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The Democratic Republic of the Sudan
NATIONAL COUNCIL FOR THE DEVELOPMENT
OF JONGLEI CANAL AREA
EXECUTIVE ORGAN

PROPOSALS
FOR A MID - TERM PROGRAMME
AND
A CRASH PROGRAMME FOR THE
DEVELOPMENT OF AGRICULTURE, LIVESTOCK
AND SOCIO-ECONOMIC SERVICES IN
THE
JONGLEI CANAL AREA

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PART I

THE MID-TERM PROGRAMME

SUMMARYA. MID-TERM AND CRASH PROGRAMMES

This document contains proposals for a mid-term programme, and a crash programme of development in the areas of agriculture, live-stock, and social services; in the 5 Local Government Council Units, directly affected by the implementation of the Jonglei Canal Project. The 5 local government councils under consideration are: Bor, Kongor, Ayod, ^{Tonga} and Fam Ez Zeraf local government council

As emphasized in the policy considerations the ultimate goal of development in the Jonglei Canal Area is to draw the local population into modern economic enterprises, to serve the two objectives of producing adequate food to meet its own needs and raise a surplus that enter the cash circle. The two goals are complementary to each other and should be realized through the direct involvement and participation of the local population in the development of production, and the rehabilitation and running of services. In line with this policy the approach to development centres around enlisting the support of the locals to the announced programmes, to meet the realized needs of the communities. It avoids heavy capital out-lays and inputs, such as costly machinery in the field of agriculture for example. Instead it concentrates on improving those inputs that are within the technical capabilities of the farmer and the herdsman, and that shall yield quick increments of progress to achieve adequate food, and a surplus for the market.

Within the scope of the latter the programmes envisage: increasing the area under agricultural production, introduction of new crops and forestry belts, organization of ranches, upgrading the quality of beef cattle, and improvement of social services, etc. In all these sectors the direct labour input of the farmer and the cattle man are taken as the bases on which these programmes shall materialize.

The purpose behind preparing these programmes is to establish a frame of development in the areas of agriculture, livestock, fisheries, local incentives and social services, to guide the activities of the Executive Organ for the coming three years. Why three years, because according to the Organ's plans, by that time, the current studies undertaken by the Organ or by foreign consultancy firms, shall yield the awaited master plan, for the overall integrated development of the whole Canal area. Until that is realized, the Organ shall proceed with bringing improvements on local conditions; and through that prepare those communities for the accommodation of the technical, economic, and social inputs that shall ensue from the master-programme. To create linkages between the proposals contained by the present document, and the anticipated master-programme, both of the mid-term and the crash programme shall be monitored in such a way that by the end of the three years period their results are fed into the master programme.

The proposals outlined in this document are worked out on the following assumptions:

- That development should be spread between the 5 local government councils listed above;
- That priorities should be given to urgent community needs, as identified during the survey phases;
- That development inputs should come integrated in selected sites, so that the latter emerge as nuclei or models; availing the chance for the Organ to build experiences and perfect its executive capacities; and
- That because of the difficulties of contracting for construction works under the present conditions of the Area, it is demanded of the Organ, to create and mobilize its own construction units - whenever feasible, to execute these programmes.

The Mid-Term and the Crash Programmes, as proposed by the present document are looked at by the Organ as a joint venture between the latter and Ministries in the Southern Region. The programmes of

agriculture and livestock shall be fully undertaken by the Organ. However, with regard to the programmes of social services, the Organ has laid a line of demarcation, between what are seen as its direct responsibilities, and those that fall under the Southern Region. In identifying services that are to be provided in the 5 areas, the Organ has been guided by the announced policies of the Southern Region. For example, in the field of education, no boarding facilities for schools are contained in this proposed programme. Instead, the programme has concentrated at this stage of the Project, on providing the required buildings (shells) for housing the essential services. The operational side of these services is assumed to be the responsibility of the Southern Region's Ministries. It is to be stressed here that reported shortages as given in the analysis on problems such as shortages in staff, in school furniture, in books and stationery, delays in salaries, etc., are not the responsibility of the Organ. The solutions to these problems fall directly on the concerned ministries of the Region; and that is why, the strategy of a joint working relationship, between the latter and the Organ, is recommended: the Organ from its side rehabilitates the services, while the Region takes the steps to perfect their operation.

In terms of Costs the following totals in £S are given for the Mid-term and the Crash Programme for the 5 local government councils:

Mid-term Programme:

<u>Item</u>		
a. Agriculture & Livestock development		£S1,426,002
b. Social Services		<u>2,747,760</u>
Total		£S4,173,762 =====

The Crash Programme:

<u>Item</u>		
a. Agriculture & Livestock development		£S 624,265
b. Social services		<u>1,373,550</u>
Total		£S1,997,715 =====

Improvement of the main roads plus the provision of feeder ones; especially from the high land settled zone to the eastern plains should have been included in the present programme. With this in mind delineation of main roads plus feeder ones and the costs involved shall soon be furnished and added to the contents of this document.

B. FOREIGN TECHNICAL ASSISTANCE PROGRAMMES

Though the above are not embraced by the present document, it is thought advisable to furnish a summary of these programmes, being an important development input, monitored by the Organ. The technical assistance programmes that so far materialized embrace: the EEC, EDF aid, The Netherlands aid, the UNDP and the UNCDF aids.

The funds allocated by these aids to the proposed developments in the Jonglei Area, including the local components are as follows:

A i d	Foreign Compo- nent	Local Componen. in £S
a) EEC, EDF (equivalent to)	£S 713,210	457,022
b) Dutch Aid	1,000,000 US\$	
c) UNDP	4,934,111 US\$	499,274
d) UNCDF	2,500,000 US\$	

Each of the above aids is directed towards the fulfilment of specific objectives as follows. The EEC EDF aid is used to finance four studies projects namely: soil survey, range ecology, livestock and swamps ecology. Of these studies the first one has been contracted to Euroconsult; while the range ecology plus the livestock have been contracted to Mefit-Babtie.

The UNDP plus the UNCDF aids compliment the Dutch one, concentrating on the livestock aspects, and the development of fisheries in the Sudd area, within the frame of Kongor Integrated Rural Development Project. The fisheries project proposes the full involvement of local fishermen in the 4 areas. As planned, this project aims

at building an extensive infrastructure of storage facilities to be located at selected centres of production, coupled with regular land and river transportation connection to guarantee supplies to these centres, and take the produce to the markets. The project also emphasises the need for the development of a strong co-operative movement based on the organization of about 1000 fishermen under the guidance and support of the Executive Organ.

INTRODUCTION

This document aims at formulating a mid-term programme of development for the areas directly affected by the implementation of the Jonglei Canal Project. In the context of this mid-term programme a crash programme to be implemented in the 1979/80 Fiscal Year shall also be outlined.

The Two programmes shall concentrate on:

- i. The development of the economic bases through the implementation of Projects in the areas of agriculture, livestock fisheries, rural industries, etc.
- ii. The rehabilitation and up-grading of the existing socio-economic service facilities.

The programmes are directed to 5 Local Government Councils, namely Bor, Kongor, Ayod, Tonga and Fam Ez Zeraf rural councils.

Organization-wise the document falls in two parts:

Part I giving the mid-term programme, while Part II contains the crash programme for 1979/80.

II. POLICY CONSIDERATIONS

In formulating the mid-term and the crash programmes, embraced by this document, the following policy considerations have been given weight. That, basically the main problem faced by the Jonglei Canal Area at present is accute food shortages. Dura the main staple food crop is short; while livestock products are characterized by a marked seasonality. According to the results of a recent nutrition survey conducted in the area the peoples' food-intake of cereals amounts to 75% as compared to the recommended WHO standard for such traditional areas. Hence it is evident that the top problem to be faced in these areas is the alleviation of the food shortages. A practical approach to that end is to base development at this stage of the progress of the Project, on the people of the area. In other words, people should be taken as the tools for development. Until the current studies conducted in the area

by foreign firms and by the Organ yield the master programme for the long range development, it is advisable that large state owned schemes be avoided. Again, when the latter become feasible the people of the area should be entered into them as partners.

III. THE AGRICULTURE, LIVESTOCK, FISHERIES AND RURAL INDUSTRIES PROGRAMMES

In the longrun these programmes aim at achieving comprehensive agricultural development along the Canal Line through integrating crop production with livestock breeding and development of fisheries. The mid-term programme lays the basis for the realization of the long term objectives. It approaches development through total land use planning which incorporates rainfed agriculture with irrigated agriculture, communal ranches, forest belts, water supply sources, fish production schemes, cottage industries, etc., around satellite villages that shall emerge as models of development. Operationally, the mid-term programme shall be founded on a viable cooperative movement that shall build on the local resources of population in terms of savings, skills, leadership, and systems of organization.

In the area of agriculture the Mid-term and the crash programmes shall concentrate on the following:

A. RAIN-FED AGRICULTURE:

This programme aims at increasing the areas under/production ^{crop} to alleviate the severe shortage from which the Canal area suffers at present. The approach to be adopted shall concentrate on preparing ample areas of land through contouring, flood control works, levelling and ploughing in some selected villages directly falling on the Canal Line, so as to be cultivated by farmers from these villages. The area earmarked for such development shall be in the range of 600 to 1000 feddans.

Other than land preparation the programme includes inputs such as: improved seeds, introduction of new crops, like Cassava, ox-ploughing, and distribution of simple tools in large numbers.

The main aim of the programme is to enable the local farmer to cultivate a larger area compared to his present plot of 1.5 feddans.

B. IRRIGATED AGRICULTURE:

(a) Introduction of Rice Cultivation.

The Jonglei Canal Area, particularly in it's southern parts, as from Duk Faweil and southwards, has a big potential for production of rice, being a crop adapted to the flood conditions of the Area whether it is up land, or floating varieties. This potential has to be tapped to solve the immediate food shortages experienced at present, as well as, it could be contemplated as an important cash crop in future.

It is therefore envisaged to introduce the two types of crop in the area, starting the work on pilot basis in two sites, one for upland rice, and the other for floating rice. With regard to the latter, the flooced areas on the western side of Kongor - Bor road, to the south of Kongor, provide favourable land for rice introduction. As for the former a favourable site for experimentation will be selected to the north of Kongor or in its vicinity.

(b) Introduction of Forestry and Fruit Crops.

The same satellite villages proposed for the development of the rain-fed agriculture schemes, shall house as well, a programme for irrigated nurseries. These nurseries shall be developed on water supplied by bore holes or obtained from natural ponds to be developed to serve other purposes as well, such as: provision of drinking supplies for cattle.

Trees will be grown in these nurseries for propagation at the wider scale. These shall include forestry trees for the development of tree belts as part of the satellite complex to serve many purposes such as: protection against soil erosion, beautification of the land scape, besides provision of adequate supplies of wood for fuel and building materials. Apart from forestry trees, the nurseries shall also supply fruit trees to be grown by the local inhabitants in their small gardens.

C. LIVESTOCK DEVELOPMENT

(a) Introduction of Communal Ranching with provision of Water-supply Sources

The mid-term programme aims also at laying the basis for the development of economic systems of livestock raising in the area; based on ranches as part of the satellite villages. It envisages reorganizing grazing on the bases of recognized Communal rights. Of the essential developments that shall be introduced in connection to ranching is the provision of water sources in the form of haffirs, ponds, and possibly bore-holes to open grazing in areas that have potential and presently under used; particularly in the uninhabited plains to the east of the presently settled zone.

(b) Improvement of the Quality of Livestock.

Coupled with the development of pastures, the programme aims as well, at the improvement of the quality of livestock in the area, mainly for beef production, at this stage. The most practical approach towards this end is through:

- (a) effective control of cattle diseases;
- (b) treatment of animals, and
- (c) introduction of better breeds to improve the qualities of the local livestock.

To realize this programme the satellite villages shall be equipped with veterinary dispensaries, linked to a central veterinary laboratory at Kongor. As envisaged, with this veterinary infrastructure well-founded vaccination teams could be organized, to carry out the essential campaigns for the control of diseases. The same dispensaries shall provide the treatment needed by the livestock; while the central laboratory at Kongor will give the back-stop service for the whole infrastructure.

D. DEVELOPMENT OF FISHERIES:

The Jonglei Canal Area is rich in fish resources in terms of quantities as well as species. Three patterns of fish production are evident at present in the area namely: Local fishing for home consumption, Local sun-dried fishing for the market, and private sector salt-dried commercial fishing.

The Organ has already entered with the UNDP in a joint project for the development of fisheries in the Sudd area. The project aims at building the essential infrastructure in terms of production centres, storage facilities, and transportation, to increase production and improve marketing. The Project shall be organized on cooperative basis drawing the fishermen of the area into production units that shall be provided with the essential equipment, supplies, and training.

E. RURAL INDUSTRIES:

These are identified as a crucial part of the programme, but no projects are given in this document, due to the facts that no planning work has been undertaken as to what industries to be introduced. As planned, surveys shall be carried during the coming season to work out projects that shall lay the bases for the development of these industries.

F. TRAINING AND EXTENSION:

The above programme in the areas of agriculture and livestock development is founded on the philosophy of integrated action, that gives full attention to the involvement and participation of the local farmers and herdsmen as the main beneficiaries of the programme. The role of the Organ in the implementation of these programmes is to give guidance to the local population, and supply those technical inputs, as required for their realization. Guided by this philosophy improving the work and organization skills of the local population in the various fields of production is an essential ingredient of the programme. This improvement shall be brought through extension workers that shall be selected from local personnel with adequate education to be trained as extension agents, in the development complexes in the satellite villages; from which they shall operate disseminating messages to the surrounding areas.

G. SITES PROPOSED FOR THE IMPLEMENTATION OF THE MID-TERM PROGRAMME

The following sites are proposed for the implementation of the agriculture, livestock, fisheries and Rural Industries programmes:

1. Obai Nyitho
2. Mogog
3. Wau
4. Ayod
5. Kuacdeng
6. Duk Fadiet
7. Nayben
8. Duk Pawil
9. Ajueny
10. Paberchibak
11. Payom
12. Panyagoor
13. Kongor
14. Wangkule
15. Paliau
16. Maar
17. Piol
18. Wunyaac
19. Jaille
20. Lirlir
21. Yomciir
22. Baidit
23. Tong
24. Panyang
25. Kolmarch

IV. CONTENTS OF THE SOCIAL SERVICES PROGRAMME

A. PRESENT SITUATION OF SERVICES IN THE 5 AREAS

a. Bor, and Kongor Local Government Councils.

A summary of the existing services in the two councils is given in Fig.1, which is a simplified chart reflecting the present

situation at a glance. It covers all of the rural centres and those small villages containing services, irrespective of the numbers of the latter with the exception of Bor town.

The Chart: Fig.1, conveys that there are:

Type of Service	No. of Facilities <u>existing</u>
i. People's Local Government Councils Centres	1 (since Bor is excluded)
ii. Main Chieftainship Courts	12
iii. Police Stations or Posts	5
iv. Shopping Centres	15 (places of even one shop are included)
v. Primary Schools	23
vi. Junior Secondary Schools for boys	1 (belongs to Kongor centre, presently functioning at Bor)
vii. Dispensaries	1
viii. Dressing Stations	13
ix. Veterinary Dispensaries	1 (+ the presence of 6 stockmen in 6 centres, one each)
x. Bore-holes	19 (out of which 16 are not functioning at present)
xi. Open-shaft wells	32 (out of which 6 are not functioning at present)
xii. Rest Houses	1
xiii. Churches	1
xiv. Mosques	Non-existent.

A detailed picture of the present performance of the various services facilities is given in Table 2 which furnishes information on:

- i. Name of place,
- ii. Date of establishment,
- iii. Indicators of performance, and
- iv. Type of buildings

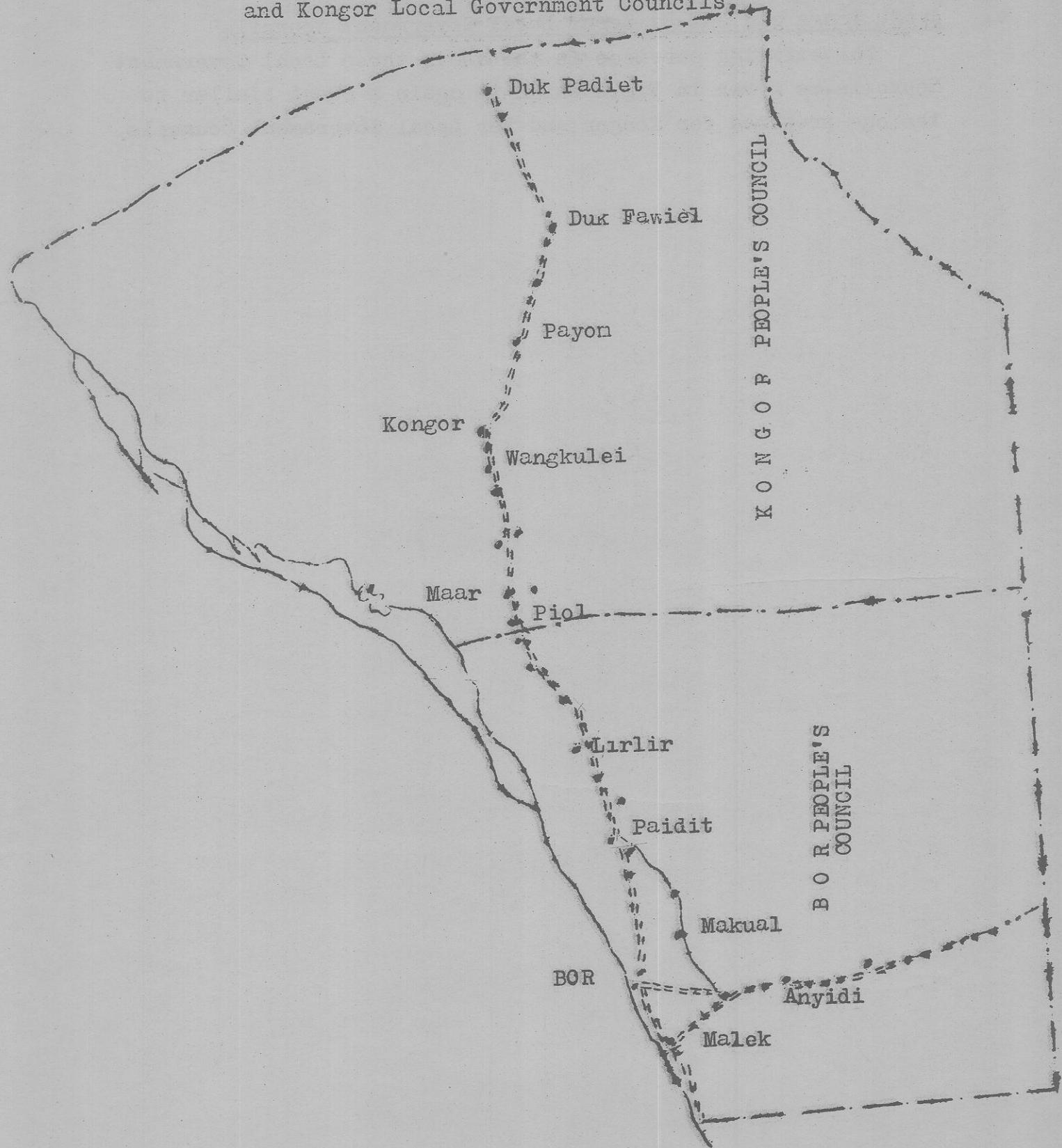
Based on the information in Table 1, the geographical distribution of services is given in the Map Fig. 2.

Table 1. *giving a detailed picture of the condition of services in Bor and Kongor*

Table 1 cont'd
Type of Service

Type of Service	Name of Place	Date of establishment	Indicator of performance and/or capacity	Type of Buildings
iv. Primary schools	15. Makuac 16. Anyidi 17. Gak 18. Kolyang 19. Malek 20. Cueiker 21. Pariak 22. Tong 23. Kakpat	1973 1973 1975 1973 1905 1973 1974 1974 1976	6 classes 6 5 6 6 6 6 6 4	Tukuls " " " " " " " " " "
V. Junior Secondary School for boys	1. Kongor	1976		
VI. Dispensaries	1. Kongor	1935		
VII. Dressing Stations	1. Duk Pawil 2. Duk Padiet 3. Paliau 4. Maer 5. Piol 6. Jalle 7. Methiang 8. Baidit 9. Makuac 10. Anyidi 11. Kolnyang 12. Malek 13. Pariak	1935 1972 1972 1973 1972 1935 1973 1959 1942 1938 1973 1914 1972		Tukuls " " " " " " " " " "
VIII. Veterinary Dispensary	1. Kongor			Tukuls

Fig.2: A map giving the location of services centres in Bor, and Kongor Local Government Councils.



N

b. Avod, Tonga and Fam Ez Zeraf Local Government Councils

The existing services in the above three Local Government Councils is given in Fig.2 which is again a chart similar to the one prepared for Kongor and Bor Local Government Councils.

Fig.3, A summary chart giving the existing services in Ayod and Fam Ez Zeraf Local Government Councils.

	Area Local Govt. Council	Main Chieftainship Court	Police Station or Post	Shopping Centre	Primary Schools	Junior Secondary School for boys	Dispensary	Dressing Station	Veterinary Dispensary	Bore-hole	Open-shaft wells	Rest House	Church	Mosques	
1. Atar*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2. Mogog	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3. Wau	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4. Ayod	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5. Fagil															
6. *Obai Nyitho															

*All of the above places belong to Ayod Local Government Council, except for Atar which belongs to Fam Ez Zeraf Local Govt. Council, and Obai Nyitho which belongs to Tonga Local Govt. C. The latter possesses no services at present. Being disturbed by the Canal line, dividing it into two parts, shall be wholly rehabilitated.

The previous chart indicates that there are:

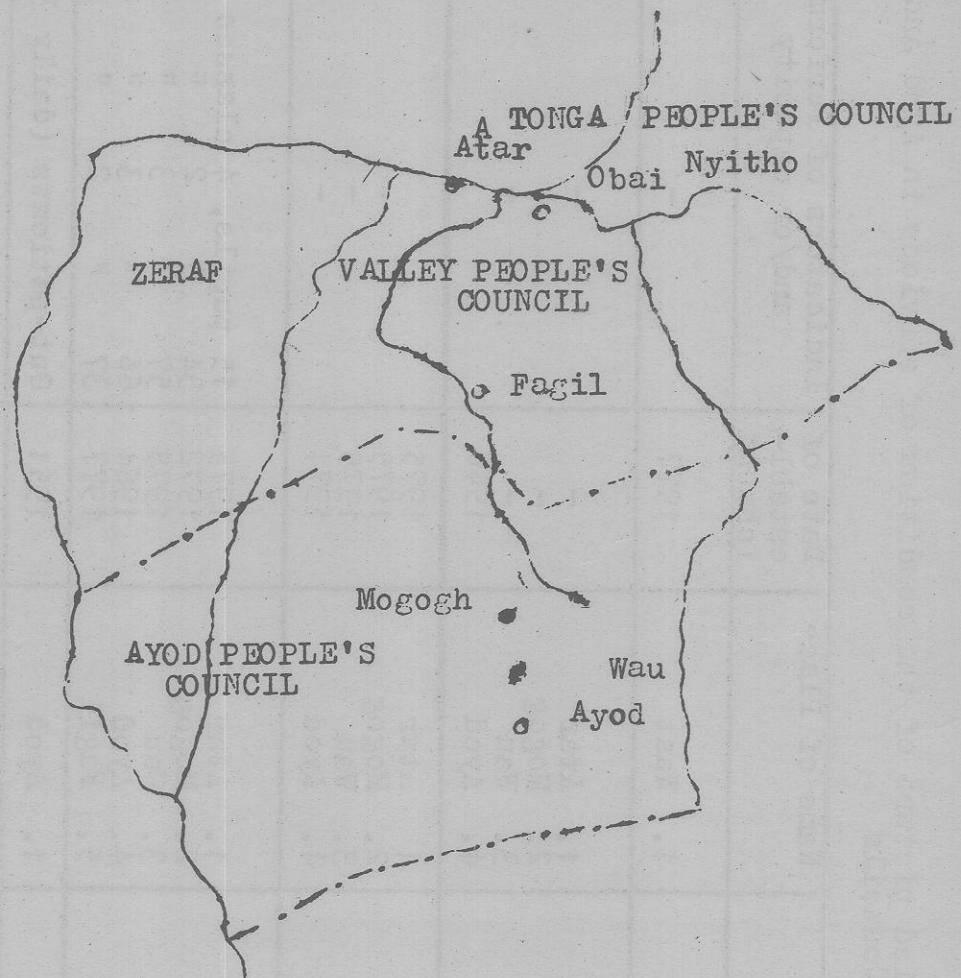
<u>Type of service</u>	<u>No. of facilities existing</u>
i. People's Local Government Council Centres	1
ii. Main Chieftainship courts	4
iii. Police Stations or Posts	4
iv. Shopping centres	2
v. Primary Schools	5
vi. Junior Secondary School for boys	non-existent
vii. Dispensaries	1
viii. Dressing Stations	3
ix. Veterinary Dispensaries	3
x. Boreholes	3
xi. Open-shaft wells	5
xii. Rest Houses	1
xiii. Churches	1
xiv. Mosques	non-existent

A detailed picture of the performance of the existing services in Ayod and Fam Ez Zeraf Local Government Councils is given in Table 2. For the geographical distribution of these services, see Fig.4

Table 2, giving a detailed picture of the condition of services in Ayod and Fam EZ
Zeraf Local Government Councils

Type of Service	Name of Place	Date of establishment	Indicators of Performance and/or capacity	Type of Buildings
I. Area/Local Govt. Council	1. Waat	1977	-	Tukuls
II. Main Chieftainship Courts	1. Atar 2. Mogog 3. Wau 4. Ayod	- - - 1948	- - - -	No buildings
III. Police Stations	1. Atar 2. Mogog 3. Wau 4. Ayod	1975 1975 1975 1974	- - - -	Tukuls " " " " " " " " "
IV. Primary School	1. Atar 2. Mogog 3. Wau 4. Ayod 5. Fagil	1975 1972 1975 1964 1977	15 pupils, 4 classes 34 " 2 57 " 3 66 " 3 37 " 2	Tukul " " " " " " " " " " " "
V. Dispensary	1. Ayod	1951	Out-patients (daily 30)	Tukuls
VI. Dressing Stations	1. Atar 2. Mogog 3. Wau	1975 1974 1975	Out-patients (daily 40) " " 45 " " 50	Tukuls " " " " " "
VII. Veterinary Dispensaries	1. Mogog	1975	Vaccinated 6,780 head of cattle in Mogog	No buildings

Fig.4: A map giving the location of services/in Ayod, Tonga, and Fam Ez Zeraf Local Government Councils. ^{centres}



GUIDELINES FOR PROGRAMME FORMULATIONBor, Kongor, Ayod, Fam Ez Zeraf and Tonga Local Government
Councils

Emphasis in the Mid-term programme shall be on the rehabilitation of what already exists, with regard to the following 5 main services:

- Primary schools;
- Dispensaries and dressing stations;
- Veterinary dispensaries;
- Water supply; and
- Rest houses.

Survey results confirm that the first 4 of the above services are the ones reported as priorities by the local communities. In summary: housing 3 of the services and the staff running them (Primary schools, dispensaries & veterinary dispensaries, plus improving the water supply situation, and finally accommodating the staff of the Organ in rest houses, should be the main concern of the Mid-term Programme at the present stage of development of the Jonglei Canal Project. Other improvements should wait for future programmes. Based on the above strategy, the final picture of the Mid-term Programme for the development of services facilities in the 5 Local Government Council Units of Bor, Kongor, Ayod, Fam Ez Zeraf and Tonga could be summarized as follows in Table 3.

V. COSTS OF THE MID-TERM PROGRAMME

The costing of the Mid-term Programme involves:

1. Costing the agriculture, and Livestock development programmes.
2. Costing of the rehabilitation of the socio-economic services.

A. Costs of the Agriculture, Livestock Programmesa. Basic considerations

In costing this programme the following are taken into consideration:

- i. Emphasis shall be given in the Mid-term programme to the development of the dura schemes, the nurseries, and the improvement of animal health.
- ii. The development of fisheries shall come through the UNDP Project SUD/79/001.
- iii. Rice cultivation shall be attempted on two sites one for upland rice, and the other for floating rice. Being on experimental basis, the piloting shall be linked to two of the dura schemes projects, using their facilities and staff; so costs incurred.
- iv. The livestock improvement programme shall concentrate during the coming 3 years on animal health aspects only; to be administered from 7 dispensaries, linked to a veterinary laboratory at Bor.
- v. Since the various projects listed above shall be implemented in an integrated form in the same satellite villages, each project shall draw on the resources of the other. Hence one technical assistant under the guidance of an agronomist or a forester for example is quite adequate to run both of the dura scheme and the nursery, at the same village site.
- vi. Finally to economize on resources in terms of specialist staff, transportation, lodging etc., these items are pooled as overhead costs for the overall development.

Costing The Programme.

The following Tables (4) and (5) give the cost of development of one unit of: dura pilot scheme, and a nursery; respectively. While Table (6) gives the over-head costs for the implementation of the agriculture and livestock, Mid-term Programmes for the development of 25 sattelite villages.

Table (4) Costs of development and running of one dura scheme
(area 600 feddans)

No.	Description	Cost
A.	<u>COST OF DEVELOPMENT PLUS RUNNING COST FOR ONE YEAR</u>	
a.	<u>Land preparation:</u>	
1.	Land selection and surveying	£S. 1,200.000
2.	Construction of embankment	1,800.000
b.	<u>Buildings, equipment, seeds and Pesticides</u>	
1.	Local buildings	400.000
2.	Local agricultural tools	4,800.000
3.	Ox-plough tools (2)	300.000
4.	Work bulls (4)	800.000
5.	Improved seeds	240.000
6.	Pest control	200.000
c.	<u>Staff</u>	
1.	Technical assistant (1)	1,335.000
2.	Ghaffirs (2)	720.000
d.	Contingencies (10% of above costs)	<u>1,179.500</u>
	Cost of development of one dura scheme plus running cost for one year	<u>12,974.500</u>
B.	<u>RUNNING COSTS OF ONE DURA SCHEME FOR 2 MORE YEARS:</u>	
1.	Improved seeds	480.000
2.	Pest control	400.000
3.	Technical assistant	2,670.000
4.	Ghaffirs	1,440.000
5.	Contingencies (10% of above costs)	<u>499.000</u>
	Cost of running one dura scheme for 2 years	<u>5,489.000</u>
C.	<u>COST OF MID-TERM PROGRAMME (DURATION 3 YEARS) FOR DEVELOPMENT AND RUNNING OF ONE DURA SCHEME (A. & B.)</u>	<u>18,463.500</u>

Table (5) Cost of Development and Running of one Nursery (area 5 feddans)

No.	Description	Cost
<u>A. COST OF DEVELOPMENT PLUS RUNNING COST FOR ONE YEAR</u>		
a.	<u>Land Preparation:</u>	
1.	Survey, levelling	£S 250.000m/ms
2.	Land clearance and fencing	950.000
b.	<u>Buildings, Equipment, Seeds and Seedlings</u>	
1.	Green house (2)	1,000.000
2.	Agricultural tools	700.000
3.	Pottery	200.000
4.	Seeds and seedlings	1,000.000
c.	<u>Workers</u>	
1.	Casual labourers 4x£30x12	1,440.000
d.	Contingencies (10% of above costs)	554.000
Cost of development of one Centre plus running cost for one year		6,094.000
<u>B. RUNNING COSTS OF ONE NURSERY FOR 2 MORE YEARS:</u>		
1.	Casual labourers	2,880.000
2.	Pottery	400.000
3.	Seeds and seedlings	2,000.000
4.	Contingencies (10% of above costs)	528.000
Cost of running one nursery centre for 2 years		5,808.000
<u>C. COSTS OF MID-TERM PROGRAMME (DURATION 3 YEARS) FOR THE DEVELOPMENT AND RUNNING OF ONE NURSERY (A. & B.)</u>		
		11,902.000
		=====

Table (6) Overhead Costs of Mid-Term Programme for Development of Agriculture and Livestock (duration 3 years) in 25 Satellite Villages

<u>Item</u>	<u>No.</u>	<u>Costs</u>
a. <u>Specialist Staff (salaries)</u>		
1. Agronomists	3	£S 16,200.000/-
2. Forester	1	5,400.000
3. Agriculture extension specialist	1	5,400.000
4. Veterinary officers	3	5,400.000
		32,400.000
b. <u>Buildings:</u>		
1. Rest Houses		(Costed under buildings for socio-economic services)
c. <u>Transportation:</u>		
1. Trucks	10	250,000.000
2. Pick-ups	12	180,000.000
3. Fuel	11000 gallons	11,000.000
4. Maintenance	22 vehicles	35,000.000
		476,200.000
d. <u>Workers (Salaries)</u>		
1. Drivers	22	47,520.000
2. A/Drivers	22	7,920.000
		55,440.000
e. <u>Allowances:</u>		
1. Allowances for specialist staff		7,280.000
2. Allowances for workers		35,020.000
		42,200.000
f. Contingencies (10% of above)		60,624.000
Total Overhead Costs		666,864.000

Based on the cost per unit of development as given in Tables (4) and (5) the Mid-term programme for agriculture and livestock could be costed as follows:

1. Cost of development in 25 satellite villages:

I. Item	No. of Units.	Cost per Unit in £S	Total cost in £S
i. Dura Schemes	25	18,463.500	461,587.500
ii. Nurseries	25	11,902.000	297,550.000
iii. Livestock improvement centres (the programme is run from 7 veterinary dispensaries, costed under the socio-economic service facilities)			759,137.500
2. Overhead costs as in Table (6)			<u>666,864.000</u>
		Total	<u>1,426,001.500</u>

B. COSTS OF THE SOCIAL SERVICES PROGRAMME

On consultation with the Ministry of Construction and General Works, and Rural Water Corporation, the following considerations are given attention to in the costing of the programme:

- i. Remoteness of the area;
- ii. Short-duration of working season;
- iii. Incapabilities of contractors within the Region;
- iv. Scarcity of skilled construction workers,
- v. Lack of construction materials and supplies; and
- vi. Urgency of the Programme

Because of the above handicaps, and based on the experience of same above personnel in the Region, it has been recommended that the programme should be founded on prefabricated steel frames and corrugated iron roofs, combined with fillings for walls from local material namely mud or grass. It has/suggested that the basic frames, and the corrugated roofs be manufactured, possibly at, Khartoum; and transported to the sites for erection and filling.

In solution to these handicaps, the Organ is taking steps to establish its own construction unit, and purchase and store building materials in ample quantities to guarantee and hasten construction activities to execute these programmes.

Besides, the Organ has already entered in an agreement with UNDP, to implement the Project SUD/79/004/A/45/31 which aims at creating a construction unit to take care of the construction component of the UNDP Aid Projects. As specified in the project document, this unit is proposed to establish, integrated comprehensive construction capability (or direct support unit) for the lively efficient and effective provision of physical infrastructure in essentially small "bush" jobs of basically simple buildings but complex and difficult circumstances. The Organ shall definitely co-ordinate activities with this UNDP unit, and benefit from its expatriate experience.

The following preliminary design specifications are given for the purpose of costing this programme. They have to be revised if need arises, when more detailed specifications are worked out:

Unit	Specifications	Dimensions	Area M ²
1. Office	One room	4x4	16
2. Classroom	-do-	5x6	30
3. Store	-do-	4x4	16
4. Latrine	-do-	2x2.5	5
5. Dispensary	Two rooms	4x4x2	32
6. Dressing Station	One room & verandah	4x4+16	32
7. Vet. Disp.	Two rooms	4x4x2	32
8. House	" " + verandah		60
9. House	One room	4x4	16

Based on a given cost of £S120 per M² for the above types of buildings, the Mid-term programme could be costed as in Table 7.

Based on the estimates in Tables (7 and 8) the total costs of the Mid-term Programme for development of social services in the 5 Local Government Councils are in the range of £S2,747,760.

C. Cost of the Mid-term Programme for the Development of Agriculture, Livestock and Social Services.

From the results of the above presentation and analysis the general costs for the two programmes emerge as follows:

i.	Costs of the agriculture and livestock programmes:	£S 1,426,002
ii.	Cost of the Social Service programme	£S 2,747,760
	Grand Cost	£S 4,173,762 =====

PART II

CRASH PROGRAMME
AND COSTS

For
1979/1980.

VI. BASIC CONSIDERATIONS IN THE FORMULATION OF THE CRASH PROGRAMME
1979/80

Introducing the developments identified in the Mid-term programme requires phasing the latter into stages, since its implementation is governed by many factors; most important among which is: the availability of funds, and the execution capacity of the Organ.

This phasing will be soon worked out, so as to complement the present plan; and to ensure guiding the activities of the Organ in the short future.. Until that is done, a crash programme has to be formulated for the 1979/80 Fiscal Year; in line with the general strategy of development outlined in the mid-term programme. The basic considerations given attention to, in the formulation of the crash programme are the following:

- i. The programme should be spread between the 5 areas, to bring maximum benefits to all communities. Hence sites selected for the programme should come from the 5 areas.
- ii. Working in the 5 areas, will enable the programme to pilot on different cultural entities, which is very essential in building experience, for the extension of the results of the programme to other areas; and in furnishing guidelines for the phasing of the mid-term programme
- iii. The sites selected, should geographically fall within close distances to the canal alignment, so that the projects executed contribute to the adjustment of the people affected by the Canal, and improve their future living conditions.

The sites selected, should possess central place characteristics. Promoting development in these places is essential in meeting the shortages from which these centres suffer at present; besides, laying the ground for their future growth as focal points, from which progress could be disseminated to their surroundings.

Based on these considerations the following Centres have been selected for the implementation of the crash programme:

<u>Bor/Kongor Local Government Councils</u>	<u>Ayod Local Govt. Council</u>	<u>Tonga Local Govt. Council</u>
Duk Padiet & Bor	Mogog	Obai Nyitho
Duk Fawil	Wau	
Kongor	Ayod	
Paliau		
Jalle		

VII. COSTS OF THE CRASH PROGRAMME

A. COSTS OF THE AGRICULTURE PROGRAMME

This programme shall concentrate on the development of dura schemes and nurseries in the above 9 villages, costed as follows:

<u>Item</u>	<u>No. of proposed sites</u>	<u>Cost per Unit £S</u>	<u>Total Cost £S</u>
Dura schemes	9	18,464.000	166,176
Nurseries	9	11,902.000	107,118
		<u>Total</u>	<u>273,294</u>

To the above, part of the overhead costs should be added.

The 9 villages make 36% of the 25 sites proposed for development in the Canal Area in the 3 years duration of the mid-term programme. This percentages comes to £3240,071 of the total overhead costs. Adding this last figure to the previous costs of development of the 9 sites, the total cost of the crash programme for the development of agriculture is £513,365.

B. COSTS OF THE LIVESTOCK PROGRAMME

This programme shall concentrate on the establishment of 7 dispensaries, the sites and costs of which are given under the costing of the buildings for the social services programme.

C. Cost of the Social Services Crash Programme

The crash programme for the provision of socio-economic services, for the nominated centres, shall embrace:

TYPE OF SERVICE TO BE PROVIDED

Name of Centre	Primary	Dispensary	Dress	Vet. Dis.	B/Hole	B/hole	New Re-
	: school	: sary	: ing St.	: pensary	: le	: ere	: st h-
	:	:	:	:	:	:	: use
<u>Bor & Kongor</u> Councils:	:	:	:	:	:	:	:
1. Duk Padiet	x	:	-	x	:	-	:
2. Duk Fawil	x	:	-	x	:	x	:
3. Kongor	x	:	x	-	:	-	:
4. Paliau	x	:	-	x	:	-	x
5. Jalle	x	:	-	x	:	x	:
<u>Ayod & Tonga</u> Councils	:	:	:	:	:	:	:
1. Mogog	x	:	-	x	:	x	:
2. Wau	x	:	-	x	:	x	:
3. Ayod	x	Rehabi-	-	x	:	x	:
		litated:			:	:	:
4. Obai Anyitho	x	:	x	-	x	:	-

In addition to the above, the programme for 1979/80, embraces as well the erection of the 11 bore-holes existing at present in Bor and Kongor Local Government Councils.

1. Werkok
2. Wangkulei
3. Aluel
4. Maar
5. Piol
6. Lirlir
7. Mathiang
8. Baidit
9. Makolecuei
10. Kolnyang
11. Malek

Furthermore it includes the excavation of 6 hafir sites, aimed at the opening of new grazing areas in the eastern plains. The suggested sites are the following ones:

1. Panyang
2. Gorgor
3. Wunkel
4. Metbiong
5. Patuorbeu
6. Paciljak.

Finally it embraces - building and equipping 2 water supply maintenance centres, one for Bor and Kongor Local Government Councils the other for Ayod, Fam Ez Zeraf and Tonga Local Government Councils. In totality the 1979/80 crash programme involves:

- i. The rehabilitation of 9 primary schools for boys, 2 dispensaries, 6 dressing stations, and the erection of the 5 veterinary dispensaries imported by the Organ, plus the building of 2 additional veterinary dispensaries.
- ii. The drilling of 7 new bore-holes, and the excavation of 6 hafirs. The latter are for the expansion of grazing areas in the eastern plain.
- iii. The erection of the already existing 11 bore-holes in Bor and Kongor Councils.
- iv. The establishment of the 2 water supply maintenance centres, one at Kongor and the other at Ayod.
- v. The provision of social services for the model village of Obai Nyitho.

The costing of the 1979/80 Crash Programme is furnished in Table 9, with the following totals given for the various items:

Item	Bor/Kongor Local Govt. Councils £S	, and Tonga Local Government Councils £S
1. Primary Schools	223,8000	178,990
2. Dispensaries & Dressing Stations	159,600	10,800
3. Veterinary Dispensaries	55,200	55,600
4. Water supply	637,000	237,000
5. Rest houses	35,000	35,000
Total Costs	<u>966,960</u>	<u>517,390</u>
Grand Total		1,484,350

In total the cost of the crash programme for 1979/80 is 1,997,715 roughly 2 million £S, of which £S513,365 are the costs of the agriculture development programme, 110,800 the costs of the veterinary dispensaries, and the remaining £S1,373,550 for the development of social services.

The Mid-term and the Crash Programmes are formulated with the intention of introducing a stage of social-uplift in the Jonglei Canal Area. This stage is essential in preparing the local communities to accommodate the more advanced technical changes, that shall result from the currently going surveys and studies undertaken by the Organ and the foreign consultancy firms.

At present there is very little in the Jonglei Canal Area in terms of development inputs. Except for the Penko-plain Project, there is actually nothing in the area of agricultural development. The same is true for the livestock sector; being limited to the dry season visits of vaccination teams operating from Bor or Malakal. True many schools, dispensaries and Bore-holes etc., have been added following the conclusion of Addis Ababa Accord, however nearly all of these services suffer from one form of inadequacy or the other. In fact they are all in bad shape.

What has been recommended in this proposal is the minimal. It stands as a basic increment of development, which is essential in laying the first steps towards erasing the wide disparities between this region, being a plighted area, and those progressive parts of the country. Some social statistics may help in revealing where the Jonglei Area stands at present in relation to the stage of development attained by some sample areas selected country-wide. Local Government expenditure per 1000 population by Rural Council indicates that very clearly.

Local Government Council Unit

Average Expenditure per 1000 population in £S for the budget years 1965/66 - 1969/70

1. Khartoum Municipality	Urban Areas	3419
2. Omdurman Municipality		1746
3. Khartoum North Municipality		3495
4. Kosti Rural Council	Mixed (traditional and irrigated Agriculture)	941
5. El Meilig	State organized agriculture: the Gezira	701
6. El Medina		771
7. El Mcheriba		802
8. El Hasaheisa		829

9. Northern Gedaref	Mechanized Agriculture	1101
10. Southern Gedaref		1483
11. ErRenk	Traditional Agriculture	1157
12. Eastern Kordofan		677
13. Hamar	Jonglei Canal Area	557
14. Tegali		496
15. Scbat	Jonglei Canal Area	270
16. Ez Zeraf		244
17. Bor		311

Though the above figures are 10 years back, yet they still hold true for comparison purposes, since it is evident that the rate of progress in the Jonglei Area is very slow, because of the stagnation of the economic bases.

In adopting the two programmes we shall be actually fulfilling the functions of the Council as stated in page 5 of the booklet: 'Regulations of the National Council for the Development Projects in Jonglei Area,' which read as follows:

- "6.(a) Formulation of integrated policies for the social and economic development in the project Area; the supervision of their execution and the promotion of the studies related to the effects of the Project on the livelihood and on the conditions created by the Project in the Area.
- (b) The implementation of the Projects in accordance with the social and economic development policies of the Nation.
- (c) Preparation and approval of the execution programmes and the related funds earmarked for the agricultural, industrial, settlement and social services Projects.
- (d) The ascertainment of the relations of production pertaining to agricultural, industrial and other development schemes."