Agig South of Suakin near the Red Sea coast, and numerous subcentres within the settlements. Project activities will include manufacturing and fitting of artificial limbs, and the setting up of protected

workshops for the integration of the disabled into the economic life of the settlements . It is not yet known to what extent leprosy, a common disease in the Horn of Africa, occurs among the refugees. In case the prevalence justifies it, voluntary agencies with experience in medical rehabilitation of lepers will be invited to assist this special category.

COST ESTIMATES OF HEALTH BUILDINGS

	Type	Location	Cost in Pounds
1	Hospital (Rahad Type)	Showak	950,000
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12	Addition to Training Schools	See Sheet .X.	322,000
		Total	<u>4,093,553</u>

TRAINING OF C.F.W. VILLAGE MIDWIVES AND OVER-SEERS

Item	Province	Existing Training Unit	Proposed Additions	Area in m ²	Cost in Pounds	Remarks
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7	Kassala	Sanitary over-seers school.	- 2 Lecture Rooms - 2 Offices - 1 Lab. - Students' hostel (for 20 students)	350	70,000	
			Total		322,000	

SECTION 5

HEALTH SERVICES FOR THE REFUGEES IN THE SUDAN

Faithful to its policy of providing services for the population the Government of the Democratic Republic of the Sudan has assumed full responsibility for the health care sector. The Ministry of Health, together with the World Health Organization, has put together a comprehensive National Health Programme which includes eight specific sub-programmes, planned for the period 1976- 77 to 1983 - 84.

The main constraints to improvement of the health care programme can be divided into five categories: Socioeconomic conditions, lack of facilities, inadequate training, inadequate information and reporting systems, and lack of finances. The presence of some 440,000 refugees has added greatly to the severity of these constraints.

MAIN HEALTH PROBLEMS

Malaria has been identified as the number one health hazard. It is endemic in the entire country, and hyperendemic in parts of the Southern Region. However, irrigated areas in the North also provide an environment which is hospitable to the *Anopheles gambiae* mosquito. Although eradication of malaria has not been feasible, malaria control can be achieved through energetic efforts. Important aspects of these efforts are health education, training in agricultural techniques which would reduce the prevalence of breeding areas for the larvae, and improved nutritional status among the local population in order to prevent latent malaria from becoming manifest.

Another category of disease which the Government has placed high on its list are those caused by poor sanitary conditions, in particular parasites, gastroenteritis and related epidemic diseases. This category, especially serious to children, is of major concern for primary health care and sanitation programmes. Waterborne diseases such as schistosomiasis and river blindness with their debilitating effects necessitate effective intervention.

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GENERAL EDUCATION SYSTEM AND STRUCTURE

AIMS AND OBJECTIVES

BEST
AVAILABLE

Education is the main instrument for the building and creation of an enlightened generation. To achieve this the broad principles governing national education may be identified as follows:

- Education is a democratic right for all citizens
- Free education is provided for all children of school age.
- Equal opportunities of education between sexes.
- Equity of access and success is also recognised.
- Education is considered as an investment of human resources closely related to socio-economic development.

The main goals for education which help in producing a responsible citizen are :

integrated development of the individual, rebuilding of social life, achievement of economic growth, consolidation of national and regional affiliation, and participation in the world and human natural understanding.

ADMINISTRATION AND STRUCTUREAdministration

General education in the Sudan is administered by:

1. The Ministry of Education and Guidance which forms the main central unit of administration.
2. A Regional unit which is responsible for educational administration in the Southern Region.

3. Provincial units which are responsible for educational administration in provinces.
4. Advisory bodies which are either instituted by presidential decrees or ministerial orders or by the regional or provincial authorities.

The central unit in the Ministry of Education and Guidance is entrusted with the following functions:

- Planning for educational development
- Setting the national aims and objectives.
- Setting the curricula for the achievement of the set goals and objectives.
- Teacher education.
- Technical and vocational education.
- Adult education and functional literacy (technical aspects).

The Regional Ministry of Education and Guidance in the Southern Region is entrusted with the same functions in full co-operation with the Central Ministry.

The Provincial education offices are responsible for day-to-day administration. Each province is further divided into smaller local districts each with a unit directly responsible to the provincial office.

Structure

The educational ladder consists of three levels: primary, secondary and higher education. The primary level is of six years duration, secondary level is of six years divided into two independent stages: intermediate and secondary, each for three years except that the secondary comprises technical schools in agriculture, commerce, industrial home economics (for girls) and primary teacher training institutes for courses of four years duration. The duration of study in higher education extends from two to six years according to specialization in universities or higher technical institutions. Pre-primary education is not yet considered as a part of formal education, nevertheless it gets support and encouragement

from the Ministry of Education and Guidance whenever it exists.

There are also Koranic and village schools which provide services equivalent to those received by children in primary schools, although of shorter period and narrower content. For these children there are complementary schools which comprise only fifth and sixth grades of primary schools. Entry to these schools is for those who could pass an examination equivalent to fourth grade of the primary school and whose age does not exceed 13 years.

Vocational training centres are provided at the level of intermediate and secondary education which admit the unsuccessful leavers of primary and intermediate schools to enter formal education at upper levels.

The Ministry of Education and Guidance is aiming at universalization of primary education in 1990. The biggest obstacle to this revolves around the financial and technical potentialities of education in the traditional conception which makes them all of one pattern in all parts of the country and under all conditions of life.

Variation in types of primary schools such as the integrated rural education centres, the complementary school, double-shift schools, the one-teacher school, the alternate - admission school beside the traditional school are introduced.

Children are enrolled in grade one at the age of seven. Sometimes older children are admitted and also younger children might be admitted.

The procedure followed in opening new primary schools is that in an area with 4,000 people two schools are opened, one for boys and one for girls. For every six primary schools one intermediate school is opened.

Development of the System

Considering the enrolment in each level, taking the figures of the school year 1978/79, there are about 1,360,000 pupils in about 5,500 primary schools. This number constitutes only 50% of children in school age.

175,000 pupils sat for the primary school certificate, but only 105,000 passed the examinations and only 95,000 could find places in first year intermediate. This means that about 80,000 of those admitted to primary education will terminate their education at the primary level.

The number of intermediate schools (1,250) would absorb about 90% of those who could pass the primary certificate examinations. But only about 45% of those who sat for the Intermediate certificate could find places in Secondary schools.

Development of non-formal education

There are four functional literacy programmes. They aim at the betterment of skills, attitudes and the positive involvement of the individual in his or her society. The main areas of the programmes are :

1. The agricultural programme
2. The industrial programme.
3. The services programme.
4. The house-wives programmes.

BEST
AVAILABLE

The main objectives of these programmes are:

- a. To help in equipping the farmers, workers and house-wives with basic reading and writing skills to the standard of the fourth year in the primary school.
- b. To equip the individual in each sector with the technical knowledge related to the respective work.
- c. To help in changing attitudes and behaviour in a manner that will enable the individual to participate positively in a changing society. The percentage of illiteracy is about 80%. The educational strategy fixed the date for the eradication of illiteracy to coincide with that for universalization of primary education in 1990.

(An additional aspect of great importance for the refugee settlement programme is to help refugees whose mother tongue is not Arabic to maintain or increase fluency in their own language for the purpose of facilitating their continued existence following voluntary repatriation.)

THE IMPACT OF REFUGEES ON EDUCATION

In Kassala province the continuous influx of refugees has affected all the services in the province in general and has had a negative effect on educational services in particular.

The following figures give a clear picture of the heavy load on the government schools in Kassala Province which are flooded by refugee children. In the primary schools of Kassala town there are 1,168 boys and 900 girls and in the suburbs of Kassala there are 562 boys and 105 girls. In Gedaref town there are 481 boys and 78 girls. In total there are 2,492 boys and 1,179 girls. The total number of pupils constitute about 73 classes at the Primary level.

The effect of refugees on the performance of the schools in Kassala town is obvious. The children who have joined the primary schools constitute 11% of the total number of students in the primary level. Seven per cent of the 6th grade children in the Primary level are refugees. Those who have been accepted in the first grade of the intermediate level in the academic year 1980/81 constitute 8% of the total number of successful students in Kassala town only. These percentages represent only those who have been classified as refugees since some of the students would not like to be termed as refugees for fear of not being admitted to schools.

As a result of the crowded schools the Educational Administration in Kassala town resorted to the double-shift system in six of the boys schools and four of the girls schools, which will raise the enrolment of the students in these schools to one thousand in 1980/81, instead of only 500 students.

This intense burden on the schools of the Province prompted the Provincial People's Executive Council in Kassala to adopt Resolution No. 514 by which the refugees children are not allowed to be admitted to intermediate and secondary schools. The suspension of this resolution for one year gave the chance for the successful refugee students to be admitted to the schools at all levels. Since they are still apprehensive of not being allowed to join schools, the Admission Committees (for the academic year 1980/81) failed to assess their numbers.

In the Red Sea Province, the effect on educational facilities is also remarkable. The government schools have been affected by admission of a considerable number of refugee children. Overcrowding, shortage of books, furniture and depreciation of buildings have been caused by the refugee influx.

Strategy

The establishment of a number of schools is proposed to alleviate the pressure on the existing schools of these provinces and to meet the requirements for the education of the refugees.

The strategy followed for the establishment of the primary schools is that for every 5,000 people in a settlement two mixed schools are proposed. For each 6 primary schools one intermediate school is proposed. For the secondary level the proposed schools are to meet the output of the suggested intermediate schools and to release the burden on the existing government schools; besides helping preparing the graduate to earn a living.

PROPOSALS

1. Primary Schools

a) New Settlements

In each new settlement with 5,000 people, two primary schools will be established.

b) Existing Settlements

One school in each of Kilo 26, Khashm el Girba, Um Rakoba Awad El Seed, Path El Rahman and Kilo 7, to raise the number to two primary schools per settlement.

c) Outside Settlements

Three schools are proposed in Kassala town to meet the educational needs of about 10,000 refugees who will be staying in the town with the Sudanese families. Four schools are proposed in Gedaref town for 7,000 refugees, two for the Eritrean and two for the Ethiopians whose media of instruction will be English. 14 schools are proposed for Port Sudan for the 12,000 refugees staying in town.

The total number of the proposed primary schools is sixty five.

Two complementary schools with boarding houses were proposed in Kassala town for the children in the Torjatic schools.

2. Intermediate Schools

14 intermediate boarding schools with two streams i.e. sequels of grade 1 to III are proposed outside the settlements except for one in Um Saqqata in the Gila en Nabal settlement. Also one stream is proposed for the existing boys school of 44 Wad Taktook in the Suki agricultural scheme. Two schools will be established in each of Kassala town, Gedaref, Showak and 44 Wad Taktook. One school is proposed for Khashm el Girba and one in Um Gulja for the Ethiopians with English as medium of instruction. Three intermediate schools will be established in Port Sudan to meet the flow of the 14 primary schools and the graduates of the

voluntary agencies' primary schools.

3. Secondary Schools

To meet the output of the intermediate schools, three secondary boarding schools with two streams are proposed; one academic, one commercial and one industrial. These schools are proposed to be established in Fao agricultural region. One stream will be added to each of Sennar boy's school, Sennar girl's school and Port Sudan boy's school.

4. Evening Classes

Evening classes are proposed for those students who had terminated their studies at different grades at the intermediate and secondary levels, besides the graduates of the voluntary agencies' primary schools which use different syllabuses e.g. Saudi, Iraqi, Syrian.

Thirtyfive secondary classes are proposed for 1,772 students among whom 138 Ethiopians. Twenty classes will be in Kassala town and 3 in Gedaref town, 10 in Port Sudan and 3 in Sennar. The total cost for these classes is .S 274,000. The cost for each class is .S 7,828.

21 intermediate evening classes are proposed for 1,040 students.

14 in Kassala town, one in Gedaref for Ethiopians, 4 in Port Sudan and 2 in 44 Tad Taktook. The total cost for those classes is 3,960.

5. Consolidation of existing non-Government Schools

These schools function either in Sudanese Government schools in a second shift or are situated in rented buildings. They give no appearance of being proper schools. Most of them lack the necessary equipment and stationery. There are about 3,012 pupils in primary schools and 405 students in intermediate schools, and 272 teachers, nearly all of whom are untrained. Syllabuses used in these schools are combinations of Iraqi Saudi, Sudanese etc.

It is proposed that these schools could continue as they are, but that no new intake should be permitted so that they are gradually discontinued. New intake should only be for the proposed schools.

In the meantime training of teachers for these schools should take place in short courses and by supervisors from the educational offices in Kassala and Port Sudan.

6. Adult Education

The proposed schools in each settlement would be utilized in the afternoons in different adult education activities. One centre should have been allocated for men and another for women. The main purposes of these centres are to maintain the refugees' skills in their own language in order to facilitate their re-integration after voluntary repatriation; and to eradicate illiteracy. Two aspects of great importance to women have been

given prominence; sewing and home-economics, in addition to improvement of handicrafts undertaken by Eritrean women.

It is proposed that for every 5 settlements an adult education officer and a female counterpart for activities, besides ten female and five male guides, are allocated. The total cost for 60 classes with 40 learners each amounts to \$s. 292,470.

7. Technical and Educational Supervision

A director shall be on secondment from the provincial Educational office in Kassala to undertake supervision and followup of establishment of schools at all levels. At the same time he will be the coordinator between the educational office and the Refugees Department.

Two technical supervisors should be appointed, and one educational supervisor with an assistant for primary schools. For the intermediate and secondary schools the educational office should cater for supervision in these schools. Supervisors should be given incentive in these two levels. It amounts to about \$S 810 yearly.

8. Teacher Training

Primary school teachers shall be seconded from provincial staff for teaching, guidance and supervision. The number required is 61 of second salary scale to act as directors of the proposed schools.

Also 61 teachers of first salary scale will be newly appointed.

The directors who are on secondment will be replaced by new teachers who could be trained within the frame work of provincial teacher training plans.

Priority should be given to qualified Eritreans and Ethiopians for the newly appointed teachers.

TEACHER TRAINING IN VOLUNTARY AGENCIES SCHOOLS

A plan has been made for upgrading of standards for the primary school teachers. The total number of teachers is about 272. The proposed budget for 100 teachers annually for a two month's course amounts to 38 25,200.

After the gradual discontinuation of these voluntary schools, those teachers could be transferred to the proposed schools.

ESTIMATES FOR EDUCATIONAL
INSTITUTIONS

Type of Education	Capital Cost	Running Cost/Year
PRIMARY EDUCATION		
a) Kassala Province		
Capital cost of 48 schools		
48 schools x 176850 CS	8,056,816	
Running cost/year for 48 schools		1,129,142
b) Red Sea Province		
Capital cost of 14 schools		
14 schools x 176850 CS	2,349,900	
running cost of 14 schools/year		329,333
c) Blue Nile Province		
Capital cost of 3 schools		
3 schools x 176850 CS	503,550	
Running cost of 3 schools/year		70,571
TOTAL	10,910,266	1,529,046

Type of Education	Capital Cost	Running Cost/Year
INTERMEDIATE EDUCATION		
a) Kassala Province		
Capital cost of 10 schools		
10 schools x 310,626 ES	3,106,260	
Running cost of 10 schools/year		169,454
b) Red Sea Province		
Capital cost of 3 schools		
3 schools x 310,626 ES	959,378	
Running cost of 3 schools/year		50,835
c) Blue Nile Province		
Capital cost of 3 streams		
3 streams x 155,313 ES	465,939	
Running cost of 3 streams/year		25,417
TOTAL	4,504,077	245,706

Type of Education	Capital Cost	Running Cost/Year
SECONDARY EDUCATION		
Academic Secondary Education		
a) Kassala Province		
Capital cost of one academic Secondary School		
1 school x 1,025,000 £S	1,025,000	
Running cost/year		46,628
b) Red Sea Province		
Capital cost of one stream to be added to Port Sudan existing Secondary School		
1 stream x 512,500 £S	512,500	
Running cost of one stream/year		23,314
c) Blue Nile Province		
Capital cost for 2 streams to be added to Sennar boys' and girls' Secondary Schools		
2 streams x 512,500	1,025,000	
Running cost		46,628

Type of Education	Capital Cost	Running Cost/Year
Commercial Secondary Education		
a) Kassala Province		
Capital cost for one commercial school		
1 school x 1,267.813 ES	1,267,813	
Running cost/year		74,836
 INDUSTRIAL SECONDARY EDUCATION		
a) Kassala Province		
Capital cost for one Industrial School		
1 school x 1,737.037 ES	1,737,037	
Running cost/year		96,252
TOTAL	5,567,350	287,658

SECTION 7

ASSISTANCE PROJECTS

The projects for which requests will be made by the Sudanese Government fall under two major headings, External projects and Settlement projects. In turn, the External projects are subdivided into those aimed primarily at generating economic revenue, such as large centralized live-stock, dairy, poultry and afforestation projects; and those aimed primarily at providing services to the refugee community at large, such as administrative services, training of medical staff and teachers, and vocational training.

The actual Settlement projects are subdivided into existing settlements, where the assistance need is mainly for consolidation, and new settlements where a wide range of assistance activities are needed for the gradual buildup.

The following presentation of the settlement programme is going to deal with different but interrelated activities. These are the actual Settlement projects, consisting of one or in some cases several groups of roughly 4,000 to 6,000 settlers administered by a common project management. The Settlement projects include a number of components, related to production of food and various goods and to basic services including health, education, water supply and other essentials. In addition there are the specific projects external to the actual settlements, consisting of for example vocational training centres and centres for poultry production.

A ruling guideline for a settlement project is that it must be regarded as an integrated socio-economic unit, in other words a complex organism consisting of numerous and diverse activities which add up to an economically viable community with a potential for future development. As many of the projects are by necessity located in marginal areas where periodic droughts and crop failures must be anticipated, the planned settlements will be based on a range of activities that will be wide enough to ensure a sound economic basis in spite of the hardships imposed by the environment.

7.I EXTERNAL INCOME GENERATING PROJECTS

7.I.1 Afforestation project

Most refugees in the Kassala Province have been accommodated in areas used mainly for grazing with scant forest resources. Small trees are providing wood for housing and fuel, as well as browse for many animals during the dry season until August when the new flush of grasses occurs after the rains. Deterioration was occurring prior to the coming of the refugees and is expected to intensify with the introduction of the added population.

The aim of the afforestation project is to compensate the loss in forest resources by adoption of the so-called "Taungya" method whereby the land is utilized to produce a crop (dura in this case) before it is stocked with trees. This method has been used in the Kassala Province for a long time for raising Hashab (Acacia Senegal) which can be tapped for Gum Arabic from the age of 5 years to the age of 25 years after which it is out down for wood and charcoal making.

It is planned to afforest a total of 100,000 feddans of which 50,000 will be by Hashab, and the rest by Talh (Acacia Seyal) and Miskeet (Prosopis Chiliensis) which is a valuable fodder tree. Most of the operation will be mechanised and is expected to take six years to complete. The project is estimated to cost £s.10,116,770. The estimated returns from dura production is £s.4,200,000 over the six years. The Gum Arabic output is estimated to be worth £s.10,116,770. The estimated returns from dura production is £s.4,200,000 over the six years. The Gum Arabic output is estimated to be worth £s.240,000 from the sixth year on. The projected area of 50,000 feddans of hashab will be fully productive on the 11th year, reaching an annual return of £s.600,000. The returns from the other 50,000 feddans of trees can not be evaluated now.

7.I.2 Livestock projects

(a) An integrated livestock and cash crop production project is proposed to be located on a 250,000 feddan area in Maharigat, Presidential Decree Area, west of Showak, El Fashags - Kassala road. Under the open grazing system of the nomadic tribes particularly during dry season periods, cows are unable to feed a calf while being pregnant. The strategy of the proposed project is directed towards the implementation of an integrated rotational grazing area along with the production of cash crops and forage legumes hay in an arable rotation. Some 6,000 head of cattle from among the refugee herds will utilize the facility on the basis of fees to be paid per animal. Veterinary care, livestock improvement efforts, and animal husbandry methods suitable to the area can be provided to the local herdsmen at the site. The capital cost of the project including machinery and equipment, buildings, transport units and minor fencing, is estimated to be £s.971,000 with annual operating expenses of approximately £s.209,500.

(b) Veterinary hospitals

Two veterinary hospitals are proposed to be located in Um Saqata and Showak to provide an entire range of care throughout the refugee settlement areas. Each unit is to cost £s.323,000 to establish. Annual expenses are estimated to be £s.37,480.

(c) A mobile veterinary unit consisting of a landrover, a mobile dispensary (a Bedford truck) and a 5-ton Diesel, is proposed to serve the refugees herds in Kassala, Girba, Showak and Setit. It is to be staffed with a veterinary doctor and his support team. The mobile unit is estimated to cost £s.76,000 to purchase and is expected to require £s.19,000 operating costs each year.

7.1.3 Dairy Projects

Two large dairy farms are proposed for Gedaref and Khashm El Girba. The Gedaref farm will supply the refugees at Um Gulja and Tawawa with dairy products and will contribute towards the improvement of refugee animals at Gedaref, Abu Nahal, Abu Rakham and Maharigat. The Khashm el Girba farm is expected to provide similar services to settlements located at kilometers 2,3,20 and 26.

The dairy projects are expected to stabilize milk prices in the area, and help train the refugees in proper animal husbandry practices.

The total estimated cost of construction of each farm is £s.597,750. Annual expected direct income from each farm is currently estimated to be roughly £s.91,400.

7.1.4 Poultry Projects

Central poultry farms at Showak and Port Sudan (Salloum kilometer 60). Each farm will be designed as a 15,000 bird chick-rearing unit to supply the settlement poultry farms. Surplus eggs and cocks will be sold for local consumption. Total estimated cost of construction, stocking and operation of each farm for the first year is set at £s.152,000, while the anticipated first year profits are estimated to be £s.51,000.

7.1.5 Vegetable Gardens

(a) Three feddan each horticultural gardens to be located and serve the following:

1. Showak gardens to serve Om Ali, Abuda, Om Gargour, Karkora and Wad Kabo settlements;
2. Abu Rakham to serve Abu Rakham I and II, Mafaza and Hawata settlements;
3. Abu Nahal to serve Salmin, Çala en Nahal, Zarzur, Um Saqata and Um Kura.

(b) Three 20 feddan each to serve refugees at:

1. Om Gulja Tawawa;
2. Khashm el Girba;
3. Halfa Gedida to serve settlements at Kilo 20,26,3,2 and Goz Ragab.

Project costs and estimated revenues:

1. For each 100 feddan garden

Capital costs	£s. 46,000
Annual running costs	10,000
Annual salaries	12,500
Estimated revenue	52,000

2. For each 20 feddan garden

Capital	£s. 40,000
Annual running costs	2,000
Annual salaries	26,000
Estimated revenue	10,400

7.2. EXTERNAL Service Projects

7.2.1 Administrative Services

These are outlined under the appropriate group settlement projects in section 7.7 and 7.9 respectively of Vol. I.

Health

These are described in Section 5 of Vol. I.

Education

These are described in Section 6 of Vol. I.

7.2.4 Vocational training centre

To meet the demand for trained manpower, presently aggravated by the large scale immigration of Sudanese nationals who find better paid jobs in the Gulf States, one vocational training centres is proposed for Gedarof. The centre is to provide 3 year training courses for Junior se secondary school leavers, as well as short 2-3 month courses for refugees who already possess certain skills and plans are well under way for the capital plant, training programmes and administrative structure. It is expected that the centres will meet important needs both among the refugees and among Sudanese trainees.

The cost of the vocational training centre is tentatively estimated at £s.10,000,000.

7.2.5 Annual preparation and training project for tractor units

This project proposes the funding and supply of an annual programme of training and preparation to improve tractor operations in the refugee settlements. It would have the following components:

- (i) Improvement of field operations. Short courses for temporary tractor drivers;
- (ii) Training of salaried senior tractor driver/supervisors for each settlement;
- (iii) Annual reconditioning of all tractors before cultivation period;
- (iv) Filling of bulk fuel storage tanks before the cultivation period;
- (v) Construction of simple field workshops for routine maintenance of each settlement;
- (vi) Consolidation of central workshops at Gala en Nahal and Shwoak.

The 1981 budget is approximately £s.300,000 but temporary funding of another £s.700,000 may be needed to facilitate the timely completion of (iii) and (iv).

7.2.6

Kassala sub-station for the Nuba Mountains Animal Drawn Equipment Project

When the tractor units become self-supporting after a few seasons, some refugees may not wish to pay the full economic cost of tractor mechanisation.

It is proposed to fund a small sub-station at a refugee settlement for the proposed Nuba Mountains Animal Drawn Equipment Project under the Department of Agricultural Engineering. The main objective would be to develop a lower cost mechanised system based on animal power traction.

1981 budget approximately £s.30,000.

7.2.7

Famine relief grain stores

In areas (such as Showak) where a certain proportion of crop failure seasons are inevitable, it is proposed that community grain stores be set up which would be large enough to provide an emergency reserve grain supply which would suffice until outside assistance could arrive.

The stores could serve the valuable subsidiary purpose of stabilising grain prices by purchasing a proportion of the refugee crop after harvests and selling the equivalent amount of old stored grain at the end of the dry season when grain prices normally rise.

The system of management is open to discussion but it is anticipated that the famine stores could be run at a small profit.

Budget to be presented.

7.3 SETTLEMENT PROJECTS

As already stated, the aims of the settlement programme are to maintain the refugee population in the settlements at an acceptable level of living related to that of their Sudanese neighbours and to their conditions before becoming refugees, but without attracting a further influx.

A necessary prerequisite for this is the economic viability of each settlement, including sufficient economic growth to maintain parity with growth elsewhere in the Sudan. This concept of equilibrium calls for some definitions.

At its most basic, economic viability can be defined in terms of a simple equation:

$$\left. \begin{array}{l} \text{(Accumulated)} \\ \text{(annual} \\ \text{(expenditure)} \end{array} \right\} \text{ equals } \left. \begin{array}{l} \text{(Accumulated)} \\ \text{(annual} \\ \text{(income)} \end{array} \right\}$$

With expenditure defined as necessary consumption of basic food requirements, basic needs of clothing, household items and necessary consumer goods, and meeting basic social costs for weddings, funerals etc., plus margins that are adequate for coping with crop failure and/or other economic losses; plus economic margins for basic investments necessary for economic growth, such as purchase of tools, non-productive training periods and trial periods for new enterprises.

To be meaningful, the formula has to be applied to the entire settlement, and thus refer to the aggregate expenditure and income. It must be strongly emphasized that a settlement has to be regarded not as a one-dimensional concentration of so many logistical units, but as a living community, an organism with its own diverse skills, with its own points of strength and vulnerability. Settlers are not oases, they are people; with human needs and a human potential. In order to release the potential of the refugees, it must be realized that the uprooting process they are going through makes their needs greater than those of the settled population, and that reintegration into a functioning socio-economic system is one of the most fundamental among the needs.

In terms of planning for a settlement this means that the refugees' lack of roots in a new environment must be taken into serious consideration. It must be anticipated that their willingness to remain in a settlement during a period of economic hardship is much less strong than that of their Sudanese neighbours, rooted in their own villages. Consequently, extra care and

caution has to be taken in safeguarding the settlements against lean periods caused by for instance a failed harvest. Even distribution of relief food is not likely to prevent refugees from drifting away from an area where they do not feel that they belong.

These points lead to one conclusion: Settlement projects must be planned in such a way as to permit the greatest possible degree of diversification of activities. The aggregate accumulated annual income of the whole settlement must be enough to meet the aggregate expenditure, which means in effect that no opportunity for generating incomes and reducing expenditure can be neglected. It is realized that this is a novel approach to settlements, imposed in part by the heterogeneous composition of the refugee groups, and in part by the current economic situation in the Sudan. While the gross national inflation rate is between 20 and 30 percent, great distances and difficult communications contribute to raising the inflation rate for low income groups in rural areas to between 60 and 70 percent. The result is that household expenditure has grown to unprecedented heights, calling for innovative strategies to enable people to make ends meet.

7.3.1 GENERAL INTRODUCTION

In the following proposals there are four main types of refugee settlement outline:

"Urban wage earning": New neighbourhoods built in existing towns to accommodate refugees who are already in urban employment:

"Agricultural + rural wage earning": Rural settlements in which refugees subsist on the produce from small rainfed holdings (usually 5 feddans/family) and supplement their income by rural wage earning employment.

"Rural wage earning only": The income from rural wage earnings is not considered sufficient to sustain self-supporting settlements. This type of settlement is therefore expected to develop into either "Agricultural + rural wage earning" or (in dryer areas) into "Rural wage earning + irrigated small-holding". These latter type will raise vegetables for sale and will also grow forage for livestock production.

The existing pressure on the rainfed grazing in the refugee areas may preclude the imposition of any further pressure from the refugees' own herds.

7.4 INTEGRAL SERVICE COMPONENTS WITHIN SETTLEMENTS

7.4.1 Water supply

All existing and projected refugee settlements have budgeted water supply systems large enough to supply both the reasonable needs of the refugees, their livestock and irrigated gardens. Not all of the installations budgeted for the current financial year have been completed.

7.4.2 Health

Each settlement normally has one dressing station staffed by a dresser and assistant dresser. Some settlements also have the services of an ambulance or share one with neighbouring settlements in the same group.

7.4.3 Sanitation

Each settlement normally relies on a system consisting of refuse collection and pit latrines constructed by each family. An incentive payment of LS.20 is made per family.

7.4.4 Tractor services

Each agricultural settlement will be supplied with one tractor and one wide level disc seeder per 1,000 refugees. Their main purpose will be to cultivate and sow the refugee farms. During the remainder of the year they will also be available for a variety of community services such as transport and road maintenance. Cultivation services will be free to the refugees during the first two seasons after which they will be expected to pay the full economic cost of the operation.

7.4.5. Education

Primary education for 600 students will be provided in each settlement. Two schools, each with 6 classrooms, a head teacher and six teachers will be built at a cost of LS,283,999 for capital and running costs during the first year.

7.4.6 Veterinary services

Veterinary staffing within each settlement will be limited to one poultry attendant in charge of the settlement poultry project.

7.4.7 Community Development

Each settlement will have a community centre staffed by a community development supervisor and assistant at a cost of LS,29,449 for capital and running costs during the first year.

7.5 INCOME GENERATING ACTIVITIES WITHIN SETTLEMENT PROJECTS

The admixture of these activities is decided by the need to generate sufficient income within the settlements to meet the aggregate accumulated household expenditure by the potential offered by the environment, different skills and inclinations of the manpower, and by the marketing opportunities within the neighbourhood. In general terms they come under five different headings.

7.5.1 Cultivation

Cultivation of food crops, mainly dura in the Eastern Region and cassava and maize in the Southern Region. Cultivation of cash crops, mainly sesame in the Eastern Region and coffee and tobacco in the Southern. Cultivation of horticultural crops, partly intended for the raising of the nutritional status of the settlers and their neighbours and partly for marketing. In areas where rainfall is marginal, the horticulture will take the form of irrigated gardening. Cultivation of forage for livestock. Cultivation of trees will include citrus and mango trees, and acacia for the production of gum arabic. In addition, seedlings will be produced for local afforestation sub-projects in order to meet the demands for firewood and building materials.

7.5.2 Animal husbandry

A large proportion of the refugees are of pastoral origin and possess considerable skills in raising livestock. However, inputs in the form of improved breeds, veterinary services and expertise in fodder production will be provided from the external livestock and dairy projects. The animal husbandry component will have to be built up over time, with a great deal of flexibility in the implementation. It will extend over the whole range of camels, cattle, goats, sheep, donkeys, horses, rabbits, chickens, ducks, fish farming and beekeeping. The outputs will be improved nutrition and income; availability of draft and pack animals, skins and hides, milk, eggs, offspring and meat for marketing.

7.5.3 Wage earning

Several rural settlements are located near large agricultural schemes where the needs for casual wage labour will supply an income during the working season. In the case of sub-urban settlements the employment will be throughout the year.

7.5.4 Small scale industries

A large part of the refugees are of non-agricultural, non-pastoralist background, and cannot be expected to become economically self sufficient in these activities within a reasonable time. On the other hand they constitute an untapped reserve of skills and experience ranging from traditional crafts and trades to training in administration and management. In order to retain these categories within the settlements and make use of their resources, a wide range of small scale industries will be encouraged. Assistance will be necessary in the form of feasibility studies concerning the availability of manpower, materials and markets. A flexible programme of short refresher courses, providing the necessary training, equipment and incentive is envisaged in order to stimulate this component of the settlement projects. The proposed vocational training centres will be drawn upon for expertise and over-view of the labour market.

7.5.5 Self-help schemes

The purpose of this form of activities is not primarily to generate income for the settlements, but rather to promote equity by making money go around, and activate the largest possible proportion of the settlement population. They will take the form of services like water fetching, small restaurants and tea-houses, and other activities which can be set up with minimum investment. They will require encouragement but no specific support.

7.6. EXISTING SETTLEMENTS

Government support

In addition to the budgeted services described above, the existing settlements also receive substantial financial support from the Sudanese Government services in the following fields: water supply, health services, education, security, employment in Government, waiver of licenses for self employment, waiver of land use fees and many other aspects where formal provision could not be made in time and it was necessary to provide for immediate needs.

7.6.2 UNHCR Support

All the existing settlements are supported by the United Nations High Commissioner for Refugees, whose programme for assistance to the refugees in the Sudan dates back to 1968. UNHCR funding covers the transportation of refugees from temporary camps to new sites, provision of housing, medical and educational facilities, setting up of some of the essential settlement infrastructure such as water supply, and assistance for agricultural activities where necessary.

7.6.3 World Food Programme support

While the settlements are becoming consolidated, the refugees receive food rations from WFP. Full daily rations consist of 400 grammes dura, 40 grammes milk powder, 30 grammes fats and 30 grammes pulses. Semi complete daily rations are the same, but with the dura reduced to 200 g.; partial rations consist only of the same quantities of milk powder, fats and pulses. Even the full ration is to be considered as a maintenance diet, and is insufficient for a working population in need of adequate nutrition. Needs for vitamins and trace elements are not met.

The WFP contribution to the settlements will be gradually phased out, but remains a necessity during the initial phases.

7.7.1 EASSALA PROVINCE

All the refugee settlements in this province are situated on the "central clay plains".

Settlement group: El Showak

This group north of Gedaref is too arid for sesame production but can grow dura in most seasons. The climate is arid to semi-arid. 10 feddans have been allocated per family at Karkora and Um Gargur and this should provide a sound economic basis for subsistence plus some income from livestock production on the fallow portions of these plots. The town of El Showak with its population of 11,000 provides a market for numerous products from small scale industries. This settlement group will also provide the refugee component of the proposed Maharigat Cattle Ranch.

Project Name: Refugees Management Office - El Showak
Type : Administrative services
Services : Project Management staff and Logistic Support
Road maintenance Section
Water supply maintenance Section
Workshop support.

Provisional Budget 1981 LS. 179,153 for consolidation.

Settlement name: -- Karkora
Refugee population 3,500 Eritrean refugees of rural origin who reached the Sudan in 1975-76.
Type Agriculture (dura only) + livestock and rural wage earning.
Services Standard, tractor unit incomplete.

Income generating enterprises Vegetable garden
Poultry project
Small scale industries
Self help schemes

WFP supplies To continue until further notice.

Budget 1979 - 80 LS. 177,500 for construction, running costs and salaries.

Continuation budget 1980 - 81 to be submitted.

Settlement name -- Um Gargur
Refugee population 5,000 Eritrean refugees of rural origin who reached the Sudan in 1975-56.
Type Agriculture (dura only) + livestock and rural wage earning.
Services Standard, tractor unit incomplete.

Income generating enterprises

Vegetable garden
Small scale industries
Self help schemes

WFP supplies To end 1980.

Budget 1980 LS.46,300 for consolidation, running costs and salaries.

Continuation budget 1981 LS.245,000 requested for further consolidation running cost and salaries.

New Settlement

Settlement name - El Showak N.W.

Refugee population 5,000 Eritrean refugees of rural origin

Type Agricultural + wage labour

Services Standard.

Income generating enterprises Poultry farm
Irrigated garden
Small scale industries
Self help schemes

WFP supplies To be issued for at least two years.

Provisional budget LS.811,890 Completion end 1981

New Settlements

<u>Settlement names</u>	7 settlements to be named in the Maharegat area on the pipeline from the River Atbara to Um Gargur.	
<u>Refugee population</u>	35,000 Eritrean refugees of rural origin.	
<u>Type</u>	Agriculture + livestock production.	
<u>Services</u>	1 dressing station for each settlement 1 ambulance for whole group 1 tractor unit for each settlement Otherwise standard.	
<u>Income generating enterprises</u>	1 poultry farm in each settlement 1 irrigated garden in each settlement	
<u>WFP supplies</u>	Will be provided for at least two years.	
<u>Provisional budget</u>	LS.10,197,899	<u>Completion end 1982</u>

BEST
AVAILABLESettlement group: Qala-en Nahal

This area about 70 km. south west of Gedaref is suitable for dura and sesame production. The climate is semi-arid. 10 feddans have been allocated per family at Qala-en-Nahal and this should provide an adequate basic income from arable farming. The settlement was established in 1969.

Settlement names Um Saqata (Hq), Salmin, Um Burush, Adingirar, El Zarzur and Deheima.

Refugee population 25,000 Eritrean refugees of rural background who mostly arrived in the Sudan in 1967-69.

Type Agriculture, dura + sesame and rural wage earning.

Services One dressing station per settlement.
Tractor units (average three tractors per settlement).
Mechanical workshop (central for whole group).

Income generating enterprises One 100 feddan vegetable garden to serve whole group.
Poultry centres.

Small scale industries.
Self help schemes.

WFP supplies Available only for recent settlers. Reduced rations until the end of 1980.

Budget 1980 £s.96,350 for consolidation, running costs and salaries.

Continuation budget 1981 £s.183,300 requested for consolidation.

Note: The Sudan Government is now funding the running costs of these settlements apart from some UNHCR expenditure on new arrivals.

New Settlements

<u>Settlement names</u>	Three settlements in the Qala-en-Nahl group to be established in 1982.	
<u>Refugee population</u>	15,000 refugees of Eritrean origin.	
<u>Type</u>	Agriculture and labour wages.	
<u>Services</u>	1 Dressing station and ambulance per village. 1 Tractor hire unit per village.	
<u>Income generating enterprises</u>	1 irrigated garden per village, animal husbandry, small scale industries, self-help schemes.	
<u>WFP supplies</u>	To be coordinated by UNHCR with COR.	
<u>Provisional budget</u>	LS. 3,579,054	<u>Completion</u> end 1982.

Settlement group - Khashm-el-Girba

This location about 100 km north-east of Gedaref is too arid for reliable rainfed agriculture. The existing settlements have been established as "rural wage earning only" but will have to develop a further major basic income source in order to become viable. It is anticipated that this will take the form of irrigated small holdings for vegetable and livestock production. The climate is arid.

<u>Settlement name</u>	Kilometre 26
<u>Refugee population</u>	4,400 Eritrean refugees (being increased to 6,000 in 1981) of rural or small trader origin who arrived in Sudan in 1978.
<u>Type</u>	Agriculture, wage employment and vegetable production for consumption and sale.
<u>Services</u>	Dressing station
<u>Income generating enterprises</u>	Irrigated garden. Small scale industries. Self help schemes.

WFP supplies To end 1981 for old and new settlers.

Budget 1980 LS.80,000 for consolidating the settlement,
running costs and salaries.

Continuation budget 1981 LS. 153,900 requested for consolidation, running
costs and salaries.

1981 -- New Settlement. LS. 84,384 request.

Settlement name Khashm el Girba (H.Q.)

Refugee population 5,700 Eritrean refugees of rural or small trader
background who arrived in the Sudan in 1978.

Type Wage earning and irrigated agriculture.

Services Standard.

Income generating enterprises Irrigated vegetable garden.
Small scale industries.
Self help schemes.

WFP supplies Expected to end 1981.

Budget 1980 LS.55,000 for consolidation, running costs
and salaries.

Continuation budget 1981 LS.223,800 requested for consolidation.

New Settlement

Settlement name Kilo 20

Refugee population 6,000 Eritrean refugees of rural origin.

Type Wage labour, livestock production on irrigated small holdings.

Services Dressing station with ambulance. Otherwise standard.

Income generating enterprises Poultry farm.
Irrigated garden (20 feddan to serve whole group).
Small scale industries.
Self help schemes.

WFP supplies Under consideration by WFP Rome.

Settlement group Gedaref

The area near Gedaref town has a reliable rainfall which permits the cultivation of sesame and dura. The climate is semi-arid. About 10,000 refugees depend on urban employment in Gedaref town.

Settlement name Um Gulja (12 km. west of Gedaref)

Refugee population 6,000 Ethiopian refugees mainly from Tigray Province of rural or small trader origin who arrived in the Sudan in 1975-76.

Type Wage earning only originally. Land has been allocated for the 1980 cropping season.

Services Standard
Tractor unit projected.

Income generating enterprises Weaving project.
Small scale industries.
self help schemes,

WFP supplies Will now be phased out. Partial ration up to end of 1980. 1000 full ration for 81/82/83 under consideration.

Budget 1.1.1980 28,209,700 for first phase construction, running costs and salaries.

Continuation budget 1981 Es.211,180 requested for further consolidation, running costs and salaries.

Settlement name Towawa

Refugee population 6,000 Ethiopian refugees mainly from Tig~~ray~~ Province of mainly urban origin temporarily settled at Um Gulja.

Type Urban employment in Gedaref town.

Services Clinic (to be developed into a health centre in 1981), otherwise standard.

Income generating enterprises Small scale industries self help schemes.

WFP supplies Received while at Um Gulja + 3 month full ration in Towawa under consideration.

Budget 1980 Cs.213,224 for the first phase construction, running costs and salaries.

Continuation budget 1981 Cs.279,400 requested for further consolidation, running costs and salaries.

New settlement

Settlement name Towawa II

Refugee population 5,000 Ethiopian refugees of urban origin.

Type Urban wage earning (in Gedaref town)

Services Health centre with ambulance, otherwise standard.

Income generating enterprises Poultry farm.
Irrigated garden.
Small scale industries.
Self help schemes.

WFP supplies Under consideration. 3 month rations under consideration
WFP Headquarters.

Provisional budget Cs.1,103,650 Completion end 1981

Settlement name Um Rakoba

Refugee population 3000 Ethiopian refugees mainly from Tigray Province of rural or small trader background who arrived in Sudan mainly in 1975-76.

Type Rural wage earning and informal agricultural production. Being converted to agricultural in 1980.

Services Being developed to standard in 1980. Shares existing Sudanese Government services.

Income generating enterprises Animal power cultivation by individual refugees. Small scale industries. Self help schemes.

WFP supplies Partial ration up to end 1980. To continue for two years for new settlers.

Budget 1980 Es.168,125 for first phase construction, running costs and salaries.

Continuation budget 1981 to be submitted.

Settlement group Abu Rakham.

About 120 km south-west of Gedaref. The rainfall permits reliable cultivation of dura but rather marginal for sesame. The settlements are adjacent to the Rahad scheme which is expected to provide much of the agricultural wage employment. The climate is semi-arid.

Settlement name Abu Rakham (H.Q.)

Refugee population 4,000 Eritrean refugees of rural origin who arrived in Sudan 1975-76.

Type Agricultural and wage earning.

Services Standard.

Income generating enterprises Irrigated vegetable garden (funded, awaiting water supply).

WFP supplies Will be stopped after two harvests.

Budget 1979-80 Es.231,858 for first phase construction, running costs and salaries.

Construction budget 1981 Es.123,300 requested to consolidate village, running costs and salaries.

New Settlements

<u>Settlement names</u>	Tendebe and Mafaza
<u>Refugee population</u>	10,000 Eritrean refugees of Ethiopian origin who arrived in the Sudan in 1975-76.
<u>Type</u>	Agricultural + wage labour.
<u>Services</u>	Dressing station at each settlement. One ambulance to serve both settlements. Tractor unit at each settlement. Otherwise standard.
<u>Income generating enterprises</u>	Poultry farm at each settlement. Irrigated garden at each settlement. Small scale industries. Self held schemes.
<u>WFP supplies</u>	Will be supplied for two seasons.
<u>Provisional budgets</u>	LS.1,061,838 and LS.1,240,030 <u>Completion end 1981</u>
<hr/>	
<u>New Settlement</u>	Fao
<u>Refugee population</u>	4,000 refugees from Ethiopia of Eritrean urban or semi-urban origin.
<u>Type</u>	Non-agricultural employment in Fao town.
<u>Services</u>	Health centre, otherwise standard.
<u>Income generating enterprises</u>	Small scale industries. Self help schemes.
<u>WFP supplies</u>	Under consideration in Rome.
<u>Provisional budget</u>	LS.1,094,400 <u>Completion end 1981</u>

Settlement Group

Abbuda and Um Ali

About 100 km. North-east of Godaref. The characteristics of the area are similar to those of the Showak group.

New settlements

Settlement names

Abbuda (H.Q.) and Um Ali

Refugee population

12,000 Eritrean refugees with a rural background.

Type

Agricultural and livestock raising.

Services

Dressing station with ambulances for each settlement.
Otherwise standard.

Income generating enterprises

Poultry farm.
Irrigated garden.
Small scale industries.
Self help schemes.

WFP supplies

Under consideration in Rome.

Provisional budgets

LS.1,219,536 and 876,184 Completion end 1981

Settlement Group

Adergawi

The climate is too dry for rainfed crop production. The proposed settlements are all on the river Atbara and adjacent to the New Halfa irrigation scheme up to 230 km. north of Gedaref. The climate is arid.

New settlements

Settlement names

Qoz Ragab (H.Q.), Adergawi I and II.

Refugee population

10,000 Eritrean refugees in two settlements.
5,000 Ethiopian refugees in one separate settlement.

Type

Irrigated smallholding raising vegetables and forage for livestock production, and rural wage earning.

Services

Dressing station with ambulance at each settlement.
Otherwise standard.

Income generating enterprises

Irrigated garden at each settlement.
Poultry farm at each settlement.
Small scale industries.
Self help schemes.

MFP supplies

Under consideration at Rome.

Provisional budgets

LS.4,328,279 Completion end 1982

BLUE NILE PROVINCE

The soil is similar to Kassala Province.

Settlement group Es Suki (H.Q. in Salma).

This group of settlements is adjacent to the Suki Irrigation Scheme. 170 km. south-west of Gedaref. The climate reliably supports the rainfed production of dura and sesame but as yet there has been no allocation of rainfed or irrigated land. Until either of these steps has been completed, these settlements will not be viable.

The Sudan Government services and Es Suki scheme management have given much direct assistance to this group of settlements:

Settlement names Awad es Sid, Fat'h el Rahman

Refugee population 5,000 Eritrean refugees of rural background who arrived in the Sudan in 1975-76. 2,500 in each settlement.

Type Rural wage earning.

Services Dressing station, adult care clinic. Services being brought up to standard in 1980.

Income generating Small scale industries.

enterprises Self help schemes.

WFP supplies Discontinue at end of 1980. 700 full ration 1981/82/83 under consideration.

Budget 1980 Cs.67,240 for consolidation, running costs and salaries.

Continuation budget 1981 £s.112,000 for further consolidation, running costs and salaries.

Settlement name Kilo 7

Refugee population 3,000 Eritrean refugees of rural background, who arrived in the Sudan in 1975-76.

Type Rural wage earning.

Services Limited. Being improved to standard in 1981.

Income generating enterprises Small scale industries.
Self help schemes.

WFP supplies Will continue till end of 1980

Budget 1980; £s. 37,579.

Continuation budget 1981 £s.65,213 for consolidation, running costs and salaries.

Settlement Group Aghadi.

This group will be situated near the southern boundary of the semi-arid zone near Roseires. Climate is therefore completely reliable for dura and sesame production. The area is about 25 km. south-west Gedaref.

New Settlements

Settlement names 3 unnamed villages.

Refugee population 15,000 refugees of Eritrean rural origin.
5,000 in each village.

Type Agriculture + rural wage labour.

Services 2 dressing stations + 1 health centre for the group.
1 ambulance for the group.
Tractor units at each settlement.
Otherwise standard.

Income generating enterprises Irrigated gardens for each settlement.
1 Poultry farm for the group.
Small scale industries.
Self help schemes.

Provisional budget £s.2,619,654 Completion end 1981

EQUATORIA PROVINCE

The settlements in Equatoria Province for Ugandan refugees are situated on both banks of the Nile near Juba. The soils are mixed recent alluviums of ^{the} Nile basin. The rainfall is over 1000 mm per year and there are usually two distinct rainy periods. The agriculture ^{is} based on planted tubers and maize for food crops and tobacco and/or coffee cash crops. There is a dry-monsoon climate.

<u>Settlement group</u>	West bank.
<u>Settlement names</u>	Tore 1, Tore 2.
<u>Settlement group</u>	East bank
<u>Settlement names</u>	Torit, Kit, Kerede.
<u>Refugee population</u>	15,000 Ugandan refugees who arrived in the Sudan early in 1979. They are grouped in 5 settlements of 3,000 refugees each.
<u>Type</u>	Agriculture (maize-cassava system).
<u>Services</u>	One dressing station per settlement. Water supply, 4 bore wells with manual pumps per settlement. Sanitation, 3 latrine units per settlement. Education, renovation of existing school buildings. Agriculture, seed and tuber supply. Area is <u>not</u> suitable for tractor ploughing.
<u>Income generating enterprises</u>	Privately owned tractors ! Small scale industry. Self help schemes.
<u>WFP supplies</u>	To be supplied until the refugees are self-sufficient.
<u>Budget</u>	1980 LS,111,282 for temporary phase I construction, salaries and running expenses.
<u>Continuation budget</u>	1981 to be presented.

New settlement

Settlement group Kerobe.

This group will be established in an area bordering the Kerobe Mountain, a site 28 miles east of Yei on the West bank of the River Nile. The land is said to be extremely fertile. The environment is otherwise similar to the existing settlements. The climate is dry-monsoon.

Settlement name First Kerobe.

Refugee population 5,000 Ugandan refugees of rural origin who arrived in the Sudan in April 1979.

Type Agriculture (Maize-cassava system).

Services Standard
Agricultural seed supply.
Area is not suitable for tractors.

Income generating enterprises Small scale industries.
Self help schemes.

WFP supplies To issue for two harvests before review.

Budget 1981 1st phase construction, salaries and running costs LS.318,194.

Project name Administrative Services for Refugee Settlements in the Southern Region of Sudan - Juba.

Type Administrative services.

Services Project management staff and logistic support.

Provisional budget 1981 LS.68,723 for consolidation running costs and salaries.

RED SEA PROVINCE

The Red Sea coastal area has a very light rainfall quite insufficient for rainfed agriculture. The limited agricultural resources of ground, water irrigated and flood irrigated land are already fully taken up by Sudanese farmers. The climate is arid.

Group Asotriba. Three urban settlements within the boundaries of Port Sudan.

Settlement names Asotriba I, II and III.

Refugee population More than 45,000 Eritrean refugees of mainly urban origin who are employed in Port Sudan.

Type Urban wage employment.

Services 25 bed modified health centre (Asotriba I).
1 clinic per settlement in Asotriba II and III.
Vocational training unit for the group (budget separately).
Otherwise services are to be standard.

Income generating enterprises Urban dairy (budgeted separately).
Poultry farm for the group.
Irrigated garden.

WFP supplies Under consideration in Rome.

Provisional budgets 1981 Asotriba I - LS.5,470,840
Asotriba II & III - LS.7,331,498

Completion end 1981

Tokar group

The Tokar delta is a flood irrigated river delta producing dura and cotton. There is also a small area of ground water irrigation. These crops provide a considerable local demand for agricultural wage labour. The environment is harsh and inhospitable, particularly during the dry season. The location of Marafit was chosen mainly because there are no tribal claims to the area. The settlement will not be viable unless irrigated land can be allotted to refugee families.

<u>Settlement name</u>	Marafit. On the southern side of the Tokar Delta.
<u>Refugee population</u>	10,000 Eritrean refugees temporarily settled at Solomona camp. There is an unusually high proportion of orphan children, war-wounded or otherwise disadvantaged refugees.
<u>Type</u>	Rural wage labour, irrigated smallholdings may be negotiated.
<u>Services</u>	Standard with appropriate modifications to serve the large proportion of disadvantaged refugees,
<u>Income generating enterprises</u>	Small scale industries. Self help schemes. The plans for this settlement are not yet complete.
<u>WFP supplies</u>	Being issued at Solomona camp under consideration for 1981/82/83.
<u>Budget</u>	1981 to be submitted.

Name of settlement Suakin

Refugee population 5,000 refugees from the coastal area of the Eritrean region mostly living in the new urban extension of Suakin.

Type Fishing and small scale industries.

Services Water supply from the existing town network.
May necessitate renovation of rundown desalination plant.
Sanitation requires maintenance of existing system in old " Pilgrim Camp" which is to be converted to housing for the refugees.
Primary schools and vocational training. Upgrading of local hospital and provision of operation theatre.

Income generating enterprises Preliminary data suggest very high revenue from fishing, but feasibility studies will be made. Main source of income from eventually 200 boats with five man crew, fishing 40 weeks per year with expected annual catch of 40 MT per boat, Boat building, carpentry, other small scale industries. Salt making is considered. Irrigated gardening is necessary for provision of balanced diet.

WFP supplies To be proposed until refugees are self-sufficient.