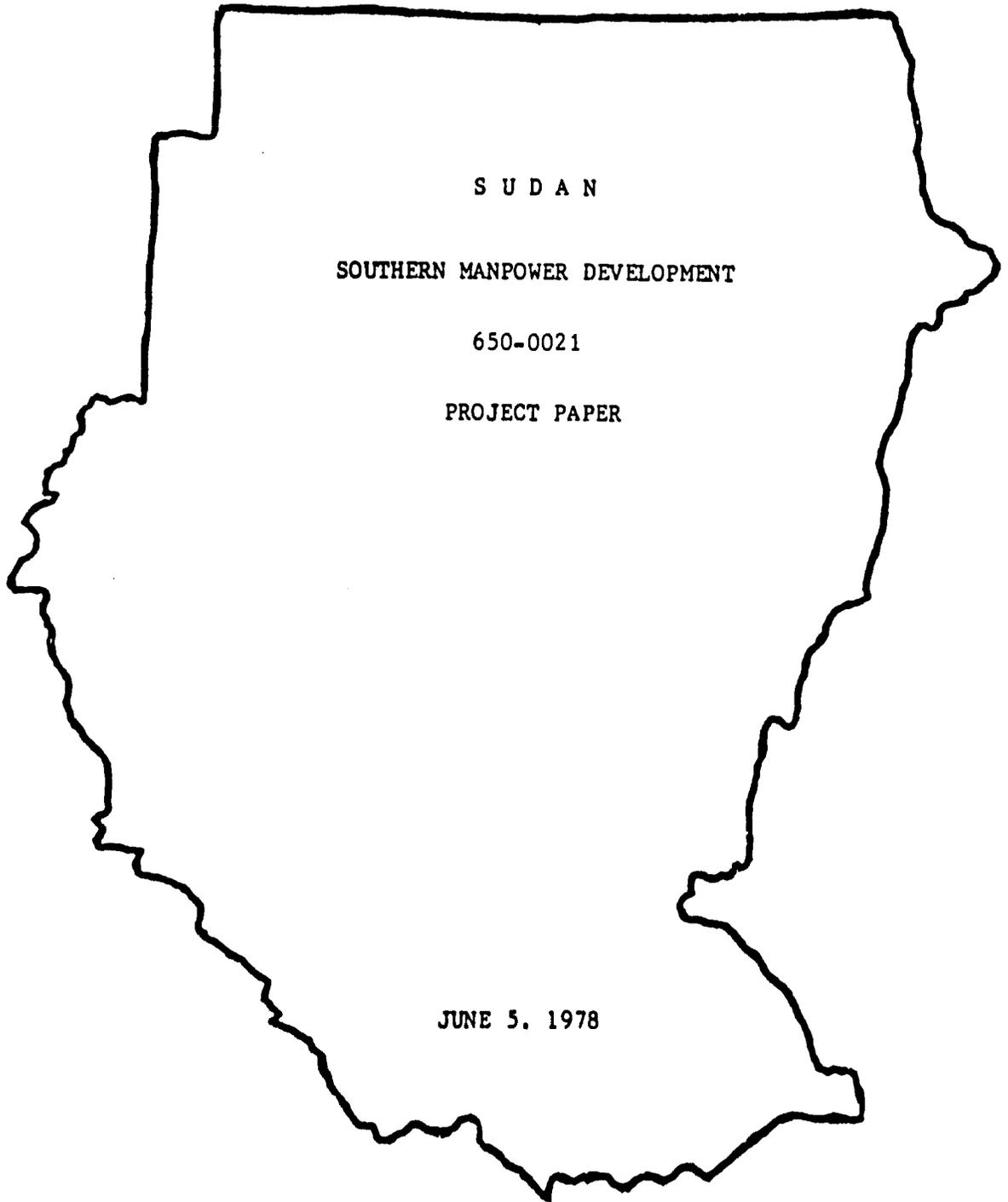
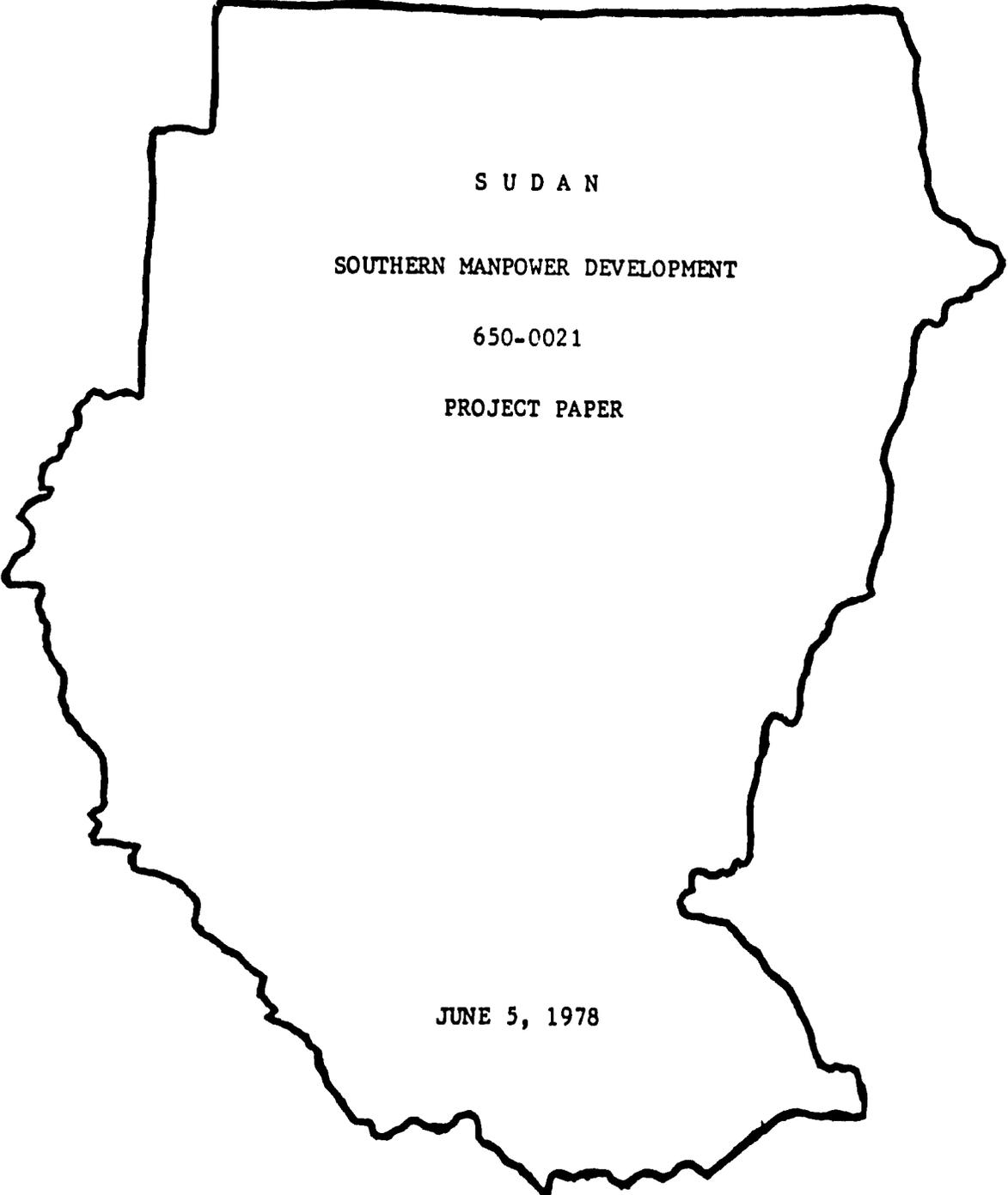


ISN 1534

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S U D A N

SOUTHERN MANPOWER DEVELOPMENT

650-0021

PROJECT PAPER

JUNE 5, 1978

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SOUTHERN MANPOWER DEVELOPMENT

PROJECT PAPER

SOUTHERN MANPOWER DEVELOPMENT PROJECT

TABLE OF CONTENTS

PART ONE: PROJECT PAPER	
Project Description	1
Project Issues	28-a
Project Specific Analyses	
Economic	29
Social	33
Engineering	36
Administrative	49
Environmental	50
Financial Plan	51
Implementation Plan	56
Evaluation Arrangements	64
Conditions, Covenants and Negotiating Status	65
PART TWO: APPENDICES	
A - Logical Framework Matrix	66
B - Statutory Checklist	72
C - 611(e) Determination	86
D - Waivers	
D-1 Vehicle Procurement Waiver	87
D-2 Commodity Procurement Waiver	90
E - PID Response Cable	93
PART THREE: ANNEXES	
A - Small Farming Systems and Agricultural Development in the Southern Sudan	96
B - Human Resource Development for the Agricultural Sector	114
C - Social Soundness Analysis	138

PART FOUR: CHARTS, LISTS, FIGURES AND TABLES

Section A - Yambio Institute for Agricultural Technicians

A-1	Staffing Pattern	152
A-2	Budget Figures	154
A-3	Organizational Diagram	156
A-4	Curriculum	157
A-5	Timetable for Agricultural Curriculum, 1977/79: Year 1 and 2	159
A-6	Timetable for Forestry Curriculum, 1977/79: Year 1	160
A-7	Postings of the Yambio Institute Class of 1977	161
A-8	Schematic Input-Output Chart for Yambio Students	162
A-9	Student Participation in Proposed Schedule for Yambio Institute Field Trials Data Collection	163
A-10	UNDP/FAO Support to Yambio	165

Section B - Rumbek Agricultural Training Center

B-1	Staffing Pattern	166
B-2	Curriculum	167
B-3	Weekly Course Schedule	168
B-4	Proposed Budgets: 1977, 1978, 1979	169

Section C - Ministry of Agriculture, Animal Resources, Forestry, and Irrigation

C-1	Partial Organization Chart for the Ministry Before the 1978 Elections	172
C-2	Partial Proposed Organization Chart for the Regional Ministry Following the 1978 Elections	173

Section D - Detailed Financial Schedules,
Southern Manpower Development Project

D-1	Yambio Costs	174
D-2	Rumbek Costs	178
D-3	MOA/Juba Support Costs	182
D-4	Logistics Support Costs	185

Section E - High Executive Council and United Nations
Development Program

E-1	High Executive Council, Southern Regional Government, Democratic Republic of the Sudan	188
E-2	UN Projects in the Southern Region, May 1978	190

Section F - Project Paper Development

F-1	Project Design Team	193
F-2	Design Team Itinerary	194
F-3	People Interviewed for Project Design	195

Section G - Bibliography	200
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10. ESTIMATED COSTS (\$000 OR EQUIVALENT \$) -						
A. FUNDING SOURCE	FIRST FY			LIFE OF PROJECT		
	B. FX	C. L C	D. TOTAL	E. FX	F. L C	G. TOTAL
AID APPROPRIATED TOTAL	-					
(GRANT)	1,000		1,000	5,260		5,260
(LOAN)						
OTHER U.S.						
HOST COUNTRY		449	449		2,040	2,040
OTHER DONOR(S)		300	300		890	890
TOTALS	1,000	749	1,749	5,260	2,930	8,190

11. PROPOSED BUDGET APPROPRIATED FUNDS (\$000)									
A. APPROPRIATION	B. PRIMARY PURPOSE CODE	PRIMARY TECH. CODE		E. 1ST FY <u>78</u>		H. 2ND FY <u>79</u>		K. 3RD FY <u>80</u>	
		C. GRANT	D. LOAN	F. GRANT	G. LOAN	I. GRANT	J. LOAN	L. GRANT	M. LOAN
(1) FN	120	070		1,000		1,409		1,000	
(2)		690							
(3)		730							
(4)		740							
TOTALS				1,000		1,049		1,000	

A. APPROPRIATION	N. 4TH FY <u>81</u>		O. 5TH FY <u> </u>		LIFE OF PROJECT		12. IN-DEPTH EVALUATION SCHEDULED MM YY <div style="border: 1px solid black; padding: 2px; display: inline-block;">1 0 8 0</div>
	P. GRANT	Q. LOAN	R. GRANT	S. LOAN	T. GRANT	U. LOAN	
(1) FN	1,657				5,260		
(2)							
(3)							
(4)							
TOTALS	1,657				5,260		

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14. ORIGINATING OFFICE CLEARANCE SIGNATURE: <i>London R. Burrier</i> TITLE: <i>AID Representative</i>	15. DATE DOCUMENT RECEIVED IN AID/W. OR FOR AID/W DOCUMENTS. DATE OF DISTRIBUTION DATE SIGNED: MM DD YY <div style="border: 1px solid black; padding: 2px; display: inline-block;">0 5 2 7 7 8</div>
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PART ONE

PROJECT PAPER

SOUTHERN MANPOWER DEVELOPMENT PROJECT

INTRODUCTION

Project Development

H The PID for this project, prepared in October 1977, recommended a grant, in the amount of \$499,805, to strengthen the Yambio Institute for Agricultural Technicians. When the PID was reviewed in December 1977, the Project Committee supported AID assistance to Yambio, but found that the recommended assistance was underfunded. The Committee recommended a substantial financial and geographic expansion of the project and suggested that the name be changed from "Yambio Agricultural Institute" to "Southern Manpower Development." The Committee also expressed a desire that the project become a "springboard" for greater AID involvement in Southern Sudan.¹

Accordingly, the project proposed in this Paper has greatly expanded upon the original PID. It has increased the financing for the Yambio Institute and has added two new components to the project, one aimed at strengthening the Rumbek Agricultural Training Center, the other involving assistance to the Ministry of Agriculture in Juba. An additional "logistics" component has been added in order, first, to support the activities in this project, second, to lay the foundation for greater AID involvement in the development of Southern Sudan.

Recommendation

In order to strengthen the human resource base in the agricultural sector of Southern Sudan, it is recommended that a grant in the amount of \$5,260,000 be authorized for this project. Financing should cover four years, beginning in FY 1978 and ending in FY 1981.

PROJECT DESCRIPTION²

Background and Goal

The long-term goal of this project is to increase the productivity and income of traditional farmers in Southern Sudan. Two of the principal agricultural and developmental goals of the Southern Regional Government (SRG), as described in the current Six-Year Plan (1978-1983), are to achieve self-sufficiency in food crops and to increase the production of cash crops. Most of the current agricultural production schemes in the South are large estate-type projects. Although these

¹ See Part Two, Appendix A, PID Response Cable.

² This project has been prepared in accordance with the revised PP guidelines in Handbook 3 effective February 15, 1978.

projects will be continued, the SRG, in order to achieve the goals of the Six-Year Plan, has broadened its strategy to target developmental assistance directly at smallholders. This strategy, while demonstrably more difficult to pursue than one based exclusively on large schemes, appears more likely to help achieve the government's complementary goals of sustained growth with equity.

In the agricultural environment of the South, there are a number of interlocking problems that must be addressed in attempting to deliver developmental benefits to smallholders. Many of these problem categories -- lack of a research base for generating, testing and adapting improved technologies, lack of farmer access to agricultural inputs and information, lack of markets or access to markets to absorb surpluses, lack of trained manpower to disseminate and apply modern agricultural knowledge -- are common throughout Africa. But during the protracted civil conflict that ravaged the Southern Sudan between 1955 and 1972, the magnitude of these problems was greatly increased. Among the most deleterious effects of the disturbances was an almost total breakdown of educational services, the consequence of which has been to seriously retard the emergence of a skilled and trained human resource base in the Region. Realizing that human resources are the backbone of any developmental activity, the SRG has focused on the lack of skilled manpower as the critical bottleneck to the achievement of the objectives of its agricultural development plan.

The AID-funded Southern Manpower Development Project will specifically address this constraint, with reference to the unique situation of the South. In the agriculture sector, human resource problems manifest themselves in several ways:

1. Absolute shortages of trained manpower, especially at the technician and field worker levels;
2. inadequate or misdirected training of available manpower; and
3. lack of planning and administrative capabilities, resulting in unsatisfactory use of available human resources.

Because of inconsistencies in job classifications and titles, and because of the various budgetary categories (in two different Ministries as well as special projects) from which salaries are paid, the exact number of agricultural personnel in the Southern Region is

Annex B discusses the problems of human resource development for the agricultural sector in some detail.

13
 difficult to calculate.¹ However, the absolute number is known to be very low. Mills calculated that, above the level of unskilled labor, there were in 1976 a total of 740 positions actually filled in the public agricultural sector.² At least 40 percent of these were administrative or clerical positions and, of the remainder, it is unlikely that more than 200 were "field positions" requiring actual or potential contact with small farmers. The outlook for the future, given the existing recruitment and training situation, is not promising. In 1976 less than 50 percent of the posts in the Ministry of Agriculture (MOA) requiring baccalaureate degrees or diplomas were filled.³ By 1980, the ratio of total projected MOA manpower supply to agricultural manpower requirements at the same two levels will be even lower, about 1:2.5.⁴

The level and quality of agricultural training capacity in the South are also very low. Between 1955 and 1975, there was no formal training of any kind for agricultural personnel in the Southern Region. Late in 1975, the Institute for Agricultural Technicians at Yambio took in its first class in two decades for a two-year diploma-level course. In November 1977, the Rumbek Agricultural Training Center accepted a class of 38 junior secondary school leavers to be trained at the certificate-level as agricultural assistants. By the spring of 1978, the Yambio Institute had produced 29 graduates (from the 1975 entry class) and there were 110 students in training. Rumbek has not yet graduated any of its trainees. As Yambio and Rumbek are the only two institutions in the Southern Region offering formal sub-degree level training in agriculture, this means that most of the existing personnel, from supervisors to the local extensionists who are supposed to come in direct contact with farmers, have had no formal agricultural training except what they have been able to pick up on the job.⁵

The small number of personnel who do exist -- trained or untrained -- tend also to be assigned and used in ways that give them few opportunities to promote and support agricultural development among small farmers. The

¹ See Annex B.

² Robin Mills, Classified Manpower in Agriculture in the Southern Sudan, October 1976, Table 1. Except for smallholder self-employment, there is virtually no private sector agriculture employment in the South.

³ Ibid., page 9.

⁴ Ibid., Tables 36 and 37. Throughout this Project Paper, the shortened term Ministry of Agriculture (MOA) refers to the Regional Ministry of Agriculture, Forestry, Animal Production and Irrigation, Juba.

⁵ The only exceptions would be those who attended institutes in the North or in other countries, or who were trained prior to the civil disturbances.

largest number of agricultural personnel at field levels are assigned to large estate-type agro-industrial schemes or to special donor projects, such as the seed multiplication units of the World Bank's Project Development Unit. The more educated or capable individuals are assigned to teaching or training positions, or are given office jobs. Even the few who are assigned to line positions in provincial or district-level field posts remain largely ineffective in the absence of direction, support, or supervision. These conditions tend to produce low morale and a disinclination to work in remote and isolated rural areas. Instead, they stimulate demand for additional training that will ensure career mobility: upward, in the administrative hierarchy, and away from positions in direct contact with small farmers.

Purpose and Strategy

The purpose of the project is to strengthen the human resource base in the agricultural sector through improvements in the training and utilization of agricultural personnel who work, or will work, with small farmers. The scope of the project is Region-wide, rather than area-specific. Assistance will be directed towards: the Ministry of Agriculture in Juba, which has responsibility for agricultural development throughout the Southern Region; and at the only two institutions in the South that are currently providing pre-service training to agricultural technicians and extension personnel. One of these, the Rumbek Agricultural Training Center, trains field assistants or village-level extensionists; the other, the Yambio Institute for Agricultural Technicians, trains technicians and district-level extensionists. According to current MOA plans, the graduates of the Yambio Institute will frequently supervise the work of the Rumbek graduates. Thus, while the two schools both train "middle-level" agricultural manpower, there is a definite hierarchical relationship between them.

Several concepts underpin the strategy to be used in the project:

1. Information on small farmer practices, constraints and decisionmaking is extremely limited in the Southern Region. Agricultural extension agents must be trained to understand these elements in order to assist small farmers to improve their production practices.
2. Building on current farmer practices, there is a need to test the effectiveness, profitability and acceptability of improved practices and technologies, as well as the efficacy of various training and extension approaches in transferring agricultural knowledge. This can only be accomplished through the establishment of close and purposive linkages between research, training and extension operations.
3. Because agricultural manpower is now in short supply, and will remain so for many years, there is an urgent need to rationalize the

use of the human resources that can actually be tapped and trained. This, in turn, requires the establishment of strong and effective extension operations at the field level, and clear guidance and administrative control at the top.

Summary of Project Components

Based on the identification of the development problem to be tackled and the critical needs delineated above, three components have been designed to accomplish the purpose of the project. These are listed here and discussed in detail in the next section.

1. Strengthen the capacity of the Yambio Institute for Agricultural Technicians to train -- and retrain -- diploma-level technicians in gaining an understanding of small farming systems and applying that knowledge to techniques of extension and knowledge transfer.

2. Strengthen and lend direction to the Agricultural Training Center at Rumbek through curriculum reorientation and revision and through the introduction of a program of direct extension activities in the Rumbek area involving students and staff at the Training Center, Provincial and District agricultural staff and the participation and training of small farmers and pastoralists.

3. Strengthen the capacity of the Ministry of Agriculture in Juba to plan, manage and support viable programs of agricultural training and extension in the Southern Region, through provision of advisory assistance to the Department of Extension and the Department of Research and Training, and through establishment of operational linkages between these Departments, the College of Adult Education and Training at the University of Juba, and the institutions at Yambio and Rumbek.

Because of the special problems of project support in the Southern Region, and because USAID/Sudan desires to use this project as a means to establish a logistical support system in the Region, a fourth "support" component has also been designed for the project:

4. Establish a logistical capacity, to support the project.

The project is designed to integrate these components: it recognizes the importance of basing a training program on available and applicable technologies, as well as on a sound knowledge of traditional farming systems in the Region. Conversely, a realistic extension program must be closely matched with limitations and potentials posed by such training parameters as level and source of recruitment, length, content, and quality of training, and the expectations

and aspirations of the trainees. These linkages will be developed and institutionalized in this project through the provision of a team of technical advisors. Working with Sudanese counterparts, they will assess, evaluate and test various approaches to improving training and extension and will, by the end of the project, establish a more effective and integrated program in these fields for the Southern Region.

Details on these components follow.

Project Components

1. Strengthen the capacity of the Yambio Institute for Agricultural Technicians to train -- and re-train -- diploma-level technicians in gaining an understanding of small farming systems and to apply that knowledge to techniques of extension and knowledge transfer.

Situation

In 1975 the Yambio Institute for Agricultural Technicians was reopened as a two-year, diploma-granting training institution. First opened in 1947, the Institute had been forced to close during the disturbances that affected the Southern Region. With the assistance of UNDP/FAO and SIDA, the Institute has made remarkable strides toward recovery. The physical plant has been almost completely restored and expanded.¹ A curriculum has been established and a teaching staff is in place.² In 1977, 29 students, including one woman, were graduated from the original 1975 class and have been posted to the field.³ Currently, there are 110 students enrolled in the Institute: 96 are in agriculture -- 53, including eight women, in the first year class and 33, including one woman, in the second year class; the other 24 students are in a new forestry section which was added to the curriculum in the current academic year.⁴ Under current plans, the UNDP/FAO assistance will be continued through 1981. A Southern Sudanese will be recruited to take over as Principal during the 1978-79 academic year and, for the first time, the operating costs for the Institute will be funded out of the MOA recurrent budget rather than the development budget.⁵

In sum, the first stage in the reconstruction and development of the Yambio Institute is now complete. The Institute is operational.

-
- 1 See Engineering Analysis.
 - 2 See Part Four, Section A.
 - 3 See Part Four, Section A.
 - 4 See Part Four, Section A.
 - 5 See Financial Plan.

The second stage will involve developing and refining the Institute's capacity to prepare agricultural technicians for the challenges and realities of agricultural work in the Southern Sudan.

Rationale for Project Assistance

In attempting to define the next set of tasks in the development of the Institute, thorough discussions were held with MOA officials and with the staff and students at Yambio. From these discussions, three principles of effective training emerged:

- . Technicians and extension agents must be technically competent; they must have a sound and correct knowledge of the improved agricultural technologies and practices that they would pass on to small farmers.
- . Technicians and extension agents must be able to translate and adapt their technical knowledge within the context of the specific constraints and potentials facing small farmers in Southern Sudan.
- . Technicians and extension agents must be able to communicate their knowledge effectively to small farmers.

Agreement on these principles helped to isolate a number of problem areas in the Yambio Institute's present training program.

One problem identified by the Principal and the teaching staff is that the content of the Yambio curriculum bears little relationship to the agricultural environment of the Southern Sudan. The curriculum is general and introductory: the technologies and agronomic practices taught are more applicable to plantation, estate and commercial farming, than to the diverse, complex and delicately balanced small farming systems characteristic of the Southern Region.¹ Even the "practical" training, limited as it has been to the area immediately around the Institute, does not equip students with an appreciation of the great variety of farming systems they are likely to encounter in their future assignments.² Techniques of socioeconomic analysis also receive inadequate coverage in the present core curriculum.

¹ The main emphasis in the agricultural engineering course, for example, is on the use of tractors. For an analytic treatment of small farming systems in the Southern Sudan, see Annex A.

² In the Yambio area, for example, very few farmers grow dura (sorghum), but in the rest of the South, dura is the principal food crop of most farm families. Yambio students also receive little practical experience in animal husbandry, since the surrounding area is in a tsetse-infested zone.

A related problem is that the Institute presently has no capacity to follow up, re-train and learn from Yambio graduates and other agricultural personnel who are posted in the field. Experience elsewhere in Africa has demonstrated that two years of general and introductory course work (especially for students who have had no previous agricultural training, and often little practical exposure to farming work) cannot adequately prepare students for a sustained career in agriculture, especially at the technician level. For this reason, pre-service training needs to be reinforced and supplemented by a program of continuing, in-service education. Such a program would be designed to equip agricultural personnel with the specialized knowledge they need in their actual assignments, as well as keep them up to date with new technologies and innovations in the field. When run through or linked to a training institution, such a program also provides valuable feedback which permits continual and iterative modification of the curriculum.

Another problem concerns the training of women at Yambio. The number of women being trained at the Institute has increased significantly in the last year. However, neither their specific training needs nor their eventual role within the MOA's overall agricultural development program have been adequately defined. Yambio women receive essentially the same training as men, but it appears unlikely that they will be assigned to work in the same capacity as men after they graduate.¹

There is also an urgent need to strengthen the teaching staff at Yambio over both the long and short term. The policy of the MOA is to gradually increase the number of Southern Sudanese on the faculty. The problem, of course, is one of supply, for there are simply few Southern Sudanese who are qualified and available for these positions at the present time. Another problem, recognized by the staff themselves as well as by the administration and the students at Yambio, is that there is an immediate need to improve the teaching skills of the current (and, in all likelihood, the future) staff at Yambio. Teaching now is generally done by rote methods; often this consists of little more than a teacher writing his lecture notes on the blackboard in order that the students copy, memorize and recite them on an examination. Because Yambio graduates will be posted in diverse areas throughout the South, they must be equipped not just with a litany of technical facts, but with analytic and problem-solving skills, so that they can adapt and apply their technical knowledge to the actual conditions under which they work.

¹ The only woman to graduate from Yambio in 1977 was assigned by the MOA to work as a nutritionist. Yet, the Yambio curriculum gives exceedingly light treatment to nutrition, and the MOA does not have a formal nutrition program. See Annex C for a more detailed treatment of this problem.

A final problem that needs to be addressed concerns the adequacy of learning and teaching materials at Yambio. Although the Institute has a library room and a librarian, it has almost no books. In addition, the Institute is very poorly endowed with teaching materials for classroom and practical instruction.

Project Activities

The project will provide technical assistance, and training and commodity support to the Yambio Institute for Agricultural Technicians, in order to achieve the following outputs:

- a. Establishment of an integrated instructional program focusing on the agricultural and socioeconomic aspects of traditional farming systems in the Southern Sudan. This activity will encompass (a) a more intensive and redirected program of theoretical and practical training oriented to the environment around Yambio, and (b) an ongoing program of data collection and analysis designed to improve the knowledge base on farming systems throughout the Southern Region.

To support this activity, the project will provide the Yambio Institute with two long-term advisors for 30 months each: a specialist in the agricultural and extension aspects of farming systems, and a specialist in the analysis of socioeconomic factors which influence the decisionmaking of small farmers and pastoralists. Additional short-term assistance will be provided to the Institute in the following fields:

- . agricultural information systems (2½ person-months);
- . staff and curriculum development (2½ person-months); and
- . agricultural research, extension methodology, and cooperatives and marketing (1 person-month each).

The short-term specialists will provide curriculum development and evaluation services corresponding to their particular fields.

Members of the technical assistance team will work with Institute staff in developing the following elements of the core curriculum and practical training program:

- . elementary course work on the agricultural and socio-economic basis of traditional farming systems in the Southern Region;

- . training in basic techniques of observation, collection, recording and analysis of field data; and
- . application of these techniques to survey existing farm management practices in the Southern Region.

In the area around Yambio, the technicians will work with Ministry of Agriculture personnel, Institute staff and students to design and execute a program of supervised field trials in which selected "treatments" (new inputs and/or improved practices) are introduced and monitored through a full cropping cycle on the fields of cooperating small farmers. This activity will provide Yambio students with direct experience in conducting field trials and evaluating their results.

The technicians will also assist with the generation of a systematic data base on farm management practices (including livestock and range management) throughout the South, utilizing Institute students during vacation periods to gather survey data, and carrying out in-depth studies themselves to investigate specific problems identified in the surveys.¹

Project inputs to support this activity will consist of the long and short-term technical assistance; housing for the long-term technicians; vehicles, spare parts and fuel for the technicians and for the Institute's extension teacher; 70 bicycles for use in students' field training; fuel to enable Ministry of Agriculture personnel to participate in and supervise the field training program; and a supply of agricultural inputs, including seeds and farm tools.

- b. Strengthening of the Institute's capacity to prepare its women trainees for effective careers in agricultural development.

The project will provide short- and long-term technical assistance in the field of women in development. This assistance will be directed at strengthening the Yambio curriculum to meet women's training needs. Curriculum revision will focus on the role of women in agricultural production as well as in nutrition, household decisionmaking, and in the processing and marketing of food and cash crops.

This work will be carried out initially by a short-term specialist, ideally provided through AID's Women in Development Office. It will be continued through the local hire recruitment of a qualified women's

¹ A proposed schedule for student participation in field trials and data gathering is presented in Part Four, Section A.

extension/development specialist. This specialist will collaborate with the project advisors in Juba and with MOA policymakers in order to rationalize the position and role of women in the Ministry's overall program.

- 21
- c. Integration of the Yambio Institute into a program of in-service training and continuing education, organized and directed by the Ministry of Agriculture and the College of Adult Education and Training at the University of Juba. This activity will serve Yambio graduates and other agricultural personnel working in the Southern Region, and will utilize Institute facilities and teaching staff for selected courses.

The major responsibility for planning and implementing this program will rest with members of the technical assistance team based in Juba.¹ It is proposed, however, to hold four continuing education courses per year at the Yambio Institute during the life of the project, with an average duration of three weeks and 15 participants per session. The long-term technicians based at Yambio, as well as other Institute teaching staff, will collaborate with MOA and Juba University staff in preparing and teaching these in-service courses.

Project inputs in support of this activity will consist of a dormitory/classroom unit to be constructed at the Yambio Institute, with accommodation for 15 persons; and transportation and subsistence for participants in courses conducted at Yambio.

- d. Provision of a teaching methods seminar for agricultural teaching staff and of a plan for continuing seminars to be conducted by the College of Adult Education and Training.

Almost without exception, Yambio and Rumbek staff lack teacher training in their professional preparation. To tackle this problem, the project will provide a two-person expatriate team to conduct an intensive three-week course in teaching methods for the staff of the two institutions during the Christmas holidays beginning in December 1979. The seminar, which will demonstrate a wide variety of classroom and practical teaching techniques appropriate to the agricultural sciences, will also involve two faculty members from the College of Adult Education and Training at the University of Juba. Upon completion of the seminar the two-person team will work with these faculty members to lay plans for the institutionalization of a Teaching Methods Seminar to be conducted on a regular basis by the University.

¹ The conceptual and operational details of the continuing education program are described under the Juba component of the project.

- e. Upgrading of the professional qualifications of the Yambio teaching staff through study tours, short courses and fellowships in African countries.

During the summer of 1979, the project will fund a six-week instructional tour for the Sudanese Principal, Vice-Principal and extension instructor of the Yambio Institute to selected research and teaching institutes in four African countries:

- . Nigeria: The University of Lagos and the International Institute of Tropical Agriculture (IITA) (farming systems unit)
- . Camerouns: The Pan-African Institute of Development (PAID)
- . Tanzania: The University at Morogoro
- . Kenya: The Faculty of Agriculture and the Institute for Development Studies at the University of Nairobi, and Egerton College at Njoro

A principal outcome of this trip (in addition to the intrinsic learning experience) will be the selection by these staff members of appropriate institutions for short- and long-term training of Yambio staff. On the basis of these selections, the project will finance short courses (average length: six weeks) in extension methods or small farming systems for three staff members per year for each of three years. The project will also provide two two-year fellowships for B.Sc. courses for two Southern Sudanese extension demonstrators from the Yambio Institute.¹

- f. Establishment of a library and provision of complementary teaching and learning materials.

The long-term advisors will work with the librarians at Yambio and at the University of Juba to select an initial complement of books and to organize the Institute library for the use of Yambio staff and students. The project will also purchase for the Institute other low-cost teaching and learning materials to support the improved core curriculum and field training activities. These will include extension materials (e.g., poster paper) field data collection kits (tape measures, cords, clipboards, graph paper, etc.) and meteorological kits to be used at five "home sites" of Yambio students for collection of meteorological data.

¹ Demonstrators are diploma-level assistant teachers: the MOA will provide Yambio with five additional demonstrators (probably from among recent Yambio graduates) in the next two years.

23
Summary of Project and MOA Inputs

AID inputs to the project under this component will have a total value of \$1,197,000, broken down among the following categories:¹

	<u>(\$US)</u>	<u>(\$US)</u>
A. Technical Assistance		640,000
1. Long-term (90 person-months)	555,000	
2. Short-term (8 person-months)	80,000	
3. Local Hire Personnel	5,000	
B. Construction		138,800
C. Commodities		279,200
D. Training		112,680
E. Other		26,250

The Southern Regional Government, through the Ministry of Agriculture, will meet the recurrent costs of the Yambio Institute (including Sudanese staff salaries). Total SRG contribution to activities at the Institute over the life of the project will be equivalent to U.S. \$1,458,590.²

Support from UNDP/FAO is scheduled to continue through the end of 1981 and will total \$891,000.³

2. Strengthen and lend direction to the Agricultural Training Center at Rumbek through curriculum reorientation and revision and through the introduction of a program of direct extension activities in the Rumbek area involving students and staff at the Center, provincial and district agricultural staff and the participation and training of small farmers and pastoralists.

Situation

In May 1975, the Sudan Council of Churches established a pilot training center at Rumbek (now the administrative headquarters of the

¹ An itemized budget is presented in Part Four, Section D.

² See Part Four, Section D for an itemized breakdown of MOA support.

³ The UNDP/FAO support for the Yambio Institute is detailed in Part Four, Section A. As the UNDP and USAID fiscal years do not coincide, only those UNDP budget figures falling within the AID fiscal year framework 1978-81 are included in the \$891,000 UNDP/FAO support figure. The UNDP/FAO support budget given in Part Four, Section A, however, follows the UNDP fiscal year schedule.

newly-created Lakes Province). The original purpose of this center was to provide ox-plow training to farmers from the Rumbek area -- mainly members of the Nilotic Dinka group, who are both cattle herders and cultivators. The SCC plans were to staff and manage the Center, to operate three-month residential courses for local farmers (who would bring their own oxen in to be trained), and to establish smaller "satellite" centers if the pilot scheme proved successful. Although the Dinka were the principal target group for this program, they did not demonstrate much interest in the ox-plowing courses.¹ Most of the 36 persons trained before June 1977 were, in fact, employees of the Ministry of Agriculture or private voluntary organizations in various areas of the Southern Region.

The Ministry of Agriculture formally assumed responsibility for the Rumbek Center in November 1977. The name of the Center and the scope and purpose of its training program were changed. Under the new policy announced by the Ministry, junior secondary school leavers from all over the South would be trained in a six-month certificate-level course and then assigned to work in extension posts at the village level where they would have direct contact with farmers. The Center is thus intended to complement the Yambio Institute, whose students are trained as technicians and supervisors, by becoming the Southern Region's training center for bottom-line, village-level extension personnel.²

The first intake of the reconstituted center consisted of 38 trainees, who are scheduled to graduate in May 1978. Ministry plans are to expand the intake to 60 for each course, thereby producing up to 120 graduates per calendar year. The SCC has continued to meet most of the operating costs of the Center, but this support will terminate at the end of 1978. The Ministry has included full support to the Center in its development budget under the Six-Year Plan.³

Rationale for Project Assistance

In broadening and redefining the role of the Center, the Regional Ministry of Agriculture has thrust major responsibilities onto a small fledgling institution. From an administrative standpoint, the Center will have difficulty in absorbing the expanded number of trainees assigned to it by the Ministry. More importantly, neither the structure nor the content of the training now offered at the Center has been adequately developed in terms of preparing people to carry out agricultural extension work. The shortage of agricultural manpower in the Southern

¹ Alternative explanations for the inability of the SCC project to reach the Dinka are presented in Annex A.

² However, see Part Four, Section B-2.

³ See Part Four, Section B-4.

Region poses a serious dilemma: the demand for quantity is accelerating at a time when the quality and substance of training needs still need to be resolved.

In its present situation, the Center lacks the capacity to fulfill its assigned role. Several problems combine to limit the quality of training it can provide:

- . The existing six-month course is closely patterned after the theoretical part of the Yambio curriculum. Inevitably, most subjects are covered superficially, even though the Rumbek trainees are less well equipped to grasp the major concepts than are their counterparts at Yambio.¹ Too much emphasis is placed on questions of "why" as opposed to "how", even though trainees at the Rumbek level must principally deal with "how" problems once they go to the field.
- . As presently organized, the course at the Center does not provide trainees with any supervised field experience in the type of work they are expected to perform after graduation. The practical content of their course is confined to instruction on the Center's demonstration farm. The absence of direct contact with farmers tends to reinforce the "academic" orientation of the trainees. In discussions with the design team, the majority of the 1977-78 group expressed a desire to go on to Yambio or other institutions for further training.
- . Although the Center is located in the heart of a "depressed area", no program exists at present to tap the resources of the institution so as to assist small farmers and pastoralists in the surrounding area. The decision to move away from the original focus on ox-plow training is likely to significantly diminish the outreach activities of the Center. In the meantime, Ministry of Agriculture personnel assigned to Lakes Province are virtually immobilized (they have few vehicles, little fuel, almost no inputs) and, as a result, few extension activities of any kind are actually taking place.

These problems help to define the scope for assistance to the Center under the proposed project. The scale of the institution and the fact

¹ Although a junior secondary school education is officially required for admission to Rumbek, several of the currently enrolled trainees have not completed primary school.

that it is in a transitional phase provide significant latitude for innovation and, where necessary, for reorientation of its training program.

Project Activities

The project will provide technical assistance, training and commodity support to the Rumbek Agricultural Training Center in order to achieve the following outputs:

- a. Development of the Center's capacity to train up to 120 village-level agricultural extensionists per year with skills appropriate to small farmer environments in the Southern Sudan.

To accomplish this, the project will provide a long-term technician plus a house, a vehicle and fuel for the technician. This technician will be a field-oriented agricultural training and management advisor and will serve as the counterpart to the Rumbek Director for two and one-half years. The advisor will assist the Director in curriculum reorientation and revision, in overall planning and management of the Center, in the preparation of recommendations to the Ministry of Agriculture for rationalization and redefinition of the Center's activities, and in the organization and supervision of student and farmer field training activities. The long-term advisor will be assisted in these efforts by the MOA advisors in Juba¹ as well as by short-term assistance.²

- b. Establishment of an extended field training component within the Center course.

Following the suggestion of the MOA Director of Agriculture, the project will provide a "direct outreach" component to the Rumbek training program. This program will add up to six months to the current six months of training received by Rumbek Center students. Supervision and direction of student extension activities will be provided by Ministry of Agriculture personnel assigned to Lakes Province as well as by Rumbek staff.

The 60 students whose field training will occur during the rainy season will be divided into groups of five and sent to live in 12 different farming communities. Each student should have responsibility for introducing improved practices to, and learning about the traditional practices of, five farmers. This may be accomplished either through direct extension methods or by means of side-by-side comparison plots. At the end of two years, Rumbek trainees will have worked with up to 600 farmers in Lakes Province.

¹ See Juba component.

² To be explained below.

21 The 60 students whose field training will occur during the dry season will provide certain basic veterinary services to farmer/pastoralists and, toward the end of the dry season, will work with selected farmers in ox-plowing. As the rural population in the Rumbek area are both farmers and herders, the Rumbek students should be able to reach approximately as many farmer/pastoralists during the dry seasons as during the rainy season.

To support this activity, the project will provide vehicles, fuel, temporary shelter (tukuls and tents), food allowances for the students and their Ministry of Agriculture supervisors, and agricultural inputs (including serum, syringes, sprayers, seeds, ox-plows and other farm implements.)

- c. Organization of 20 field days per year for farmer/pastoralist groups involving specific aspects of improved livestock and crop production.

These training sessions will occur in the farmers' own communities and villages and will be organized at the community level by the Rumbek trainees. The project will provide organizational assistance (through the long-term advisor) and transport and support for MOA or other specialists who will serve as demonstrators for these sessions. Demonstrators will be primarily recruited from among the existing extension personnel of Lakes Province.

- d. Evaluation of the results of the field extension efforts, leading to revision and improvement of the Center's recruitment criteria, its curriculum and its overall approach to the training of village-level extensionists.

To support this activity, the project will provide, in addition to the long-term advisor, short-term assistance in the following fields: veterinary sciences (two person-months), animal traction (1.5 person-months), and marketing (one person-month). As with the long-term advisor, the short-term specialists will perform tasks which will assist in achieving all four outputs at Rumbek.¹

Summary of Project and MOA Inputs

AID inputs under this component will have a total value of \$690,630 broken out as follows:²

¹ Assistance for the Rumbek activities will also be provided by the College of Adult Education and Training. See Juba component.

² Itemization is presented in Part Four, Section D.

	<u>(\$US)</u>
A. Technical Assistance	316,250
1. Long-term (30 person-months)	250,000
2. Short-term (4.5 person-months)	45,000
3. Local Hire Personnel	21,250
B. Construction	58,000
C. Commodities	341,755
D. Other	26,250

The Southern Regional Government, through the MOA, will meet the recurrent costs of the Center (including staff salaries) and the costs of construction already in progress. The Ministry will also be responsible for the salaries of its own technicians and extension staff working within Lakes Province. The total SRG contribution to the activities in Rumbek over the life of the project will be equivalent to U.S. \$350,000.¹

- Strengthen the capacity of the Ministry of Agriculture in Juba to plan, manage and support viable programs of agricultural training and extension in the Southern Region, through provision of advisory assistance to the Department of Extension and the Department of Research and Training, and through establishment of operational linkages between both of these Departments, the College of Adult Education and Training at the University of Juba, and the institutions at Yambio and Rumbek.

Situation

In the Regional capital, Juba, three institutions will be critical to the development of a viable agricultural extension service for the Southern Region: these are the Departments of Extension and of Research and Training within the Ministry of Agriculture, and the College of Adult Education and Training at the University of Juba.

Responsibility for planning and administering agricultural extension services in the Southern Region is presently diffused among

¹ See Part Four, Section D, for itemization.

several departments within the MOA. Logically, this should be the responsibility of the Assistant Director for Extension, who, until recently, reported to the Deputy Director of Agriculture. However, several other departments run by Deputy Directors, e.g., animal production, plant protection, and fisheries -- also have responsibility for extension activities. To confuse matters further, the entire Ministry is currently undergoing a reorganization occasioned by the change of administration which occurred after the February 1978 elections. This has resulted in a division of the Ministry into two directorates -- Agriculture and Animal Resources -- and appears also to have placed the Departments of Extension and Agriculture on an equal footing, with the Deputy (or Assistant) Directors of each Department reporting directly to the Director of Agriculture.¹

The actual operation of extension services is the responsibility of the Assistant Commissioners for Agriculture in the six provinces. According to the Assistant Director of Extension in Juba, the Region has currently 206 "extension officers". However, interviews with the Assistant Commissioners for Agriculture in Western Equatoria (Yambio) and Lakes (Rumbek) Provinces revealed there were only seven extension officers assigned to Western Equatoria Province and five to Lakes.² For lack of vehicles, fuel, inputs and supervision, these extensionists were reported to spend most of their time in the Provincial capitals, making only occasional visits to farmers.

As part of the Special Development Program for the Depressed Areas the Six-Year Plan calls for agricultural extension services to be provided in a decentralized manner through 30 Agricultural Centers (one in each district). Currently, six pilot Agricultural Centers are being built by Norwegian Church Relief (NCR) in Eastern Equatoria Province. The Ministry is seeking donor support for the establishment and operation of similar centers in other provinces.³

Responsibility for the coordination of agricultural research activities in the Southern Region and for the integration of research and training lies with the Department of Research and Training in the

¹ The Ministry was not able to furnish the design team with a formal organization chart. Part Four, Section C, presents a partial pre-election organigram and a partial proposed post-election reorganization chart as created by the design team through discussions with various Ministry officials.

² The majority of extension officers have apparently been seconded to large parastatal or semi-autonomous donor-operated agricultural schemes. Postings of the 1977 Yambio graduates are presented in Part Four, Section A.

³ For a more detailed analysis of the structure and operations of the extension services, including the NCR pilot Agricultural Center operation, see Annex B.

Ministry of Agriculture. Currently, this Department is staffed only by the Director; the 1978-79 budget has proposed two professional staff to assist the Director.

Four donor organizations and one Sudanese organization are currently carrying out various kinds of agricultural research in the South. The World Bank's Project Development Unit (PDU) operates an experimental station at Yei for crop trials and seed multiplication in dura (sorghum), maize, groundnuts, coffee and cotton. The PDU also operates trial centers at Yambio, Rumbek, Wau, Torit and Malakal. The UNDP/FAO Land Development Project administers research and other activities in the Aweil Rice Scheme, a soil survey and research center at Halima, and a dairy and poultry production center outside Juba. The British Overseas Development Ministry (ODM) is sponsoring forestry research in the Imatong Mountains and tea research at Iwacoka. The NCR is conducting agronomic trials with dura near Torit. The Jonglei Commission is carrying out research on the possible socioeconomic effects of the proposed Jonglei Canal on agricultural production in the flood plains.¹

In addition to the Yambio Institute for Agricultural Technicians and the Rumbek Agricultural Training Center, the Ministry of Agriculture runs a Veterinary Stockman's School and a Fisheries Institute at Malakal. The PDU at Yei also gives some crop-specific and in-service training for its technicians and extension personnel.²

The College of Adult Education and Training (CAET) is one of four colleges at the University of Juba.³ CAET shares with the University as a whole the mandate of a "developmental institution", servicing the development needs of the Southern Region. As such, three of its four departments -- Vocational Training, In-Service Training and Extra-Mural Studies -- are directed specifically at adult out-of-school training programs.⁴ To facilitate this program, plans are being laid to establish eight sub-campuses of the University, including one at Yambio to deal specifically with crop production.

¹ Nominally, all agricultural research in Sudan is the responsibility of the Sudanese Agricultural Research Corporation. In practice, the operations in the South are operated more or less independently by the donor organizations.

² See Annex B for a more detailed treatment of agricultural training in the South.

³ The others are the College of Natural Resources and Environmental Studies, the College of Education and the College of Social and Economic Studies.

⁴ The other department -- Undergraduate Studies -- gives training leading to a diploma or a Bachelor's degree in Adult Education.

Rationale for Project Assistance

The most effective extension strategy for reaching the traditional farmer in the South has yet to be worked out. At the moment, the only extension work being carried out in the traditional sector involves scattered programs of seed distribution, cattle inoculations and some spraying of plants and animals. In order to move from these preliminary efforts to a more intensive approach, in which the small farmer will be asked to make fundamental changes in farm management behavior -- new methods of cultivation, new planting schedules, new cropping patterns, investment in new inputs, etc. -- a number of issues must be addressed:

- . Do improved technologies and practices already exist among some farmers in the South which can be transferred horizontally to other farmers?
- . What is the best method of testing new technologies so as to ensure their effectiveness and their acceptability to small farmers?
- . How should the risk perceptions of small farmers affect the choice of technologies to be introduced and their method of introduction?
- . How can the existing human resource base in the agricultural sector be more effectively tapped for extension purposes? Is it possible, for example, to recruit and train farmer-demonstrators or paraprofessionals to support and supplement the work of Yambio and Rumbek graduates?
- . What implications does the role of women in small farm production and in the family decisionmaking process have for extension strategy?
- . How should the diversity of settlement patterns (more often isolated homesteads than villages) and patterns of intra- and inter-tribal cooperation extant in the South affect the organization and operation of the Ministry's proposed Agricultural Centers or Farmer Training Centers?
- . Should Yambio or Rumbek trainees be recruited from particular areas, be given training tailored to the needs of that area and be posted back to that area, or should they be given a more general training course that would allow them to work in more diverse settings?
- . What types of job assignments would make the best use of the talents and training of Yambio and Rumbek graduates?

- . How can Yambio and Rumbek graduates be kept up to date on new technologies and how can their in-service effectiveness be improved? What incentives (salaries, promotions, further training, etc.) will be needed to induce superior performance?
- . For administrative and budgetary purposes, should the "extension service" be consolidated or should separate "extension services" be administered through the various departments? How would these decisions affect the decentralized operations of the extension services in the provinces and districts?

Manpower constraints are such that the Ministry of Agriculture has not given sufficient consideration to these issues. In the absence of a well-conceived and agreed-upon development strategy, research, training and extension operations are carried out in an eclectic and uncoordinated fashion.

As described in the two previous sections, the project activities at Yambio and Rumbek have been designed not just to strengthen those institutions but also to collect basic agricultural and socioeconomic data, forge linkages with ongoing research programs and explore alternative training methods. In its Juba component, the project will provide for the institutionalization of a capacity to coordinate, learn from and synthesize the activities in Yambio and Rumbek. It will also give systematic attention to the issues raised in this section and provide for conceptual and operational coordination among institutions responsible for research, training, re-training and extension.

Project Activities

The project will provide technical assistance, training and limited commodity support to the Regional Ministry of Agriculture and to the College of Adult Education and Training at the University of Juba in order to achieve the following outputs:

- a. Formulation and implementation of a plan within the Department of Extension for the placement and utilization of Yambio and Rumbek graduates, which includes the support, direction and assistance necessary to sustain small farmer and pastoralist development programs in the Southern Sudan.

To accomplish this objective, the project will provide an agricultural planning and extension specialist who will serve as an advisor to the Deputy Director for Extension within the MOA. The advisor, who

will have a 30-month assignment, will assist the MOA in defining priorities and establishing a program for resource allocation within the following areas:

- . stimulation of food crop and cash production among traditional farmers;
- . improved management and marketing of livestock; and
- . large donor-assisted schemes.

The advisor will assist the MOA in conducting a manpower survey which will identify training and manpower needs. Based on the summary, he will assist the Department of Extension in preparing detailed plans for the staffing, operations, support and evaluation of the MOA extension program. He will also help to coordinate and evaluate field training and extension activities based at Yambio and Rumbek, in order to provide the MOA with recommendations regarding the recruitment, training and placement of personnel who will work directly with small farmers and pastoralists. The advisor will be provided with housing, a vehicle, fuel and local hire staff.

In addition to the long-term advisor, the project will provide three person-months of short-term assistance in the following fields:

- . agricultural extension strategies (two months); and
- . agricultural credit and marketing (one month).

These specialists will assist the long-term technicians in conducting evaluations and preparing recommendations in their respective fields.

- b. Formulation and implementation of a plan within the MOA's Department of Research and Training to incorporate available knowledge on the socioeconomic and technical aspects of improved agricultural production into the training of agricultural technicians and extensionists at Yambio and Rumbek.

To accomplish this objective, the project will provide a long-term advisor who will serve as team leader for the entire technical assistance team and who will work directly with the Deputy Director for Research and Training within the Regional Ministry of Agriculture for a period of 30 months. The advisor will help to synthesize the results of low-level agricultural interventions at various sites and projects within the Southern Region. He will travel regularly to Yambio and Rumbek to work with other members of the technical assistance team and the teaching staff at the two institutions, in order to coordinate the MOA's overall training program. The project will build a house for this advisor and provide a vehicle, fuel and local hire staff.

The project will also provide short-term technical assistance to the Department of Research and Training in the following specialties:

- . agricultural research (two months), and
- . agricultural information systems (one month).

These short-term specialists will assist in conducting evaluations and preparing recommendations in their respective fields.

- c. Establishment of a capacity within the Ministry of Agriculture, and the College of Adult Education and Training at the University of Juba, to conduct, organize and support continuing education for technicians, extension agents and other key agricultural personnel.

To initiate this activity, the project will utilize the long-term technicians based at the Yambio Institute, and within the MOA at Juba, and will construct physical facilities (a dormitory/classroom unit accommodating 15 persons) on the campus of the Yambio Institute. The advisor in the MOA's Department of Research and Training will have principal responsibility for coordinating this effort. He will serve as liaison between the Ministry and the College of Adult Education and Training, and will help to develop systematic procedures for scheduling, for selection of participants and instructors, and for provision of administrative and logistical support.

During the life of the project, four such courses will be held annually at the Yambio Institute. The participation of the long-term technicians based at Yambio as well as the teaching staff of the Institute will permit lessons learned from these in-service courses to be introduced into the Institute's core curriculum and practical training program. The project will provide all transportation and subsistence support for participants and instructors in the courses held at Yambio.

- d. Establishment of a capacity, within the College of Adult Education and Training at the University of Juba, to upgrade the skills of Yambio and Rumbek instructors through a continuing program of short courses in teaching methods.

Initially, the project will organize and conduct an intensive course in teaching methods for staff at the Rumbek Center and the Yambio Institute during the semester break in December 1979. This input has been described under the Yambio component of the project (see above). Over the longer term, however, a continuing program will be needed to further upgrade instructors' skills and to cope with probable expansion and turnover of the staff at the two schools. To

35
develop this capacity, the short-term specialists provided for the intensive course in December 1979 will work with staff from the College of Adult Education and Training and the project advisors in the MOA to develop plans for an annual series of teaching methods workshops for Yambio and Rumbek (and possibly other institutions) teaching staff to be held each year at the Yambio Institute or other appropriate locations.

The advisor in the Department of Research and Training will serve as liaison between the MOA, the Institutes and the College of Adult Education and Training. An additional three person-months of short-term assistance from a teaching methods specialist will be provided during the life of the project to evaluate and ensure continuity for this activity.

Summary of Project Inputs

AID inputs to the project in support of this component will have a total value of U.S. \$948,230, broken out as follows:¹

	<u>(\$US)</u>
A. Technical Assistance	680,000
1. Long-term (60 person-months)	500,000
2. Short-term (9 person-months)	90,000
3. Local Hire Personnel	5,000
4. Manpower survey	85,000
B. Construction	72,000
C. Commodities	196,230

Host country contributions in support of this component will consist of salaries and benefits to participating staff at the Ministry of Agriculture and the College of Adult Education at the University of Juba, and MOA vehicles allocated for use in project-related activities. Over the life of the project GOS contributions to this component will be equivalent to U.S. \$206,500.²

4. Establish a logistical capacity to support the project.

¹ An itemized budget for this component of the project is presented in Part Four, Section D.

² Details are presented in Part Four, Section D.

Situation

The Southern Region, which occupies a territory larger than Kenya, is very often cut off from the North and from the rest of the world in terms of transportation, communications and supplies. During the three weeks that the design team spent in the South, the international airport in Juba was closed to large aircraft.¹ Telex and telegraph facilities were not operational, and the telephone system worked only occasionally. During the dry season (November to March in most parts of the South), it is possible to drive from Juba to either Khartoum or Nairobi in about one week; but during the rainy season, road travel between Khartoum and Juba is impossible, and between Nairobi and Juba it becomes very difficult. Shipment of goods by river barge or steamer from Khartoum to Juba may take several months. The rail link from Khartoum extends only to Wau, which is a 2-1/2 day drive from Juba during the dry season. For these reasons, most goods imported into Southern Sudan come through the port of Mombasa, Kenya, which provides a more reliable source of supply than via Port Sudan. For this reason, major international donors have a logistics specialist stationed in Nairobi to facilitate support operations.

Rationale for Project Assistance

In order to implement this project, an effective system of transportation, communications and logistical support is necessary to supply U.S. project technicians with the necessary housing, fuel, food and other supplies.

The Southern Manpower Development Project is the first AID assisted activity in which long-term U.S. technical assistance to the South is proposed. USAID/Sudan thus has no logistical base or experience in the Southern Region and is aware of the gravity of support problems from extensive discussions with other international donors. The UNDP, the African Committee for the Rehabilitation of Southern Sudan, and other major international donors all have established their own self-contained logistical support system consisting of logistical personnel (including a representative in Nairobi), storage facilities, a communications system and a transportation system.

AID expects to increase its assistance and establish a long term presence in the Southern Region and plans to use this project to gain an understanding of the logistical support problems of project implementation in the Region and to establish the basis for a more permanent system of AID support.

¹ The airport was closed for runway repairs and all scheduled flights from Khartoum and Nairobi were cancelled. The design team was able to leave the South only by chartering a single-engine airplane.

Project Activities

31 For this first major AID project in the South, it is not appropriate to establish an elaborate support system. Rather, for transportation and storage of fuel, foodstuffs and other commodities, the project will utilize the support system that has already been established by UNDP. This arrangement is both practical and logical, since one of the institutions supported by the project (Yambio) is also being supported by UNDP/FAO. The arrangement with UNDP, worked out by the design team during its trip to the South, will essentially involve cost-sharing for the procurement, transportation and storage of bulk commodities.¹

Under this arrangement the selected contractor will be responsible for coordinating all administrative and logistic matters. The contractor will provide a full-time logistics specialist and an administrative officer who will be stationed in Juba for a period of three years. These specialists will be supported by USAID/K, a third country national logistics specialist in Nairobi, and the contractors' home office. They will work with the administrative unit of UNDP/Juba to coordinate the procurement, transportation and storage of commodities and with the construction unit of UNDP and local contractors to supervise all project construction. They will maintain radio communication with project personnel in Yambio and Rumbek and with the AID office in Khartoum. They will also keep records and an inventory of AID-procured commodities and assist the Ministry of Agriculture to improve its own logistical support system.

The contractor will also construct a combination office/warehouse, will furnish a radio base station, a vehicle with a mobile radio and local hire staff to assist in administrative, bookkeeping and warehousing tasks.

Although these inputs will be used, in the first instance, for direct support to the Southern Manpower Development Project, the knowledge gained as well as the physical facilities established will prove invaluable for the support of other AID-assisted projects in the Southern Region.²

¹ See the Implementation Plan for a more detailed discussion of the arrangements with UNDP.

² As additional AID-assisted projects get underway in the South, it is the intention of the AID Representative in Khartoum to station a full-time direct-hire AID officer in Juba.

Summary of AID Inputs

	<u>(\$US)</u>
A. Technical Assistance	538,600
Long-term U.S. (2) ^a	360,000
TCN/Nairobi (1)	36,000
Short-term U.S. (2)	124,000
Local Hire (5)	18,600
B. Construction	77,000
C. Commodities	170,350
D. Transportation/Procurement Expenses	<u>185,000</u>
Total	970,950

^aOne technician at \$100,000 per annum, the other at \$20,000 per annum. The second technician will be either a locally available American or a third-country national.

38

PROJECT ISSUES

39
The viability of the Rumbek component of the Southern Manpower Development Project depends on the availability of funds to cover recurrent operating costs of the Rumbek Agricultural Training Center. These costs have been budgeted and approved, with proposed financing to come from a Southern Regional Government (SRG) "development budget for 1978/79." However, as explained in the Financial Analysis section of the Project Paper, the SRG's use of the terms "recurrent budget" and "development" budget bears explanation. Funds are placed in a "recurrent budget" only for institutions or activities that have become financially viable or have otherwise proven their worth. Beyond the usual annual operating expenses, an institution's "recurrent budget" may contain one-time-only capital expenditures, such as the cost of a new building. A "development budget," on the other hand, may contain annual operating expenses, as well as capital expenditures, for an institution or an activity that is just getting off the ground and has not yet "proven itself." Most funding budgeted and approved in a recurrent budget is generally disbursed and is received by its intended recipient. Recent history has shown, however, that less than one-third of funds budgeted and approved in a development budget may actually be disbursed and received by the designated institution or activity.

The issue that needs to be considered by the Project Review Committee is as follows: All the necessary operating costs of the Rumbek Center have been placed in a development budget which has been approved (for 1978-79) by the Government of Sudan. (It is expected that the same procedure will recur in following years.) As explained above, it is quite probable that only up to one-third of the necessary operating costs of the Rumbek Center will actually be disbursed. This discrepancy between approved and actual expenditures is an extremely sensitive political issue in the Southern Region since the "Northern" Government of Sudan provides nearly all "development budget" funding for the South. Thus, it would not be judicious to place a line item in the project budget to cover the recurring costs of the Rumbek Center since this would constitute double budgeting (once by the project and once by the SRG). Yet, without some provision for assisting the Rumbek Center with its recurrent costs, it is likely that the Center will not be able to support proposed project activities.

It should be pointed out that this issue is quite likely to come up again and again as AID considers additional development assistance to Southern Sudan.

Two options are offered for the resolution of this issue with respect to the Southern Manpower Development Project.

1. Provision of a separate line item in the Project budget, in the amount of \$75,000 per year, to be called "other costs". (It is estimated that this amount will be the maximum annual deficit in operating funds for the Rumbek Center.)
2. AID approval of the use of Project "contingency funds" for Rumbek operating costs.

The design team favors the second option as the one more likely to do the job without creating the tensions that may arise from the thinly disguised double budgeting inherent in the first option. A covenant has been included in the Project Agreement stating the GOS's intention to cover Rumbek operating costs. This will provide USAID/S with some leverage to obtain necessary funds from the GOS, although it is not likely that such a mechanism could be used in a timely fashion to cover the needs of the project.

PROJECT SPECIFIC ANALYSES

Economic AnalysisMethodology

As a non-revenue-producing project, the Southern Manpower Development Project does not lend itself easily to benefit-cost or IRR analysis. Instead, cost-effectiveness analysis has been used to compare the approach and activities proposed in this project with alternative approaches.

Analysis

The purpose of the project is to strengthen the human resource base in the agricultural sector of the Southern Region, through improvements in the training and utilization of agricultural personnel who work with small farmers and pastoralists. To achieve this purpose in the most cost-effective manner, certain decisions had to be made during the design process concerning:

- . the level and type of personnel to be trained;
- . the institutional base for the training;
- . training methods and activities with the greatest promise of payoff in terms of purpose achievement; and
- . least cost methods of delivering project inputs.

That lack of trained manpower is a critical constraint in the development of the Southern Region is not a question. Only about five percent of the secondary school age group in the South attends secondary school; more than 90 percent of the population is illiterate; of more relevance, only 29 men and women have graduated from a formal agricultural training course in a Southern institution over the last 20 years. As one observer has pointed out:

When one examines the underutilized budget of the Southern region, it is most evident that skilled and semi-skilled manpower, rather than finance, is probably the major retarding factor in the development process of the Region.¹

¹ T. Mills, op. cit., page 5.

As identified in Annex B, agricultural manpower may be grouped into four levels:

- . professionals to plan and manage research, training, and development programs;
- . middle managers and technicians capable of technical and supervisory support of extension activities and applied research;
- . extensionists capable of transferring technical knowledge to farmers and feeding back information gained from farmers; and
- . farmer/pastoralist demonstrators who can spread information and knowledge within their communities.

There is an absolute lack of manpower within all four categories, but since resource limitations (human, institutional and financial) preclude the possibility of massive and simultaneous training programs at all levels, the initial question becomes what level should be handled first.

One approach would be to concentrate efforts at the top through training of professionals at the university and post-graduate levels. In addition to helping fill the manpower gap at the top, such an approach might provide individuals who could be used to train others. However, the social rate of return to higher education in most African countries -- including the Sudan -- compares unfavorably to the returns that can be expected to investments in training and education at lower levels. The 1976 ILO study of the Sudan found that the social rate of return to university education was only half the social rate of return to secondary education (four versus eight percent); the study concluded that Sudan's investment in higher education was already (in 1976) much higher than could be justified on economic grounds.¹

Another approach would be to concentrate the human resource development effort at the other end of the scale, i.e., engage in the direct training of farmer-demonstrators, farmer paraprofessionals or, perhaps, farmers' sons. Such an approach would employ nonformal or basic education techniques, and would organize farmer groups either (1) to give intensive instruction in a single improved practice or a "minimum package" of improved technology, or (2) encourage, and financially support, farmer efforts to identify their own learning needs and

¹ International Labor Office, Growth, Employment and Equity, A Comprehensive Strategy for the Sudan, 1976, page 407. This finding was made before the opening of the University of Juba.

43 seek out their own learning resources. (The latter might consist, initially, of little more than learning about the marginally improved techniques of one of the community's more successful farmers.) To be effective, however, such an approach presupposes one or more of the following conditions:

- . a minimum body of knowledge about existing farming systems and community organization, so that effective intervention techniques can be employed;
- . a minimum package of improved technologies that have been locally tested; and
- . a cadre of extensionists or community development workers trained in techniques of communication and knowledge transfer and in evaluation of the effectiveness and impact of new technologies.

As discussed in Part Three, little is known about farming systems or local organizations in the Southern Region and few improved technologies have been developed and locally tested. More critically, the South lacks trained personnel with either the technical competence or the extension skills to initiate an effective two-way communication process with small farmers.

The analysis thus confirms that it is the lack of trained manpower at the middle levels that constitutes the greatest single bottleneck to agricultural development. The project is designed to address the manpower constraint at two "middle" levels. At Yambio, the project will help train personnel who will become middle-level managers and technicians; Rumbek trainees, by contrast, are destined to work directly with small farmers as first-line field agents. By channeling assistance to ongoing institutions, the project avoids the heavy lead-times and start-up costs that would be incurred by developing new institutions; it also ensures built-in counterparts for the Yambio and Rumbek advisors so that capacities developed by the project can be assimilated and sustained. By placing advisors in the Ministry of Agriculture, which has responsibility for these two institutions, the project will help ensure efficient and complementary training and placement of Yambio and Rumbek students.

The design team recognized that attempts to train secondary school leavers for agricultural professions through formal, institutionalized schooling have very often failed in other parts of Africa. Drawing lessons from these failures, the activities proposed in this project have been designed to maximize the return to this investment in training. A common problem, for example, is that agricultural curricula, as well as the organization and operations of extension services, have

often been based on inapplicable models from industrialized countries: a key output of this project will be the introduction of a core instruction unit at the two institutions that will be based on a constantly expanding knowledge base on farming systems in the Southern Sudan. This knowledge base will also generate recommendations concerning Regional organization and operation of research, training and extension activities.

Another shortcoming of much agricultural training is an over-emphasis on theory at the expense of practice. Often, this is due more to circumstance than design. The curricula at both Yambio and Rumbek have been designed to include large amounts of practical training, but, in practice, much less time is spent in the fields than was originally intended. This is due mainly to resource constraints; to overcome this, the project will provide vehicles, fuel, food support and agricultural inputs to support strengthened and expanded programs of practical training at the two institutions. This training will be particularly emphasized at Rumbek whose trainees, once assigned to the field, will be more concerned with questions of how than with questions of why.

Another pervasive pitfall is the assumption that directed learning necessarily stops upon award of a diploma or certificate. Even at Yambio (the more advanced of the two institutions), trainees will be able to gain no more than an introductory and general knowledge of agriculture in their two years of residence. In order to adapt this knowledge, technicians and extension personnel need a continual series of seminars and refresher courses. The project will provide technical assistance and funding to initiate such a program through the two training institutions, the MOA and the College of Adult Education and Training at the University of Juba.

In addition to inadequate training, another reason for the notoriously poor performance of extension personnel in Africa is low morale due to low pay, inadequate housing, and other such incentives. Although the project will not provide direct support to extension personnel once in the field, a major task of the extension advisor in the Ministry of Agriculture will be to recommend a package of support and incentives for the extension service that will make a sustained career in agriculture more attractive.

The project has also been designed to minimize the cost of logistical support which, due to the isolation of the South, can assume great proportions. Rather than create a self-contained communication, transportation and input supply capacity in the South, USAID/Sudan will enter into a cost-sharing agreement with UNDP to make use of their already established support system.

Together, these activities will help maximize the potential payoff from this investment in human resource development.

Social Soundness Analysis

Methodology

45 The social and cultural implications of the Southern Manpower Development Project have been carefully reviewed during the process of project design. Key issues were examined by the design team's social anthropologist who also participated in the writing of the Project Paper.¹

Initially, the principal ethnographic literature on the Southern Sudan was consulted and reviewed.² Although comparatively few contemporary studies have been published, the available sources highlight the importance of the interface between cultivation and pastoralism. They also reveal that a wide range of farming systems exists within the Southern Region, each adapted to specific ecological factors. This overview indicated the need for a strategy of development assistance which can be adapted to fit the different agricultural environments within the South.

The next stage involved a field trip within the Southern Region over a period of two and one-half weeks. Interviews were held with trainees currently enrolled at Yambio and Rumbek, with Ministry of Agriculture officials and donor project personnel, and with farmers and pastoralists from ethnic groups in three localities:

1. Kakwa: Yei, Eastern Equatoria Province
2. Azande: Yambio, Western Equatoria Province
3. Dinka Haggat: Rumbek, Lakes Province

In general, the findings highlighted the diversity of farming systems in the South and the need for systematic inquiry into their dynamics and productive potential.

Project Analysis

The project design raises and addresses a set of basic questions, and identifies a methodology for resolving these questions in the course of project implementation:

What kinds of agricultural manpower are needed in order to develop a system capable of delivering benefits to small farmers?

¹ A detailed analysis is presented in Annex C.

² See bibliography in Part Four.

Clearly, both middle-level technicians and field extensionists will be needed. The project encompasses training for both types of personnel, and will strengthen linkages between the MOA and the two major training institutions. The respective functions of technicians and extension agents need to be more clearly delineated, however, to maximize the use of scarce human resources within the MOA's overall program. At present, neither category of personnel has a clearly prescribed role in terms of providing services to the small farmer.

2. From what sources should agricultural personnel be recruited and trained?

The present MOA policy of recruiting secondary school leavers for both Yambio and Rumbek should be subjected to ongoing evaluation. Experience in other developing countries, and discussions with current trainees at the two institutions, raise questions about the motivation and future job performance of persons educated to this level. The integration of project components will aid this evaluation process and allow examination of other options (e.g., training of farmers as demonstrators or paratechnicians).

3. What role should women play within the overall agricultural development program of the Southern Region?

The project design addresses this question (as yet unanswered, despite the inclusion of women in the Yambio course) through provision of a women-in-development specialist, who will help to rationalize the training needs and professional roles of women within the MOA's program. The need for this is self-evident, given the critical importance of women in agricultural production and family decisionmaking throughout the Southern Region.

4. What skills do agricultural technicians and extension agents need to work effectively with small farmers and pastoralists in the Southern Region?

The design exercise highlighted the importance of communication and problem-solving skills (the ability to adapt technical knowledge to specific environments) as vital supplements to technical competence acquired in formal training institutions. The capacity to develop these skills will be a major output of the project: the knowledge base on Southern Region farming systems will be strengthened, and increased emphasis given to practical field training in direct contact with farmers. Feedback from field personnel participating in in-service courses organized by the project will help to further clarify training needs.

5. What measures can be taken to ensure the widest possible spread of benefits from the project?

47 The expressed intention of the MOA is to deliver development benefits to small farmers throughout the Southern Region; yet current practice in both selection and placement of personnel falls considerably short of this objective. By channelling assistance directly to small farmers and pastoralists in Lakes Province through the Rumbek component, the project will significantly improve MOA coverage in one of the "depressed areas" targeted for assistance. As the human resource base is broadened, further steps must be taken to extend coverage into the more remote areas and to those farmers most in need of help. Members of the technical assistance team will assist the MOA in devising and implementing this strategy.

Summary

The complexity of these questions underlines the fact that the problems of agricultural development in the Southern Sudan are not susceptible to a "quick fix" approach. The project design specifies a process, generated by identifiable inputs and outputs, through which these questions can be systematically resolved. The questions themselves define the scope for evaluating the social impact and equitability of the project, once it is actually implemented.

ENGINEERING ANALYSIS

THE PROJECT

1. Background

In order to optimize the effectiveness of assistance to Yambio, the PP team determined that additional support should be given to the Extension Headquarters in Juba and the Rumbek Agricultural Training Center. The team determined that to effectively impact on the manpower shortage in agriculture, namely extension, two technicians should be posted to Yambio, three technicians to Juba and one technician to Rumbek. (See map, Fig. 1)

2. Existing Facilities

a) Yambio, Physical Plant (See Plan, Fig. 2)

Generator house complete with controls for:

- 1 52.8 KVA AC Generator with 64.5 HP Diesel Engine
- 1 52.8 KVA AC Generator with 80 HP Diesel Engine;

Overhead water tank for Institute and some staff houses (48 M. cubed);

Overhead water tank for senior staff houses (3000 liters);

Overhead water tank (3000 liters) not being used; and

Two bored wells with pump and diesel engine not being used.

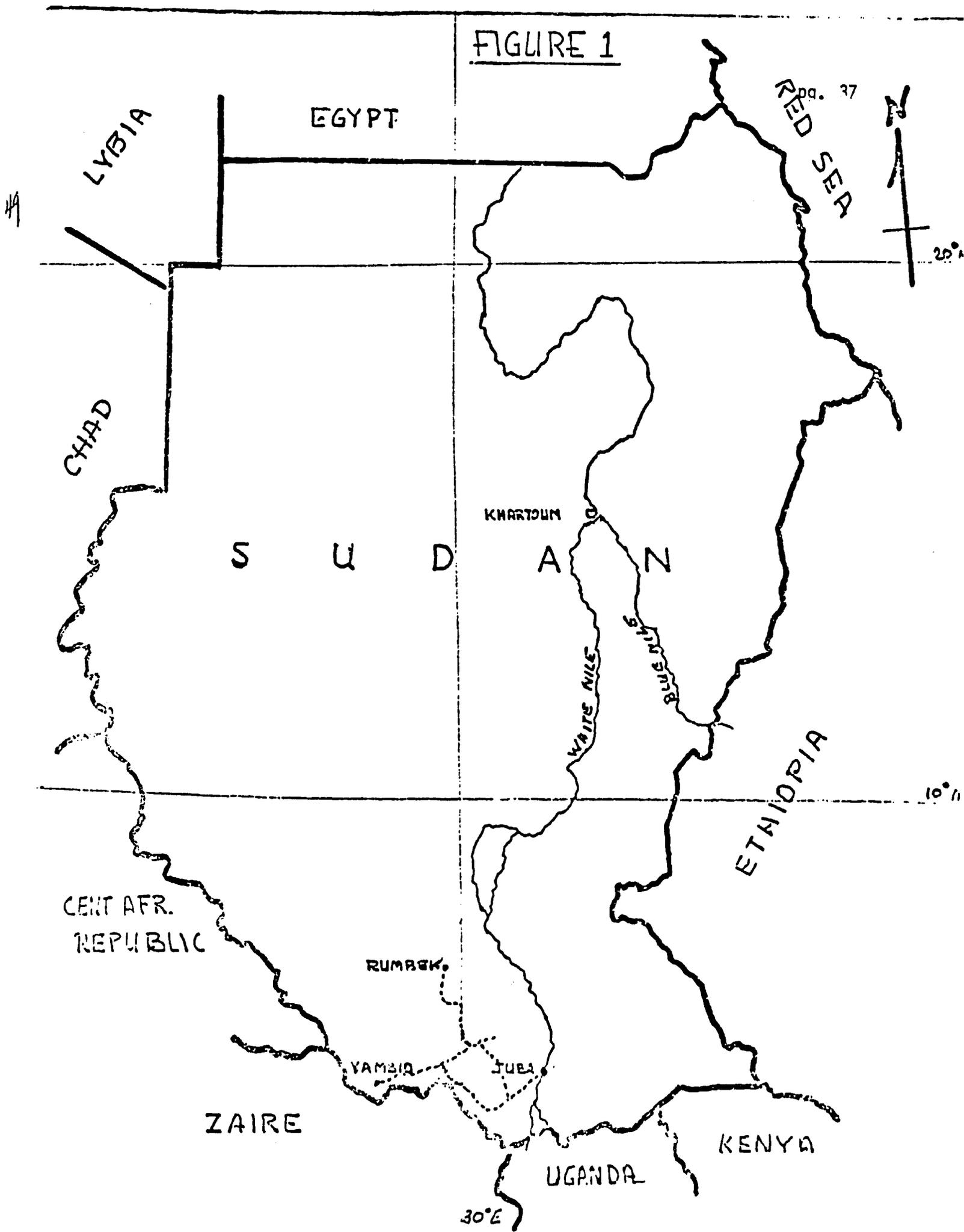
Fuel Storage Tanks:

- Two 5000 liter tanks for diesel;
- One 1000 liter tank for petrol; and
- 1200 liters kerosene.

(With drum storage they could store up to 20,000 liters of diesel.)

Work storage area with blacksmith shop, technical stores and spare parts, repair shop, garage and machinery shed.

FIGURE 1



49

pg. 37

25°N

10°N

30°E

LYBIA

EGYPT

RED SEA

CHAD

S U D A N

KHARTOUM

WHITE NILE
BLUE NILE

ETHIOPIA

CENT AFR.
REPUBLIC

RUMBEK

YAMBIK

JUBA

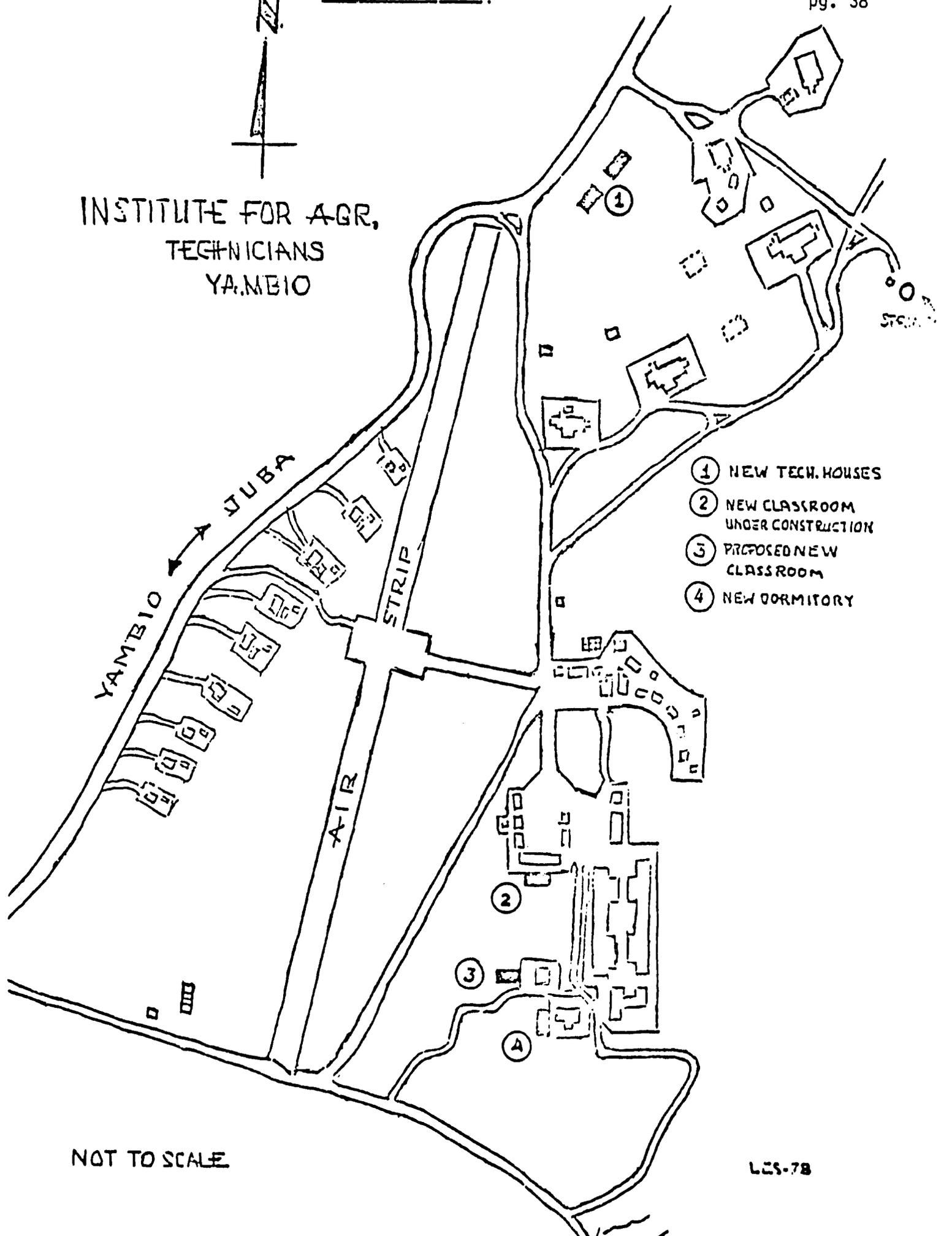
ZAIRE

UGANDA

KENYA

FIGURE 2.

INSTITUTE FOR AGR,
TECHNICIANS
YAMBIO



- ① NEW TECH. HOUSES
- ② NEW CLASSROOM UNDER CONSTRUCTION
- ③ PROPOSED NEW CLASSROOM
- ④ NEW DORMITORY

NOT TO SCALE

LCS-78

50

Six houses for senior staff.

Two pre-fabricated 2-BR houses for senior staff
(under construction).

Ten houses for Junior staff and instructors.

Five houses for shop personnel.

Kitchen and dining hall (presently 110 students).

Dormitory for approximately 130 students.

Three storage buildings

One dispensary.

One principal's office.

One vice-principal's office.

One shed for carpenter shop.

One chicken coop.

One four-stand pit latrine, under construction
(for students).

b) Rumbek, Physical Plant

All buildings are of standard steel frame, steel truss and metal roof in standard modular bays 2.5 x 7.25 M, with walls of cut laterite pointed and sealed with sand-cement mortar on the exterior and mud plaster on the interior.

1 kitchen/dining hall	6 bays (under construction)
2 dormitories	5 bays each
1 classroom	3 bays
1 store	3 bays
1 office	4 bays
1 work shop	4 bays (used as dining hall)
1 garage	4 bays
1 principal's house	5 bays

- 1 vice-principal's house 4 bays
- 14 native houses for staff housing
- 3 bored wells with hand pumps

3. Special Problems That Must be Considered

- a) Extremely remote and isolated locations. Yambio 670 kms. and Rumbek 580 kms. from Juba, which in turn is remote and receives practically all service and support from Kenya through Uganda.
- b) Extremely bad roads subject to closure during rainy season.
- c) Little or no foodstuffs available locally or in Juba. Must be imported overland or by air from Kenya.
- d) No timber products available. Must be imported from Kenya. Cement is \$17.50 per bag in Yambio.
- e) Spring at Yambio is only producing 4000 liters per day, which is nowhere sufficient. There are two drilled wells on the Institute but are not being used. There seems to be some confusion as to why they are not utilized; however, the addition of personnel at the Institute will require amplification and revision of the water supply.
- f) There is no electricity at Rumbek. Generator will be necessary.
- g) Electricity is only available 6 to 8 hours per day at Yambio, requiring kerosene operated freezers, refrigerator and cooking stove.
- h) Only hand carried water available at Rumbek. Will require well and pump.
- i) No communication facilities at either location. Will require radio.
- j) Tsetse fly infection serious at Yambio, both bovine and human.
- k) Termites are serious problem at all locations.
- l) Furniture and household equipment will have to be provided for all houses, etc.

52

m) No municipal sewers are available. Therefore septic tanks must be provided.

n) Water supply at all locations will require storage tank to insure continuous supply.

o) Municipal electrical supply in Juba is unreliable and sporadic; therefore generators must be provided.

p) Little or no fire protection or municipal services are available in Rumbek and Yambio.

4. Project Site Description

Yambio

The soil at the Institute is a dark sandy loam, mixed with weathered laterite and underlain with a dense laterite. It is fairly well drained in the built-up area and the farm plots; however, as the land slopes to the South-East, it becomes water-logged and swampy in that region of the Institute property. Fields at the Institute (see Fig. 3) are presently being cultivated by the students as a practical part of their course work.

A spring on the property is presently being utilized as the sole source of water; however, it is proving to be inadequate. General observation of the area indicates that there is a good possibility of a suitable and adequate supply of ground water. There is a possibility that two wells presently installed can be developed or increased in depth to supply necessary supply. This, however, will require examination and investigation by a qualified ground water hydrologist.

Buildings constructed over twenty years ago are still sound with no indication of foundation problems, and no problems are anticipated for the new construction as sites are located on high ground, well away from swampy area.

Rumbek

The soil at the Training Center is a sandy loam with dense laterite at two to three feet below the surface. The area is fairly flat but there is no indication of poor drainage or water-logging. Fields at the Center are presently being used as training centers for practice in Ox-Plowing, but plans are to use a major part of them for student practice plots.

The technician's house will be sited on the Center property, however exact spot has not been determined. This should present no problem since there is ample area and all of it about equal. There are three drilled wells on the Center, one of which is producing a

good quality and quantity of water. The other two, which are only 30 meters deep, produce good water but it contains an objectionable amount of silt and must be filtered. It is expected that the new well to be drilled for the technician's house will go to the aquifer producing clear water.

Juba

Juba is the capital and principal city of the Southern Sudan, located on the west bank of the Nile River, close to the Zaire, Uganda and Kenya borders (see Map Fig. 1). It is geographically closer and more accessible to Kampala and Nairobi than to Khartoum. River barge transport from Khartoum to Juba is extremely slow and dependent upon water level and river conditions. Overland by truck requires approximately one week in good weather and can be completely closed at times, depending on weather and road conditions. In addition, the supply of equipment and supplies available in Khartoum is extremely limited; therefore, practically all equipment and supplies (including foodstuffs) are imported from Kenya overland by truck or by air charter.

The Ministry of Housing, Lands and Public Utilities has identified building space for proposed construction. The site is located adjacent to the compound where new UNDP houses are presently being constructed. Electricity, water and roads have been brought to the site. It is located on well drained, high ground close to the new Ministry buildings. Granite outcrops are common throughout the area and buildings in the area are sound with no evidence of foundation problems and no problems are anticipated with this construction.

Climate

The entire project area falls in a region with over 1400 mm. annual rainfall, with Juba and Yambio receiving more than Rumbek. Rainfall is generally fairly evenly distributed from May to October with greatest amounts in June and July, but without excessively heavy periods. Severe thunderstorms occur and gully erosion is evident along the road from Juba to Rumbek and Yambio. It was reported that there is sufficient rainfall to produce most crops including long maturing Dura throughout all of the project area.

Temperatures are hot throughout the project area with highest humidity in Juba. Air conditioning is not practical due to the scarcity and high price of electricity. Insulation in the roof and ceiling are necessary and some houses have double ceilings and walls on the sunny side of the building. Proposed houses have been designed for this climate and are quite comfortable with natural ventilation and ceiling fans.

5. Personnel and Equipment Needed to Initiate Project

55 a) The Southern Sudan is extremely isolated in terms of communications, transportation and logistics support. Two weeks after signing contract, the contractor selected for the project will place a logistics specialist and administrative officer in Juba to initiate the actions necessary to prepare for the arrival of the full technical assistance team. The logistics specialist would be responsible for seeing that housing is constructed, furniture and appliances in place, supply sources identified and delivery mechanisms detailed and functioning. To facilitate these support activities, the project will make use of, and complement the facilities of UNDP in Juba (e.g. the UNDP system for fuel purchase, shipment and storage).

b) An Expeditor/Procurement Specialist should be located and posted in Nairobi. The specialist could be officed in REDSO, possibly under the supervision of the Supply Management Office. This position should be filled at the same time, or shortly after, posting the Administrator in Juba. His duties will include, but not be limited to, identifying supply sources, arranging shipment and insuring timely delivery of supplies and equipment to Juba. It is intended that this person be a local hire citizen of Kenya and as such could be hired without waiver problems.

c) Permission should be secured from the GOS to install a radio net consisting of 100 watt base and mobile units. Base units to be located in Khartoum, Juba, Yambio and Rumbek. Antenna height for base stations will be 35 ft. Stations will operate on 100 watt CSB, with A-1-A emission (voice). Permission for installing this net should be obtained prior to posting man in Juba and procurement of the equipment should be initiated well in advance so that it can be on site and installed shortly after his arrival at post.

d) It is imperative that transportation be available upon the arrival of the technicians since none is available. It is proposed that Land Rover pick-ups (diesel) be provided for project use as service and spare parts for them is available. It is also recommended that Leyland five-ton trucks be provided for project use for the same reason. A request for waiver will be prepared and, hopefully will be granted. However, we have been advised that it will take at least eight months after placing firm order for the delivery of these units. Therefore, procurement should be initiated at least eight months prior to the arrival of project personnel.

e) Contractors

i. Construction of houses and warehouse/office

The prime contractor will subcontract, most likely with a firm in Juba, for construction services. There are a number of small firms in Juba that qualify as local (i.e. Sudanese) firms under the new AID requirements, but none of these are qualified financially or professionally to handle the construction proposed in this project. No known U.S. firms are operating in the area, and none are likely to be interested in a job of this size given the unusually difficult logistics problems in Southern Sudan. Two British-owned firms, capable of performing the work required, are operating in the area. One is building ODM housing and the other is building housing for UNDP. A waiver will be requested to permit 935 source procurement of construction services, making these two firms eligible for the sub-contract.

ii. Well drilling at Rumbek

A contract will be required to drill and develop a well at Rumbek. Equipment is available at the Center. There is Bucyrus Iri 22 W cable rig with all bits, tools, etc. stored at the Center, presumably government property. No drilling contractors were actually contacted; however, we were advised that they are available. One of the agencies of the Ministry of Agriculture is actually engaged in drilling water wells. If direct contract is necessary, Contracting Officer will handle. The well should be installed prior to or at the same time the house is constructed.

6. Construction Standards

The UNDP in Juba has developed complete plans and detailed specifications for a two bedroom house for their personnel. They have constructed 13 units and have an additional 10 under construction. These houses were designed especially for the heat and climate conditions of Southern Sudan. They are not elaborate or pretentious but are attractive and quite adequate. The house has two bedrooms, living/dining room, kitchen and full bath. A garage and store room are attached, both of which are usually used for storage. There is a large screened verandah which is extremely useful in this climate and is usually used as additional living space.

Steel columns and trusses will be utilized in the house construction thus eliminating the need for load bearing walls. A double ceiling with free circulation of air will greatly reduce heat in that area. Masonry (sand cement or cut laterite) walls also help insulate and reduce inside temperature. The use of wood is minimized; however, where required, it will be treated to protect it from termites.

56

b) Construction and Equipment CostsJUBA

One Office/Warehouse Combination	\$ 40,000
Three two bedroom houses @ 35,000	105,000
Site works, fence and roads	4,000
Water Storage Tanks (2)	7,200
Two Septic Tanks	2,400
Household equipment and furniture 4 X 8,000	<u>32,000</u>
TOTAL AT TODAY'S PRICE (4-78)	\$190,600
TOTAL AFTER ONE YEAR (4-79) 20% inflation	\$228,700

YAMBIO

2 two bedroom houses @ 35,000	70,000
Two Water Tanks	7,200
Two Septic Tanks	2,400
Site works, fence and roads	2,000
Household equipment and furniture 2 X 8,000	16,000
Transport equipment and supplies Juba-Yambio	25,000
Two 6-bay modular structures (classroom & dormitory) (including freight, doors & windows and burglar bars)	17,300
Labor and local material	15,300
Furniture for dormitory	1,400
Renovation of existing building for ablution block	<u>1,700</u>
TOTAL AT TODAY'S PRICE (4-78)	\$155,200
TOTAL AFTER ONE YEAR (4-79) 20% inflation	\$186,200

The Continuing Education classroom and dormitory at Yambio will also be constructed with steel columns and trusses and insulated metal roof. Walls will be of cut laterite with pointed cement mortar joints on outside and smooth plaster on interior walls. Doors, windows and burglar bars will be imported. Actual construction will utilize skilled artisans and labor presently employed by the Institute. They are presently constructing a classroom of identical design and materials. Present and projected work load for this crew precludes their use for the technician housing construction.

Water storage tanks will be provided for houses to assure water supply even with intermittent system delivery.

Septic tanks will be constructed for all houses equal to or exceeding local requirements and using proven plans and design.

7. Maintenance and Operation

All buildings constructed under this project will be considered property of the GOS, Ministry of Housing, Lands and Public Utilities. Those at Yambio and Rumbek will be listed as property of the respective school and maintenance and up-keep expenses will be budgeted in their annual recurrent budget. Maintenance and up-keep for buildings in Juba will be financed from funds budgeted by Min. of Ag. and administered by Ministry of Housing. A standard clause will be included in the Pro-Ag to the effect that the use of the buildings by AID shall be assured until such time that it is mutually agreed that AID has no further use, at which time their use and disposition shall be determined by the Ministry of Housing, Lands and Public Utilities.

8. Estimated Capital Costs

a) Initial Equipment to Support Project Personnel

Install water well with pump and motor - Rumbek	\$ 10,000
Water system revision and development - Yambio	7,500
Radio Communication Equipment, 5 base stations, 4 mobile	35,000
Eight Land Rover P.U. (Diesel) @ 15,200 delivered to Juba	121,600
Two Leyland 5-ton Trucks @ 27,700 delivered to Juba	55,400
Twenty per cent spare parts for above vehicles	29,300
Three 13 KV Motor Generators delivered to Juba	<u>23,700</u>
TOTAL AT TODAY'S PRICE (4-78)	\$ 282,500
TOTAL AFTER ONE YEAR (4-79) 20% inflation	\$ 339,000

RUMBEK

One two-bedroom house @ 35,000	\$ 35,000
Water tank	3,600
Septic tank	1,200
Site works, fence and roads	1,000
Household equipment and furniture	8,000
Transport equipment and supplies Juba-Rumbek	<u>12,000</u>
TOTAL AT TODAY'S PRICE (4-78)	\$ 60,800
TOTAL AFTER ONE YEAR (4-79) 20% inflation	\$ 73,000

TOTAL CONSTRUCTION AND EQUIPMENT COSTS

TOTAL AT TODAY'S PRICE (4-78)	\$650,800
TOTAL AFTER ONE YEAR (4-79) 20% inflation	\$780,900

9. Annual Recurrent Costs to Support Project Activities and Personnel

Diesel for 2 generators at Juba (200 liters per 8 hr. day)	\$ 43,000
Diesel for 1 generator at Rumbek	28,000
Diesel for vehicles at Juba (4 Land Rovers)	10,500
Diesel for vehicles at Rumbek and Yambio (4 Land Rovers & 2 trucks)	27,500
Kerosene (20 liters per house per week)	3,200
Petrol for Extension vehicles (6 vehicles)	6,000
Maintenance and service of vehicles	11,000
Four round trips (truck) Juba-Yambio-Rumbek	4,000
Six round trips (Land Rover) Juba-Yambio-Rumbek	5,000
Air support Juba-Yambio-Rumbek (48 hrs. @ \$250 per hr.)	12,000
Air shipment Nairobi-Juba (6 TA's X 1000 lbs. X \$1.00 per lb.)	<u>6,000</u>
TOTAL ANNUAL COSTS AT TODAY'S PRICE (4-78)	\$156,200
TOTAL LIFE OF PROJECT WITH 20% INFLATION P.A.	\$585,750

10. Section 611 a of the FAA of 1961 (as amended)

The above quoted prices reflect the results of discussions actually on Site; with UNDP personnel in Juba, transport contractors, building contractors and verification of supply and prices in Nairobi. There was nearly universal accord that inflation for this region is running at nearly 20% per year so this figure was used in the computations. Initiating this project in the Southern Sudan is very similar to starting a new Mission in a country without an American Embassy and no prior AID program. There are no U.S. facilities or personnel available for establishing an operational base. Temporary living quarters are extremely poor or non-existent; transportation is limited to Juba and very expensive; supplies and equipment necessary to work and LIVE are scarce or not available; in other words, housing and support must be provided prior to the arrival of Project Technicians and funds provided to supply the necessary continuing support. Most of this support will have to be imported from Kenya and transportation is expensive; however, considering the isolation of the area, the great distances, poor roads, etc., they tend to appear more reasonable. Therefore, the prices quoted can be considered reasonably firm and acceptable thus satisfying the requirements of Section 611 a of the FAA of 1961 (as amended).

60

ADMINISTRATIVE ANALYSIS

61 The administrative analysis is covered in the Financial Plan and Implementation Plan, pages 51 to 63, and in Annex B, pages 123 to 137.

ENVIRONMENTAL CONCERNS

When the PID for this project was reviewed in November, 1977, the project committee recommended, and AA/AFR subsequently approved, a negative determination for the IEE.

62.

FINANCIAL PLAN

63 Basic Financial Tables, including summary cost estimates, projection of expenditures by fiscal year, and a costing of inputs and outputs, are presented on the following three pages.¹ Total project cost will be \$8.4 million over four years. Of this total, about 30 percent represents the host country contribution and slightly more than 10 percent represents UNDP contributions to the Yambio Institute. Total AID and host country contributions have been inflated at 25 percent.² Contingencies have been calculated at 15 percent of the non-inflated AID contribution.³

Financial Analysis of Participating Institutions

The financial status of the Southern Regional Government reflects the extreme shortage of operating funds in a very poor region of one of the world's 25 least developed countries. This section discusses the SRG budgeting process and the financial status of participating institutions.

The SRG's use of the terms "recurrent budget" and "development budget" bears some explanation. Beyond the usual annual operating expenses, an institution's "recurrent budget" may contain one-time-only capital expenditures, such as the cost of a new building. (See, in Part Four, the proposed 1978-79 budget for Yambio.) Funds are placed in a "recurrent budget" moreover, only for institutions or activities that have become financially viable or have otherwise proven their worth. A "development budget", on the other hand, may contain annual operating expenses, as well as capital expenditures, for an institution or activity that is just getting off the ground and has not yet "proven itself". Most funding budgeted and approved in a recurrent budget is generally disbursed and received by its intended recipient. On the other hand, recent history has shown that less than one-third of funds budgeted and approved in a development budget may actually be disbursed and received by the designated institution. Budgets are prepared and submitted in January, in order to be reviewed and approved in time for the beginning of the Sudanese fiscal year in July.

¹ Detailed Financial Schedules are presented in Part Four, Section D.

² Inflation has been calculated by category of expenditure. Inflation for construction materials is about 20 percent per year in Juba. Fuel prices respond to international trends; food prices have also risen sharply in the recent past.

³ Contingency will cover the unpredictability of the inflation rate as well as differences between proposed and actual contractor expenses.

SUMMARY COST ESTIMATE AND FINANCIAL PLAN
(U.S. \$ 000)

Source	Aid Fx	Host Country Lc	UNDP Fx	Total
Use				
I. Technical Assistance/ Salaries	2,175	937	576	3,688
II. Construction	346	166	29	541
III. Commodities	987	504	79	1,570
IV. Training	113	321	102	536
V. Other	234	112	104	553
Subtotal	3,858	2,040	890	6,788
Inflation (12% annually) ^a AID Inputs	1,036	---	---	1,036
Contingency (10%) AID Inputs	366	---	---	366
Total	5,260	2,040	890	8,190

^a12% annually over four fiscal years given as a reasonable estimate, taking into account construction scheduling, cost-of-living allowances and other inflation factors built into T.A. support costs, rates of inflation on individual commodities, etc.

COSTINGS OF PROJECT OUTPUTS/INPUTS
(U.S. \$ 000)

Project Inputs	Project Outputs				Total
	1 Yambio	2 Rumbek	3 Juba	4 Logistics	
AID	1,197	742	948	971	3,858
Host Country	1,484	350	206	---	2,040
UNDP	890	---	---	---	890
Subtotal	3,571	1,092	1,154	971	6,788
Inflation - AID Inputs (12% annually) ^a					1,036
Contingency - AID Inputs (10%)					366
Total - All Inputs					8,190

^a12% annually over four fiscal years given as a reasonable estimate, taking into account construction scheduling, cost-of-living allowances and other inflation factors built into T.A. support costs, rate of inflation of individual commodities, etc.

PROJECTION OF EXPENDITURES BY FISCAL YEAR
(U.S. \$ 000)

Fiscal Year	AID Fx	Host Country Lc	UNDP Fx	Total
FY 79	864	291	158	1,313
FY 80	1,205	583	294	2,082
FY 81	1,110	583	268	1,961
FY 82	679	583	170	1,432
Subtotal	3,858	2,040	890	6,788
Inflation - AID Inputs (12% annually) ^a	1,036	---	---	1,036
Contingency - AID Inputs (10%)	366	---	---	366
Total	5,260	2,040	890	8,190

^a12% annually over four fiscal years given as a reasonable estimate taking into account construction scheduling, cost-of-living increases, and other inflation factors built into T.A. support costs, rates of inflation of individual commodities, etc.

66

67
 Up to and including this year, the MOA contribution to the Yambio Institute has been financed out of a development budget. In 1978-79, the MOA will finance Yambio for the first time out of a recurrent budget. This switch from one category of funding to another reflects an SRG appraisal that Yambio is a viable institution. This conclusion appears justified: the viability of the Yambio Institute, which consumes the greatest single portion of the proposed AID contribution to the project, is high.¹

Since the Rumbek Agricultural Training Center is still a very young institution, its funding continues to come from an MOA development budget. This makes the financial viability of the Rumbek Center more precarious than that of Yambio. However, the largest single item in the 1979 MOA budget for Rumbek is staff salaries, an item that has historically been given priority among competing uses of limited funds. The expanded activities proposed in this Paper for Rumbek will be entirely financed out of project funds.

The SRG budgets for the Department of Extension and the Department of Research and Training in the Ministry of Agriculture are almost entirely for administrative salaries and are financed from a recurrent budget.

The College of Adult Education and Training (CAET) is a constituent part of the University of Juba, which is an autonomous institution. University funding comes from the Government of Sudan as well as private sources. The CAET uses part-time instructors for specific assignments who are paid from University funds. Since the project will provide transportation and food support for CAET instructors who participate in the project's workshops and seminars, there are no additional costs to be met by the host country government.

¹ The MOA and UNDP budgets for Yambio are presented in Part Four, Section A. The AID contribution is shown in Part Four, Section D.

IMPLEMENTATION PLAN

The project will be implemented by the Southern Regional Government, assisted by a United States firm or institution under contract to AID. The Contractor will be selected through competitive bidding, and should have expertise in agricultural education and development as well as experience in U.S. Government procurement regulations and logistics to support project implementation in remote areas of developing countries. Until a direct-hire AID employee is stationed in Juba, project monitoring will be the responsibility of the AID General Development Officer in Khartoum, assisted by REDSO/EA. Assistance with logistics and construction will be provided by the UNDP construction and administrative and logistical support units in Juba.

The decision to delegate most of the responsibility for project implementation to a single contractor arose from (1) the need to maintain the conceptual integrity of the project, and (2) the need to centralize responsibility for coping with the severe difficulties of communications, transportation and logistical support in Southern Sudan. In addition to assuming responsibility for the achievement of all substantive objectives of the project, the Contractor will be responsible for:

- . provision of technical assistance, long and short term;
- . completion of construction: housing, offices and dormitory/classrooms;
- . procurement, transportation and delivery of furnishings and equipment;
- . procurement, transportation and delivery of project supplies and commodities;
- . scheduling and supporting Third Country participant training; and
- . disbursement of and accounting for funds to support project activities.

Since the initiation of almost all project activities must await the selection of a contractor, a draft PIO/T has been appended to this

¹ Due to staffing limitations, neither REDSO/EA nor USAID/Sudan will be able to supervise construction in three locations in the South while ordering and arranging for shipment, storage and delivery of equipment, supplies and commodities needed for the project.

69.
 Project Paper.¹ As indicated in the implementation schedule, the contractor should be selected within 90 days after the signing of the Project Agreement. Two weeks after contract signing, the successful bidder will place a logistics specialist and an Administrative Officer in Juba to initiate the actions necessary to prepare for the arrival of the full technical assistance team. The implementation schedule shows the importance of early support actions required to initiate the project.

Project Monitoring

The project will be monitored by the General Development Officer, assisted by the Management Officer, in USAID/Sudan through regular field trips to Juba and other project sites. Initially, these trips will occur every three months. The project monitor will draw upon the services of REDSO/EA for assistance in engineering, contracting and procurement to insure that the Contractor's procedures and records are in accord with AID regulations.

Logistics

As mentioned previously, the Southern Sudan is extremely isolated in terms of communications, transportation and logistical support. Special efforts and arrangements are necessary to support donor activities.

To facilitate logistical support activities, the project has been designed to make use of and complement the facilities of UNDP in Juba. The project will use the UNDP system for fuel purchase, shipment and storage. The project logistics specialist will work with UNDP staff in Juba to specify details of a cooperative agreement to be negotiated and signed by the AID Representative and the UNDP Resident Representative in Khartoum. The UN, for example, has identified an overload in their present system of procurement from Nairobi; since the project will have its own support capability in Nairobi, it may be possible to arrange mutually agreeable cooperative services for UNDP projects and personnel stationed in Southern Sudan. It may also be possible to draw upon the construction capacity of UNDP/Juba to speed arrival of materials from Kenya.

Construction

Project construction will consist of six houses (three in Juba, two in Yambio and one in Rumbek), an office warehouse (Juba) and a dormitory/classroom (Yambio). Supervision of this construction will be the responsibility of the prime Contractor with specifications

¹ Part Two, Appendix G.

approved by the AID engineering office in REDSO/EA. The construction work itself will be subcontracted to a construction firm in Juba although assistance for procurement of materials and supervision of construction will be available from UNDP in Juba. (See Technical/Engineering Analysis.)

Procurement

The Contractor will also be responsible for all project procurement. Items to be procured will include, inter alia:

- . diesel generators;
- . household furniture and appliances;
- . diesel Land Rovers, with spares;
- . five-ton lorries;
- . fuel for the vehicles;
- . bicycles; and
- . agricultural implements and commodities.

Non-U.S. procurement will be necessary for certain items and appropriate waivers have been appended to this Paper. Virtually all commodities will enter the Southern Sudan through Kenya. For clearances and assistance in procedures, the project logistics specialist in Nairobi will seek assistance from REDSO/EA.

Most of the procurement, particularly for smaller items, will be American source and origin. To ensure rapid response to requests for project items it will be critical that the selected Contractor have a Stateside capacity to fill orders rapidly in accordance with AID regulations. This will require regular communications between Juba and Nairobi, and between Nairobi and the Contractor's office in the United States.

Accounting and Bookkeeping

In addition to the full time Logistics Specialist, funding has been provided for a full-time accountant/administrator to be stationed in Juba. This person will have principal responsibility for the disbursement and accounting of contract project funds and will be assisted by a local-hire bookkeeper/secretary.

Activities Schedule

71 The project will last four years, with funding beginning FY 1978 and ending FY 1981. Most of the first year will be taken up by construction and procurement activities. The Logistics Specialist will arrive in the fourth month of the first year and will engage local-hire staff in Juba. The long-term technical advisors for Juba, Yambio and Rumbek will arrive in summer 1979 with 30-month terms of service. Short-term technical assistance will be scheduled as needed. The final few months of the project will consist mainly of evaluations and the completion of participant training exercises.

Following is a schedule of major events including pre-project activities.

<u>Month</u>	<u>Activity</u>	<u>Responsibility</u>
June 1978	Project Paper and PIO/T submitted	USAID/Sudan
July 1978	PP reviewed and RFI drafted	AID/W
August 1978	Project authorized, Project Agreement finalized	AID/W
September 1978	Project Agreement signed	USAID/Sudan, GOS
	Waivers approved	AID/W
	RFP issued	AID/W
November 1978	Proposals submitted	Bidders
December 1978	Proposals reviewed, contract awarded	AID/W
January 1979	Contract signed, logistics specialist arrives in Juba	AID/W, Contractor
February 1979	Construction sub-contract signed, materials ordered	Contractor, Logistics Specialist(LS) REDSO/EA, UNDP/J
March 1979	Logistics agreement between AID and UNDP negotiated, signed	USAID/Sudan UNDP/K
February-June 1979	Furnishings, Equipment, Commodities ordered	LS, UNDP/J

<u>Month</u>	<u>Activity</u>	<u>Responsibility</u>
April 1979	Construction materials arrive in Juba and are shipped to sites	LS, UNDP/J
May 1979	Construction begins	LS, Sub-contractor UNDP/J
July, August 1979	Construction completed, furnishings and equipment arrive at sites	LS, Sub-contractor UNDP/J
June, July 1979	Technical Advisors arrive in Sudan	Contractor
June 1979	Six-week instructional tour of four African countries, for three Yambio staff, begins	MOA, Yambio staff, USAID/Sudan
August, September 1979	Technical Advisors arrive at posts, Yambio academic year begins	TA Team
December 1979	Yambio students begin data-gathering assignments in home posts	Yambio TA Team
	Three-week teaching methods course begins	Juba TA, Yambio TA, short-term TA, CAET
	One Yambio staff member leaves for short course in farming systems or extension	Yambio staff, Yambio TA, Juba TA, USAID/Sudan
February 1980	First continuing education seminar held	Juba TA, short-term TA, CAET
March 1980	Yambio students begin intensive field trials/extension training	Yambio staff, TA
April 1980	Second continuing education seminar held	MOA, CAET, Juba TA, Short-term TA
	Library materials ordered for Yambio	Yambio TA, short-term TA
May 1980	Rumbek students begin intensive field extension training, emphasis on agriculture	Rumbek TA, Staff MOA Provincial Staff

72

<u>Month</u>	<u>Activity</u>	<u>Responsibility</u>
June 1980	First College of Adult Education and Training (CAET) teaching methods course held	CAET, Juba TA
	Two Yambio staff depart for short courses in farming systems/extension	Yambio, Juba TA USAID/Sudan
	Rumbek area farmer training sessions begin	Rumbek TA, MOA
	Yambio students divided into groups do home area small farmer research, work at Yambio research stations, or continue extension work with Yambio area small farmers	Yambio staff, TA
July 1980	Two Yambio demonstrators depart for two-year Third Country B.Sc. fellowships	Yambio, USAID/Sudan, AID/W
August 1980	Yambio academic year begins, students continue field extension work with Yambio area farmers	Yambio staff, TA Short-term TA
September 1980	Third continuing education course held	CAET, Juba TA
	Library materials arrive, Yambio library organized	Yambio, Short-term TA
October 1980	First evaluation conducted	AID/W
November 1980	Second group of Rumbek students begin intensive field extension activities, emphasis on livestock	Rumbek TA, MOA
	Farmer training sessions continue with emphasis on harvest, storage, marketing	Rumbek TA, MOA
December 1980	Second CAET teaching methods course held	CAET, Juba TA Short-term TA
	Yambio students return to home areas for second round of data collection	Yambio TA, MOA

<u>Month</u>	<u>Activity</u>	<u>Responsibility</u>
December 1980 (continued)	One Yambio staff member departs for Third Country short course in farming systems/extension	Juba, Yambio TA USAID/Sudan
January 1981	Fourth continuing education course held	CAET, Juba TA, MOA
March 1981	Yambio students begin intensive field trials/extension training	Yambio staff/TA
April 1981	Fifth continuing education course held, results of Yambio Institute small farmer research evaluated	CAET, Yambio and Juba TA, MOA, Short-term TA
May 1981	Third group of Rumbek students begin intensive field training, emphasis on agriculture	Rumbek TA, MOA
June 1981	Third CAET teaching methods course held	CAET, Juba TA
	Two Yambio staff depart for short courses in farming systems/extension	Juba, Yambio TA USAID/Sudan
	Rumbek area farmer training sessions continue	Rumbek TA, short-term TA, MOA
	Yambio students again divided into groups to do home area small farmer research, work at Yambio research station or continuation of work with Yambio area farmers	Yambio TA, MOA, Short-term TA
August 1981	Yambio academic year begins, students continue field extension work with Yambio area farmers	Yambio staff, TA
September 1981	Sixth continuing education course held	CAET, Juba TA
October 1981	Second evaluation conducted	AID/W
November 1981	Third group of Rumbek students begin intensive field extension	Rumbek TA, MOA, Short-term TA
	Farmer training sessions continue: harvest, storage, marketing	Rumbek TA, MOA, Short-term TA

75

<u>Month</u>	<u>Activity</u>	<u>Responsibility</u>
December 1981	Fourth CAET teaching methods course held	CAET, Juba TA
	Yambio students return to home area for small farmer data collection	Yambio TA, MOA
	One Yambio staff departs for Third Country short course in farming systems/extension	Yambio, Juba TA, USAID/Sudan
January 1982	Seventh continuing education course held, TA Team meets to synthesize final report	CAET, MOA, TA Team
February 1982	Technical Advisors submit final reports, depart	TA Team
	Yambio, Rumbek and MOA counterparts carry on work begun by TA Team	Rumbek, Yambio staff, MOA, CAET
May 1982	Eighth continuing education course held	CAET, MOA
August 1982	B.Sc. fellowship recipients return, take up teaching posts at Yambio	AID/W, USAID/Sudan, MOA
September 1982	End of Project	USAID/Sudan, AID/W

EVALUATION ARRANGEMENTS

Two evaluations will be conducted, one in October 1980, the second in October 1981. The first evaluation will be a progress evaluation designed to assist the SRG and the contracting team in an appraisal of their methods of operation. The second, after two full years of technical assistance work, will be an in-depth evaluation of project results, and will assist the technical and advisory team in making final recommendations to the SRG and in filing final reports with AID. 76

The evaluation will focus on measuring progress toward achievement of outputs and accomplishment of the project purpose. They will also help diagnose problems that have impeded progress. Special attention should be paid to issues raised in the social analysis and social soundness annex of this paper, including questions of appropriate recruitment of trainees and effective placement of graduates.

Short-term advisors will help identify and collect information that will be useful for these evaluations. The evaluations themselves will be conducted by USAID/Sudan jointly with the GOS with assistance from REDSO/EA and AID/W.

CONDITIONS, COVENANTS AND NEGOTIATING STATUS

77 Thorough discussions have been held with appropriate representatives of all participating institutions, including the Yambio Institute, the Rumbek Center, the SRG Ministry of Agriculture, UNDP, and the University of Juba. Discussions covered all activities proposed in this document and agreement was reached with all parties on the inclusion of the activities and the division of responsibilities for implementation. A Request for Assistance is currently being prepared by the Ministry of Finance and Economic Planning in Khartoum.

Covenants to be included in the Project Agreement should be as follows:

1. USAID/Sudan and the GOS will agree on the sites or locations of the structures to be erected in Juba, Yambio, and Rumbek.
2. The GOS will agree to underwrite the operating costs of the Yambio and Rumbek training institutions.
3. The GOS will provide counterpart personnel from the staff of the MOA, the Yambio Institute for Agricultural Technicians, and the Rumbek Agricultural Training Center to work with the long-term U.S. technical advisors. These personnel will have appropriate background so as to maximize their counterpart training experience.
4. The GOS will agree to duty-free importation of project commodities and materials, as well as the personal effects of the U.S. technicians.

19

PART TWO

APPENDICES

LOGICAL FRAMEWORK

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS
<p><u>Goal:</u></p> <p>Increase the productivity and income of traditional farmers and pastoralists in Southern Sudan.</p>	<ol style="list-style-type: none"> 1. Increased volume of marketed produce from small farmers in the Southern Region. 2. Increased yields of basic food crops, especially in the Depressed Areas of the Southern Region. 3. Improved opportunities for the marketing and management of livestock.
<p><u>Purpose:</u></p> <p>Strengthen the human resource base in the Southern Region through improvements in the training and utilization of agricultural personnel who work or will work with small farmers and pastoralists.</p>	<p><u>EOPS:</u></p> <ol style="list-style-type: none"> 1. Teaching staff at Yambio giving courses on small farming systems, running outreach and data collection programs; using information from data collection programs, the library and continuing education seminars to update and revise their courses. 2. Rumbek teaching staff orienting coursework toward small farming systems and, with assistance of Ministry of Agriculture (MOA) extension personnel in Lakes Province, running outreach program and utilizing lessons learned in outreach program to revise and update their courses. 3. Adoption and implementation by the MOA of a comprehensive program for the recruitment, training, re-training and support of agricultural technicians and extensionists. 4. Establishment and operation by the College of Adult Education and Training of a program of continuing education for agricultural personnel and of teacher training for the teaching staff at Yambio and Rumbek.

MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p><u>Goal-level Indicators:</u></p> <ol style="list-style-type: none"> 1. Agricultural census and marketing surveys 2. Agricultural surveys by extension personnel 3. Livestock marketing surveys 	<p><u>Purpose/Goal:</u></p> <ol style="list-style-type: none"> 1. Non-farm incomes increase sufficiently to create town and urban markets for agricultural surpluses. 2. Price structure creates an incentive for crop and livestock production surpluses. 3. MOA and Provincial budgets increase and are used to support extension personnel in field. 4. Southern Regional Government (SRG) continues to receive external support for agricultural research.
<p><u>EOPS:</u></p> <ol style="list-style-type: none"> 1. Project Evaluation 2. Project Evaluation 3. Project Evaluation 4. Project Evaluation 	<p><u>Output/Purpose:</u></p> <ol style="list-style-type: none"> 1. MOA recurrent budgetary support continues for Yambio and Rumbek. 2. MOA will be able to recruit additional Southern Sudanese for teaching positions at Yambio and Rumbek. 3. SRG will retain priority of concentrating on increasing productivity of the traditional crop and livestock producer. 4. College of Adult Education will have sufficient operating funds. 5. MOA will be able to get needed agricultural inputs from outside the Region in a timely fashion. 6. MOA maintains openness and willingness to entertain fresh approaches to agricultural extension and training.

81

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS
<p><u>Outputs:</u></p>	<p><u>Magnitude of Outputs:</u></p>
<p><u>Yambio</u></p> <ol style="list-style-type: none"> 1. Agricultural Technicians trained to adapt skills to varied farming environments in Southern Region. 2. Core instruction unit established to provide intensive field training in data collection, input option selection, farmer trials, result evaluation. 3. Systematic data base generated by Yambio students on crop and livestock management practices of Southern Sudan. 4. Agricultural Development seminars instituted and held for in-service continuing education program. 5. Short Third Country courses in extension methods and farming systems attended by Yambio staff. 6. B.Sc. degrees obtained by Southern Sudanese faculty at Yambio. 7. Library established. 	<ol style="list-style-type: none"> 1. 55 Yambio graduates per year given thorough grounding in problems of Southern Regional farming systems. 2. 110 Yambio students per year exposed to theoretical and practical aspects of core instruction unit. 3. 110 students per year participating in data base generation on crop and livestock practices in the six Southern Provinces and filing reports on same. 4. Two three-week seminars/workshops held annually. 5. Participation of nine Yambio teaching staff. 6. Two demonstrators at Yambio obtain B.Sc. degrees by end of project. 7. Established.
<p><u>Rumbek</u></p> <ol style="list-style-type: none"> 1. Curriculum re-oriented and revised to train extensionists to work directly with small farmers and pastoralists. 2. Field extension training program established and operating. 3. Farmer/pastoralist Field day program established. 	<ol style="list-style-type: none"> 1. 120 Rumbek students per year trained to work directly with small farmers/pastoralists. 2. Two six-month field training programs per year conducted involving 60 Rumbek students at 12 sites and supervised by Lakes Province extension staff. 3. 20 farmer/pastoralist field days held per year.

82

NARRATIVE SUMMARY

OBJECTIVELY VERIFIABLE INDICATORS

Outputs (continued)

- 4. Student selection, curriculum training approach and scheduling improved.

- 4. Recommendations for improvements in student selection, curriculum and training approach scheduling adopted.

Juba

83

- 1. Rationalized program of recruitment, pre-service training and initial posting of agricultural technicians and extensionists established.

- 1. Official adoption of program with implementation plan by MOA.

- 2. Field support program for technicians and extensionists established.

- 2. Improved support (housing, fuel, agricultural inputs, etc.) system functioning.

- 3. Technical updating program established by the MOA Department of Research and Extension.

- 3. System of assessing and disseminating field trial and other research results established and functioning.

- 4. Continuing education program established.

- 4. System for organizing and scheduling annual series of workshops and seminars for agricultural technicians, extensionists and other personnel established by MOA and the College of Adult Education and Training; eight such courses held during life of project.

- 5. Capacity to conduct teacher training courses for Yambio and Rumbek instructors established in the College of Adult Education and Training.

- 5. System for organizing and scheduling two teacher training courses per year established by the College of Adult Education and Training; four such courses held during life of project.

Logistical Support

- 1. Logistical support system for project established.

- 1. Three technicians' houses, one office/warehouse built in Juba.

- 2. Radio network linking Yambio, Rumbek, Juba and Khartoum established.

- 3. System established for procuring commodities through Kenya, by air and by land.

MEANS OF VERIFICATION

IMPORTANT ASSUMPTIONS

Outputs:

Project monitoring of technician reports, school records, reports of Yambio graduates and Yambio students on their data gathering exercises, MOA documents including budgets, reports on continuing education and teacher training seminars, inventory and bookkeeping records in Juba technicians' office/warehouse.

Input/Output:

1. AID/W able to let a contract to a qualified firm in timely fashion.
2. Technicians arrive on schedule.
3. MOA provides technicians for appropriate counterparts.
4. Cooperation with UNDP/Juba established for logistical support.
5. Technician in Nairobi able to communicate with technicians in Southern Sudan and able to procure commodities in timely fashion.
6. MOA able to attract and retain suitable candidates for training at Yambio and Rumbek.
7. Yambio and Rumbek trainees willing to live and work in Depressed Areas.
8. Lakes Province extension personnel available for supervisory work and for participation in farmer field days.
9. College of Adult Education able to recruit qualified instructors for teacher training and continuing education seminars.
10. MOA able to obtain results of, and disseminate, field trial and other research results in timely fashion.

84

NARRATIVE SUMMARY

OBJECTIVELY VERIFIABLE INDICATORS

Inputs:

	(\$'000)	
	First Yr.	All Yrs.
AID	985	5,175
HOST COUNTRY	326	2,040
OTHER DONOR	158	890
TOTAL	1,469	8,105

1 US \$ = 0.40 LS

Input Categories (AID only):	(\$'000)
Technical Assistance	2,175
Construction	346
Commodities	988
Training	113
Other	151
Subtotal	3,773
Inflation	1,036
Contingency	366
TOTAL	5,175

Note: A detailed breakout of inputs is presented in Part Four, Section D.

95

APPENDIX B
STATUTORY CHECKLISTS

6C(1) - COUNTRY CHECKLIST

A. General Criteria for Country

- | | |
|---|---|
| <p>1. <u>FAA Sec. 116.</u> Can it be demonstrated that contemplated assistance will directly benefit the needy? If not, has the Department of State determined that this government has engaged in consistent pattern of gross violations of internationally recognized human rights?</p> | <p>1. This grant assistance is directed toward improving the productivity and income of poor farmers in Southern Sudan.</p> |
| <p>2. <u>FAA Sec. 481.</u> Has it been determined that the government of recipient country has failed to take adequate steps to prevent narcotics drugs and other controlled substances (as defined by the Comprehensive Drug Abuse Prevention and Control Act of 1970) produced or processed, in whole or in part, in such country, or transported through such country, from being sold illegally within the jurisdiction of such country to U.S. Government personnel or their dependents, or from entering the U.S. unlawfully?</p> | <p>2. The GOS has taken the necessary steps to ensure safeguard controls have been applied to narcotic drugs and other controlled substances.</p> |
| <p>3. <u>FAA Sec. 620(a).</u> Does recipient country furnish assistance to Cuba or fail to take appropriate steps to prevent ships or aircraft under its flag from carrying cargoes to or from Cuba?</p> | <p>3. The GOS does not furnish assistance to Cuba or carry cargo to or from Cuba.</p> |
| <p>4. <u>FAA Sec. 620(b).</u> If assistance is to a government, has the Secretary of State determined that it is not controlled by the international Communist movement?</p> | <p>4. The Secretary of State has so determined.</p> |

86

- 89
5. FAA Sec. 620(c). If assistance is to government, is the government liable as debtor or unconditional guarantor on any debt to a U.S. citizen for goods or services furnished or ordered where (a) such citizen has exhausted available legal remedies and (b) debt is not denied or contested by such government? 5. Does not apply to the GOS.
 6. FAA Sec. 620(e). If assistance is to a government, has it (including government agencies or subdivisions) taken any action which has the effect of nationalizing, expropriating or otherwise seizing ownership or control of property of U.S. citizens or entities beneficially owned by them without taking steps to discharge its obligations toward such citizens or entities? 6. No.
 7. FAA Sec. 620(f); App. Sec. 108. Is recipient country a Communist country? Will assistance be provided to the Democratic Republic of Vietnam (North Vietnam), South Vietnam, Cambodia or Laos? 7. No.
 8. FAA Sec. 620(i). Is recipient country in any way involved in (a) subversion of, or military aggression against, the United States or any country receiving U.S. assistance, or (b) the planning of such subversion or aggression? 8. No.
 9. FAA Sec. 620(j). Has the country permitted, or failed to take adequate measures to prevent, the damage or destruction, by mob action, of U.S. property? 9. No.
 10. FAA Sec. 620(l). If the country has failed to institute the investment guaranty program for the specific risks of expropriation, inconvertibility or confiscation, has the AID Administrator within the past year considered denying assistance to such government for this reason? 10. No.

11. FAA Sec. 620(o); Fishermen's Protective Act. Sec. 5. If country has seized, or imposed any penalty or sanction against, any U.S. fishing activities in international water,
- a. has any deduction required by Fishermen's Protective Act been made?
- b. has complete denial of assistance been considered by AID Administrator?
12. FAA Sec. 620(q); App. Sec. 504. (a) Is the government of the recipient country in default on interest or principal of any AID loan to the country? (b) Is country in default exceeding one year on interest or principal on U.S. loan under program for which App. Act appropriates funds, unless debt was earlier disputed, or appropriate steps taken to cure default?
13. FAA Sec. 620(s). What percentage of country budget is for military expenditures? How much of foreign exchange resources spent on military equipment? How much spent for the purchase of sophisticated weapons systems? (Consideration of these points is to be coordinated with the Bureau for Program and Policy Coordination, Regional Coordinators and Military Assistance Staff (PPC/RC).)
14. FAA Sec. 620(t). Has the country severed diplomatic relations with the United States? If so, have they been resumed and have new bilateral assistance agreements been negotiated and entered into since such resumption?
15. FAA Sec. 620(u). What is the payment status of the country's U.N. obligations? If the country is in arrears, were such arrearages taken into account by the AID Administrator in determining the current AID Operational Year Budget?
11. Not applicable to the GOS.
12. Currently, the GOS is approximately one month in arrears on the payment of the principal and interest on several AID loans but this is expected to be cleared up momentarily.
- 13.
14. The GOS severed diplomatic relations with the U.S. in 1967 but they were resumed in 1969. The 1958 bilateral assistance agreement remains in effect.
- 15.

- 89
16. FAA Sec. 620A. Has the country granted sanctuary from prosecution to any individual or group which has committed an act of international terrorism? 16. No.
17. FAA Sec. 666. Does the country object, on basis of race, religion, national origin or sex, to the presence of any officer or employee of the U.S. there to carry out economic development program under FA^? 17. No.
18. FAA Sec. 669. Has the country delivered or received nuclear reprocessing or enrichment equipment, materials or technology, without specified arrangements on safeguards, etc.? 18. No.
19. FAA Sec. 901. Has the country denied its citizens the right or opportunity to emigrate? 19. No.

B. Funding Criteria for Country

1. Development Assistance Country Criteria

- a. FAA Sec. 102(c), (d). Have criteria been established, and taken into account, to assess commitment and progress of country in effectively involving the poor in development, on such indexes as: (1) small-farm labor intensive agriculture, (2) reduced infant mortality, (3) population growth, (4) equality of income distribution and (5) unemployment. a. Yes.
- b. FAA Sec. 201(b) (5), (7) & (8); Sec. 208; 211(a) (4), (7). Describe extent to which country is:
- (1) Making appropriate efforts to increase food production and improve means for food storage and distribution. (1) The SRG Six-Year Plan makes an increase in food production a priority objective.

- | | |
|---|---|
| (2) Creating a favorable climate for foreign and domestic private enterprise and investment. | (2) Foreign and domestic private investment is officially encouraged. |
| (3) Increasing the public's role in the development process. | (3) Every effort is being made to bring the public into the development process including decentralization. |
| (4) (a) Allocating available budgetary resources to development. | (4) (a) The allocation of budgetary resources to development is a key GOS priority. |
| (b) Diverting such resources for unnecessary military expenditure and intervention in affairs of other free and independent nations. | (b) GOS military expenditures are limited to legitimate defense requirements. |
| (5) Making economic, social and political reforms such as tax collection improvements and changes in land tenure arrangements, and making progress toward respect for the rule of law, freedom of expression and of the press, and recognizing the importance of individual freedom, initiative and private enterprise. | The GOS is committed to such reform. |
| (6) Otherwise responding to the vital economic, political and social concerns of its people, and demonstrating a clear determination to take effective self-help measures. | (6) The GOS is making such improvements. |
| c. <u>FAA Sec. 201(b), 211(a)</u> . Is the country among the 20 countries in which development assistance loans may be made in this fiscal year, or among the 40 in which development assistance grants (other than for self-help projects) may be made? | c. Yes. |
| d. <u>FAA Sec. 115</u> . Will country be furnished, in same fiscal year, either security supporting assistance, or Middle East peace funds? If so, is assistance for population programs, humanitarian aid through international organizations, or regional programs? | d. No. |

90

2. Security Supporting Assistance Country Criteria

- 91
- | | |
|--|--------------------|
| a. <u>FAA Sec. 502B.</u> Has the country engaged in a consistent pattern of gross violations of internationally recognized human rights? Is program in accordance with policy of this Section? | a. No. Yes. |
| b. <u>FAA Sec. 531.</u> Is the Assistance to be furnished to a friendly country, organization or body eligible to receive assistance? | b. Yes. |
| c. <u>FAA Sec. 609.</u> If commodities are to be granted-so that sale proceeds will accrue to the recipient country, have Special Account (counterpart) arrangements been made? | c. Not applicable. |

6C(2) - PROJECT CHECKLIST

A. General Criteria for Project

1. App. Unnumbered; FAA Sec. 653(b)
 - (a) Describe how Committees on Appropriations of Senate and House have been or will be notified concerning the project; (a) FY 79 Congressional Presentation.
 - (b) is assistance within (Operational Year Budget) country or international organization allocation reported to Congress (or not more than \$1 million over that figure plus 10%)? (b) Yes. 42
2. FAA Sec. 611(a)(1). Prior to obligation in excess of \$100,000, will there be (a) engineering, financial and other plans necessary to carry out the assistance and (b) a reasonably firm estimate of the cost to the U.S. of the assistance?
 - (a) Yes.
 - (b) Yes.
3. FAA Sec. 611(a)(2). If further legislative action is required within recipient country, what is basis for reasonable expectation that such action will be completed in time to permit orderly accomplishment of purpose of the assistance?
 3. Not applicable.
4. FAA Sec. 611(b); /pp. Sec. 101. If for water or water-related land resource construction, has project met the standards and criteria as per Memorandum of the President dated Sept. 5, 1973 (replaces Memorandum of May 15, 1962; see Fed. Register, Vol. 38, No. 174, Part III, Sept. 10, 1973)?
 4. Not applicable.
5. FAA Sec. 611(e). If project is capital assistance (e.g., construction), and all U.S. assistance for it will exceed \$1 million, has Mission Director certified the country's capability effectively to maintain and utilize the project?
 5. Yes.

- 93
6. FAA Sec. 209, 619. Is project susceptible of execution as part of regional or multi-lateral project? If so, why is project not so executed? Information and conclusion whether assistance will encourage regional development programs. If assistance is for newly independent country, is it furnished through multilateral organizations or plans to the maximum extent appropriate?
 6. Project is designed with UNDP inputs and in close collaboration with UNDP on logistical support.
 7. FAA Sec. 501(a); (and Sec. 201(f) for development loans). Information and conclusions whether project will encourage efforts of the country to: (a) increase the flow of international trade; (b) foster private initiative and competition; (c) encourage development and use of cooperatives, credit unions and savings and loan associations; (d) discourage monopolistic practices; (e) improve technical efficiency of industry, agriculture and commerce; and (f) strengthen free labor unions.
 7. (a) - (d) Not applicable.
 - (e) By improving the technical competence of extension workers, the project will improve the technical efficiency of agriculture.
 - (f) Not applicable.
 8. FAA Sec. 601(b). Information and conclusion on how project will encourage U.S. private trade and investment abroad and encourage private U.S. participation in foreign assistance programs (including use of private trade channels and the services of U.S. private enterprise).
 8. U.S. technical assistance and commodities will be applied to this project.
 9. FAA Sec. 612(b); Sec. 636(h). Describe steps taken to assure that, to the maximum extent possible, the country is contributing local currencies to meet the cost of contractual and other services, and foreign currencies owned by the U.S. are utilized to meet the cost of contractual and other services.
 9. See Financial Plan.
 10. FAA Sec. 612(d). Does the U.S. own excess foreign currency and, if so, what arrangements have been made for its release?
 10. No.

B. Funding Criteria for Project

1. Development Assistance Project Criteria

- a. FAA Sec. 102(c); Sec. 111; Sec. 281a.
 Extent to which activity will (a) effectively involve the poor in development, by extending access to economy at local level, increasing labor-intensive production, spreading investment out from cities to small towns and rural areas; and (b) help develop cooperatives, especially by technical assistance, to assist rural and urban poor to help themselves toward better life, and otherwise encourage democratic private and local governmental institutions?
- (a) Project purpose is to train extension workers to work directly with rural poor. 94
- (b) Not applicable.
- b. FAA Sec. 103, 103A, 104, 105, 106, 107.
 Is assistance being made available: (include only applicable paragraph -- e.g., a, b, etc.--which corresponds to source of funds used. If more than one fund source is used for project, include relevant paragraph for each fund source.)
- (1) (103) for agriculture, rural development or nutrition; if so, extent to which activity is specifically designed to increase productivity and income of rural poor; (103A) if for agricultural research, is full account taken of needs of small farmers;
- (1) Project purpose is to train extension workers to work directly with rural poor.
- (2) (104) for population planning or health; if so, extent to which activity extends low-cost, integrated delivery systems to provide health and family planning services, especially to rural areas and poor;
- (2) Not applicable.
- (3) (105) for education, public administration, or human resources development; if so, extent to which activity strengthens
- (3) Project purpose is to train extension workers to work directly with rural poor.

nonformal education, makes formal education more relevant, especially for rural families and urban poor, or strengthens management capability of institutions enabling the poor to participate in development;

- 45
- (4) (106) for technical assistance, energy, research, reconstruction, and selected development problems; if so, extent activity is:
- | | |
|---|---|
| (a) technical cooperation and development, especially with U.S. private and voluntary, or regional and international development, organizations; | (a) U.S. firm or institution will assist with implementation of project activities. |
| (b) to help alleviate energy problem; | (b) Not applicable. |
| (c) research into, and evaluation of, economic development processes and techniques; | (c) Yambio graduates will study decisionmaking-processes among small farmers. |
| (d) reconstruction after natural or manmade disaster; | (d) Not applicable. |
| (e) for special development problem, and to enable proper utilization of earlier U.S. infrastructure, etc., assistance; | (e) Not applicable. |
| (f) for programs of urban development, especially small labor-intensive enterprises, marketing systems and financial or other institutions to help urban poor participate in economic and social development. | (f) Not applicable. |
- (5) (107) by grants for coordinated private effort to develop and disseminate intermediate technologies appropriate for developing countries.
- (5) Not applicable.

c. FAA Sec. 110(a); Sec. 208(e). Is the recipient country willing to contribute funds to the project, and in what manner has or will it provide assurances that it will provide at least 25% of the costs of the program, project or activity with respect to which the assistance is to be furnished (or has the latter cost-sharing requirement been waived for a "relatively least-developed" country)?

d. FAA Sec. 110(b). Will grant capital assistance be disbursed for project over more than 3 years? If so, has justification satisfactory to Congress been made, and efforts for other financing?

e. FAA Sec. 207; Sec. 113. Extent to which assistance reflects appropriate emphasis on; (1) encouraging development of democratic, economic, political and social institutions; (2) self-help, in meeting the country's food needs; (3) improving availability of trained worker-power in the country; (4) programs designed to meet the country's health needs; (5) other important areas of economic, political and social development, including industry; free labor unions, cooperatives and Voluntary Agencies; transportation and communication; planning and public administration; urban development and modernization of existing laws; or (6) integrating women into the recipient country's national economy.

f. FAA Sec. 281(b). Describe extent to which program recognizes the particular needs, desires and capacities of the people of the country; utilizes the country's intellectual resources to encourage institutional development; and supports civic education and training in skills required for effective participation in governmental and political processes essential to self-government.

c. Although a relatively least-developed country, the GOS will contribute approximately 32 percent of all project costs. See Financial Plan.

d. No.

(1) Not applicable.
 (2) Extension workers will be trained to involve groups of farmers in increasing the production of food crops.
 (3) The project is aimed directly at increasing and improving the agricultural human resource base of the South.

(4) Not applicable.
 (5) Not applicable.

(6) Special emphasis is placed on training women extension workers.

f. The project supports an SRG programmatic goal and directly supports two SRG training institutions, an SRG Ministry and a College of the University of Juba.

97
 g. FAA Sec. 201(b) (2) - (4) and - (8); Sec. 201(e); Sec. 211(a) (1) - (3) and - (8). Does the activity give reasonable promise of contributing to the development: of economic resources, or to the increase of productive capacities and self-sustaining economic growth; or of educational or other institutions directed toward social progress? Is it related to and consistent with other development activities, and will it contribute to realizable long-range objectives? And does project paper provide information and conclusion on an activity's economic and technical soundness?

g. See Economic, Technical and Social Analysis.

h. FAA Sec. 201(b) (6); Sec. 211(a)(5), (6). Information and conclusion on possible effects of the assistance on U.S. economy, with special reference to areas of substantial labor surplus, and extent to which U.S. commodities and assistance are furnished in a manner consistent with improving or safeguarding the U.S. balance-of-payments position.

h. U.S. technicians and commodities will be used in this project.

2. Development Assistance Project Criteria (Loans only)

2. Not a loan.

a. FAA Sec. 201(b)(1). Information and conclusion on availability of financing from other free-world sources, including private sources within U.S.

b. FAA Sec. 201(b)(2); 201(d). Information and conclusion on (1) capacity of the country to repay the loan, including reasonableness of repayment prospects, and (2) reasonableness and legality (under laws of country and U.S.) of lending and rolending terms of the loan.

c. FAA Sec. 201(e). If loan is not made pursuant to a multilateral plan, and the amount of the loan exceeds \$100,000, has country submitted to AID an application for such funds together with assurances to indicate that funds will be used in an economically and technically sound manner?

d. FAA Sec. 201(f). Does project paper describe how project will promote the country's economic development taking into account the country's human and material resources requirements and relationship between ultimate objectives of the project and overall economic development?

e. FAA Sec. 202(a). Total amount of money under loan which is going directly to private enterprise, is going to intermediate credit institutions or other borrowers for use by private enterprise, is being used to finance imports from private sources, or is otherwise being used to finance procurements from private sources?

f. FAA Sec. 620(d). If assistance is for any productive enterprise which will compete in the U.S. with U.S. enterprise, is there an agreement by the recipient country to prevent export to the U.S. of more than 20% of the enterprise's annual production during the life of the loan?

3. Project Criteria Solely for Security Supporting Assistance

3. Not Security Supporting Assistance

FAA Sec. 531. How will this assistance support promote economic or political stability?

4. Additional Criteria for Alliance for Progress

4. Not Alliance for Progress.

a. FAA Sec. 251(b)(1), - (B). Does assistance take into account principles of the Act of Bogota and the Charter of Punta del Este; and to what extent will the activity contribute to the economic or political integration of Latin America?

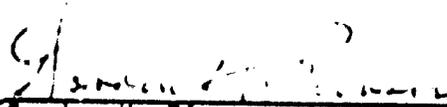
99
b. FAA Sec. 251(b)(8); 251(h). For loans, has there been taken into account the effort made by recipient nation to repatriate capital invested in other countries by their own citizens? Is loan consistent with the findings and recommendations of the Inter-American Committee for the Alliance for Progress (now "CEPCIES", the Permanent Executive Committee of the OAS) in its annual review of national development activities?

APPENDIX C

CERTIFICATION PURSUANT TO
Section 611(e) of the
FOREIGN ASSISTANCE ACT
As Amended

100

I, Gordon K. Pierson, the principal officer of the Agency for International Development in the Democratic Republic of Sudan, do herewith certify that in my judgment, Sudan has both the financial capability and the human resources to maintain and utilize effectively goods and services procured under this development assistance project entitled Southern Manpower Development.



Gordon K. Pierson
AID Representative
Democratic Republic of Sudan

5/27/75

Date

101

APPENDIX D - 1

Vehicle Procurement Waiver

APPENDIX D - 1

ACTION MEMORANDUM FOR THE ASSISTANT ADMINISTRATOR FOR AFRICA

FROM: USAID/S, Gordon Pierson, AID Representative

SUBJECT: Vehicle Procurement Waiver (Source/Origin)

DATE: May 26, 1973

Problem: Approval is requested for procurement source waiver from Geographic Code 000 (U.S. only) to Geographic Code 935 (Special Free World).

- | | |
|--------------------------------|--|
| a. Cooperating Country | Sudan |
| b. Authorizing Document | Project Paper |
| c. Project | Southern Manpower
Development (650-0021) |
| d. Nature of Funding | Grant |
| e. Description of Commodities | 8 4-wheel drive Land Rovers
2 Leyland 5-ton trucks |
| f. Approximate Value | Vehicles \$177,000
Spare Parts 35,550
Total \$212,550 |
| g. Probable Procurement Origin | UK |
| h. Probable Procurement Source | UK, Sudan |

Discussion: Section 636 (1) of the Foreign Assistance Act of 1961, as amended, prohibits AID from purchasing motor vehicles unless such vehicles are manufactured in the United States. Section 636 (1) does provide, however, that "...where special circumstances exist, the President is authorized to waive the provision of this act in order to carry out the purpose of this act." In addition, in accordance with A.I.D. Handbook 1B, procurement of commodities from Code 935 sources under a grant financed project requires a waiver. A waiver may be granted if, inter alia, an essential commodity is not available from eligible sources or there are circumstances determined to be crucial to the attainment of U.S. foreign policy or foreign assistance program objectives. Authority for making the special determination and waiver has been redelegated to the Assistant Administrator for Africa.

The above named vehicles will be used in the Juba area in Southern Sudan. It is a remote and isolated area and there is a complete lack of spare parts and maintenance support for U.S. made vehicles. In fact, to our knowledge, there are no U.S. made vehicles in Southern Sudan.

The only reasonable supply of spare parts available locally are for Land Rovers and Leylands. In addition, local mechanics are familiar with these two types of vehicles and are capable of maintaining them. Exceptional spare parts can be obtained from sources in Nairobi since Leyland has an assembly plant in Kenya.

Because of unavailability of spare parts and maintenance facilities for U.S. manufactured vehicles and the fact that such availability is essential to carrying out the project, it is our opinion special circumstances exist which justify waiving the origin requirements under Section 636(i) and the source/origin requirements generally set forth under Handbook 1B.

Recommendation: For the above reasons, it is recommended that you conclude (1) that special circumstances exist at this time to warrant the procurement of non-U.S. manufactured vehicles and (2) that you certify that exclusion of procurement from the source requested would seriously impede attainment of U.S. foreign policy objectives and the objectives of the foreign assistance program.

Approved _____

Disapproved _____

Date _____

103

APPENDIX D - 2

Commodity Procurement Waiver

501

APPENDIX D - 2

ACTION MEMORANDUM FOR THE ASSISTANT ADMINISTRATOR FOR AFRICA

FROM: USAID/S, Gordon Pierson, AID Representative
 SUBJECT: Commodity Procurement Waiver (Source/Origin)
 DATE: May 29, 1978

Problem: Approval is requested for procurement source waiver from Geographic Code 941 (Selected Free World) to Geographic Code 935 (Special Free World).

- | | |
|---------------------------------|--|
| a. Cooperating Country | Sudan |
| b. Authorizing Document | Project Paper |
| c. Project | Southern Manpower
Development (650-0021) |
| d. Nature of Funding | Grant |
| e. Description of Commodities | Diesel generators, household
appliances, household and
office furniture and equipment. |
| f. Approximate Value | \$223,860 |
| g. Probable Procurement Origin | UK, Japan, Kenya |
| h. Probable Procurement Sources | Kenya, Sudan |

Discussion: A.I.D. Handbook 1B, Chapter 5, states that the authorized source for procurement of project commodities under a grant to a relatively least developed country (RLDC) is Geographic Code 941 (Selected Free World). Sudan is an RLDC. In accordance with Handbook 1B, procurement of commodities from Code 935 sources under a grant financed project requires a waiver. A waiver may be granted if an essential commodity is not available from eligible sources or there are circumstances determined to be crucial to the attainment of U.S. foreign policy or foreign assistance program objectives. Authority for making the special determination and waiver has been redelegated to the Assistant Administrator for Africa.

The above named commodities will be used in the Juba region of Southern Sudan. It is a remote and isolated area which occupies a territory

107

larger than Kenya, and is very often cut off from the North and the rest of the world in terms of transportation, communications and supplies. During the three weeks that the design team spent in the South, the international airport in Juba was closed to large aircraft. Telex and telegraph facilities were not operational, and the telephone system worked only occasionally. During the dry season (November to March in most parts of the South), it is possible to drive from Juba to either Khartoum or Nairobi in about one week; but during the rainy season, road travel between Khartoum and Juba is impossible, and between Nairobi and Juba it becomes very difficult. Shipment of goods by river barge or steamer from Khartoum to Juba may take several months. The rail link from Khartoum extends only to Wau, which is a 2-1/2 day drive from Juba during the dry season. For these reasons, most goods imported into Southern Sudan come through the port of Mombasa, Kenya, which provides a more reliable source of supply than via Port Sudan.

Because of the non-availability of commodities, spare parts and maintenance support for project commodities from the authorized source (Code 941) and the fact that such availability is essential to carrying out the project, it is our opinion that special circumstances exist which justify waiving the source/origin requirements generally set forth under Handbook 1B.

Recommendation: For the above reasons, it is recommended that you conclude (1) that special circumstances exist at this time that warrant the procurement from Code 935 sources and (2) that you certify that exclusion of procurement from the source requested would seriously impede the attainment of U.S. foreign policy objectives and the objectives of the foreign assistance program.

Approved _____

Disapproved _____

Date _____

801

APPENDIX E
PID RESPONSE CABLE

The PID for this project was prepared by Dr. Thayer Scudder in October 1977. It covered only the Yambio Institute for Agricultural Technicians. Proposed activities were budgeted at \$499,805.

As shown below, the PID response cable approved the Yambio activities but recommended a substantial expansion of this project to cover other agricultural manpower development activities. The design team, upon arriving at Yambio, also concluded that the activities proposed for the Institute were underfunded.

109

OUTGOING CABLE

12/06/77

SUBJECT: SOUTHERN MANPOWER DEVELOPMENT PROJECT (YAMBIO AG TRAINING INSTITUTE) - 650-0021

SUMMARY:

1. PROJECT COMMITTEE, WITH PARTICIPATION AID REP PIERSON, REVIEWED PID FOR SUBJECT ACTIVITY ON 11/23/77 AND RECOMMENDED AA/AFR APPROVAL, SUBJECT TO PROPOSED MODIFICATIONS DISCUSSED BELOW. COMMITTEE ALSO RECOMMENDED APPROVAL OF "NEGATIVE DETERMINATION" FOR IEE. AA/AFR APPROVAL PROVIDED UPON TRANSMITTAL THIS MESSAGE. PP WILL BE PREPARED FOR 3RD QUARTER AUTHORIZATION BY AID/W. END SUMMARY.
2. PROJECT COMMITTEE SUPPORTS AID INVOLVEMENT, ALONG WITH UNDP AND SIDA, IN STRENGTHENING YAMBIO AGRICULTURE TRAINING INSTITUTE. IN VIEW OF THE MAGNITUDE OF THE MANPOWER CONSTRAINT IN SOUTHERN SUDAN, (PARTICULARLY IN AGRICULTURE) COMMITTEE OF OPINION THAT, WHILE ACTIVITIES OUTLINED ON PP-10-26 ARE IMPORTANT TO STRENGTHENING THE INSTITUTE'S PROGRAM, ADDITIONAL ACTIVITIES ILLUSTRATIVELY OUTLINED ON PP 16-18 PROVIDE A MORE MEANINGFUL OPPORTUNITY FOR AID PARTICIPATION, OVER AN EXTENDED PERIOD, IN AGRICULTURAL MANPOWER DEVELOPMENT (I.E. TRAINING), IN PARTICULAR, AND AGRICULTURAL DEVELOPMENT ACTIVITIES (E.G. RESEARCH AND "OUTREACH" MULTI-PURPOSE CENTERS FOR EXTENSION), IN GENERAL. COMMITTEE AGREES THAT INITIAL ACTIVITIES PROPOSED IN BUDGET ARE UNDERFUNDED. WHILE AID/W AWARE AND SYMPATHETIC TO MISSION'S DESIRE TO HAVE FIELD APPROVAL OF PP FOR DOLS 500,000 OR LESS (TO PROVIDE QUICK IMPACT IN AREA OF CRITICAL IMPORTANCE TO GOS), BELIEVE MORE ACCURATE COSTING OF INITIAL ACTIVITIES WILL REQUIRE AID/W APPROVAL OF PP. THUS, SINCE AID/W APPROVAL LIKELY, MISSION SHOULD, INTER ALIA, EXAMINE FEASIBILITY OF BROADENING THE SCOPE OF PROJECT TO INCORPORATE ADDITIONAL ACTIVITIES REFERRED TO ON PP 16-18 OF PID.
3. COMMITTEE RECOMMENDS THAT MISSION CONTINUE DISCUSS WITH GOS POSSIBILITIES FOR GREATER INVOLVEMENT IN MANPOWER TRAINING AND AGRICULTURE DEVELOPMENT IN SOUTHERN SUDAN, THE POOREST REGION OF THE COUNTRY AND THE REGION IN WHICH WE WOULD ANTICIPATE GREATEST AID INVOLVEMENT. IN THIS REGARD, MISSION MAY WISH DISCUSS FEASIBILITY OF INCLUDING IN THIS PROJECT, LONG- AND/OR SHORT-TERM CONSULTANT ASSISTANCE TO THE MINISTRIES OF AGRICULTURE AND EDUCATION TO ASSIST IN PLANNING/EVALUATING NEW OR ON-GOING ACTIVITIES (E.G. JUBA UNIVERSITY) WITH A VIEW TO FOLLOWING-UP WITH DISCRETE AID OR JOINT DONOR PROJECTS IN THE SOUTH.

4. IN VIEW PARAS 2 AND 3 ABOVE, COMMITTEE RECOMMENDS THAT PROJECT TITLE BE CHANGED FROM "YAMBIO AG TRAINING INSTITUTE" TO "SOUTHERN MANPOWER DEVELOPMENT". SUBJECT PROJECT CAN THUS BECOME A "SPRINGBOARD" FOR GREATER AID INVOLVEMENT IN ADDRESSING CRITICAL CONSTRAINT TO RURAL DEVELOPMENT IN THE SOUTH.

5. PP DESIGN TEAM WILL, INTER ALIA, ADDRESS FOLLOWING COMMITTEE CONCERNS (A) RELATIONSHIP BETWEEN YAMBIO INSTITUTE AND OTHER TRAINING INSTITUTES (E.G. JUBA UNIV., UNIV. KHARTOUM, AHFAD COLLEGE, ETC.). (B) SOURCES(S) OF STUDENTS, (C) PLACEMENT/EMPLOYMENT OF GRADUATES VS. CONTINUED EDUCATION, (D) RELATIONSHIP THIS PROJECT TO OTHER PROPOSED AID PROJECTS (E.G. WESTERN RESEARCH, AG EXTENSION, SMALL FARMER COOPS), (E) EVALUATION PLAN AND FUNDING REQUIREMENTS, (F) APPROPRIATE CONTRACTING MECHANISM(S) AND (G) COORDINATION WITH OTHER DONORS. SEPTEL FOLLOWS PROVIDING PROPOSED SCHEDULE, COMPOSITION AND DETAILED SCOPE OF WORK FOR PP DESIGN TEAM.

6. FYI: AID/W RECOGNIZES IMPORTANCE OF CARRYING-OUT PROPOSED WORKSHOP IN TEACHING METHODS FOR THE STAFF AT YAMBIO DURING JUNE '78. DO NOT BELIEVE PROJECT CAN BE AUTHORIZED IN TIME FOR CONTRACTOR TO BE SELECTED AND TO FIELD PERSONNEL FOR THIS ACTIVITY. THEREFORE, WE ARE EXAMINING WITH AFR/RA POSSIBILITY FUNDING THIS ACTIVITY THROUGH AMDP PROJECT. WILL ADVISE SEPTEL. END FYI.

7. COMMENTS WELCOMED. YY

113

PART THREE

ANNEXES

ANNEX A

SMALL FARMING SYSTEMS AND AGRICULTURAL DEVELOPMENT
IN THE SOUTHERN SUDANI. Ecological and Agricultural Setting

The Southern Region of the Sudan has a total surface of 650,000 km². It is larger than most African countries, and as ecologically diverse. There is a wide range in climatic, edaphic, topographic, and vegetation characteristics within the three broad ecological zones of the Southern Region.

The northern part of Upper Nile Province contains part of the Central Rainlands Zone. Annual rainfall is generally less than 800 mm and occurs over a period of 4-5 months. Open grassland alternates with bush and thorn woodland. Heavy alkaline clays and loams predominate. Sandy soils make up a small portion of the total soil complex. Rain-fed crop production is limited to quickly maturing cereals and oil seeds. Livestock production is important.

The Flood Plains Zone incorporates about half of the Southern Region. Jonglei, Lakes, Upper Nile and Bahr el Ghazal Provinces are all partly within this zone. Rainfall averages 800 - 1,000 mm over a six to seven month period. The Sudd, a region of permanent and semi-permanent swamps, covers an area variously estimated at 18,300 to 128,000 square kilometers. The soils of the low, gently sloping Sudd are mostly heavy waterlogged clays. Higher lying land has lighter soils, which can be cultivated during the rainy season. Marshland grasses and trees grade into areas of acacia scrub and savannah tree species. Herdsmen exploit higher areas of range during the rainy season, and follow the receding water level into intermediate land and flood plains (called toich) during the dry season. Due to its grazing potential and relative freedom from the tsetse fly, the Flood Plains Zone is the most important livestock-producing area of the Southern Sudan.

The Equatorial Zone is a very diverse zone which is more appropriately divided into four areas: the Ironstone Plateau, the Central Hills, the Greenbelt, and the Imatong and Dongotona Mountains. Most of Bahr el Ghazal, Western Equatoria, and Eastern Equatoria Provinces fall within this zone. Rainfall varies from 900 to 1,300 mm distributed over six to eight months on most of the Ironstone Plateau. Within the Greenbelt, at the extreme southern limit of the Ironstone Plateau, rainfall averages 1,300 to 1,600 mm over an eight to nine month period. The Central Hills have about the same total precipitation

as the Ironstone Plateau, with more variable rainfall patterns. The mountain slopes and foothills have a steep precipitation gradient, ranging from over 2,000 mm at high elevations to 800 mm in the foothills.

Soil types in the Equatorial zones range from shallow, highly leached, lateritic soils on the Ironstone Plateau to deep medium-fertility loams and sandy loams in the high plateaus and mountains.

Vegetation in the Equatorial Zone also varies considerably. The scrub savannah of the lower elevations of the Ironstone Plateau grades into a mosaic of high savannah, broadleaf forest areas and open grassland. Denser broadleaf forest stands exist in the Greenbelt and higher foothills. Mixed broadleaf-coniferous forests exist in the Imatong Mountains.

Production of a wide variety of agronomic crops, horticultural crops, and forest trees takes place in the Equatorial Zone. The major constraint to livestock production in the zone is the presence of tsetse over much of the area.

An overview of the Southern Region presents the picture of a large, irregularly shaped basin with an elevated perimeter from which drainage lines run towards the only exit point to the North, the White Nile. In each locale of the Southern Region the biological production potential is determined by the mix and dynamics of change of abiotic and biotic factors.

The Equatorial Zone is the most diverse ecologically and therefore possesses the greatest variation in production potential. The Flood Plains Zone covers the largest area: the intergradations of high land, seasonally waterlogged toich grasslands, and the permanent Sudd swamp have the potential to impose a mosaic pattern on the production of the zone. The Central Rainlands Zone covers the smallest area. It is the most homogeneous ecologically and can be expected to have relatively small variations in production potential.

II. Production Potential and Constraints

In an area such as the Southern Region where modern technological inputs are scarce, and very expensive to obtain and use, the agricultural production potential will be closely linked to the biological production potential of the local environment. Much of the agricultural data base needed to evaluate production potential is lacking in the Southern Region. Meteorological data collection and systematic surveys of soils, crops, livestock, rangelands, fisheries and forests have only begun in the past few years.

It is tempting to try to determine aggregate production potential from arable land estimates, the limited available yield data, and

population statistics. However, this exercise quickly becomes meaningless for the Southern Sudan when the available numbers are examined.

Total surface area is generally estimated at 650,000 square kilometers. Arable land estimates seem to be derived by subtracting estimated areas of the Sudd swamp, waterways, and forests from the total surface area. Total water surface is given in various sources as 8,300 square kilometers, 20,000 square kilometers, and 128,000 square kilometers.^{1,2,3} Since seasonal flooding occurs, a static figure for water surface area is not useful in determining the arable land area. What the numbers point out, though, is that there is a likelihood the 5.56 million head of cattle population occupies potential cropland at some time during the rainy season. Forest area is estimated to be 154,251 square kilometers.

The best current "guesstimate" is that only 1/3 of the available arable land is being cultivated. Calculations of the area available for crops range from about 56,000 square kilometers to about 162,500 square kilometers. Current estimates of cropped area are not within an order of magnitude of this calculated range. For example, the 1974 Sudan Yearbook of Agricultural Statistics 1973/74 figures for crop production show about 4,000 square kilometers (922,000 feddans) under major crops.⁴ Using the 1973 census figure of 4.02 million people in the Southern Region and 1973/74 production figures, per capita food crop consumption would have been about 75 kgs., far below subsistence levels.

Before any rational examination of the Southern Region's production potential can be undertaken, there is a critical need to obtain accurate data on:

- . land area available for crop and animal production,
- . present cropping and grazing patterns, and
- . present crop and animal production levels.

Excepting parts of the Greenbelt and the locales surrounding modern rice and sorghum schemes, one generalization that can be made about aggregate food production in the Southern Region is that production does not fulfill demand. Even without precise data, it is clear that crop yields and animal live weight gains are low and are not tending to higher levels.

¹The Six Year Development Plan 1977/78-82/83. Southern Regional Government, Juba.

²A New Outlook in Agriculture, Forestry and Animal Wealth in the Southern Region, 1977. Regional Ministry of Agriculture, Juba.

³Area Handbook for the Democratic Republic of Sudan, 1973. American University Foreign Area Studies, Washington, D.C.

⁴See Table A-1, Southern Sudan Production Statistics.

116

TABLE A-1 Southern Sudan Production Statistics

	Area Harvested 1,000 Feddans				Yield KG/Feddan				Production 1,000 MT			
	1970/71	71/72	72/73	73/74	1970/71	71/72	72/73	73/74	1970/71	71/72	72/73	73/74
Dura (Sorghum)												
Upper Nile	166	170	182	353	175	465	429	388	29	79	78	137
Bahr El Ghazal	201	200	85	120	602	590	235	325	121	118	20	39
Equatoria	9	20	60	170	111	250	250	300	1	5	15	51
Total	376	390	327	643	---	---	---	---	151	202	113	227
Dukhn (Millet)												
Upper Nile	---	---	---	---	---	---	---	---	---	---	---	---
Bahr El Ghazal	7	7	6	---	571	571	167	---	4	4	1	---
Equatoria	---	---	---	---	---	---	---	---	---	---	---	---
Total	7	7	6	---	---	---	---	---	4	4	1	---
Maize												
Upper Nile	66	---	---	---	300	---	---	---	18	---	---	---
Bahr El Ghazal	7	7	6	7	1000	1000	833	286	7	7	5	2
Equatoria	5	4	3	37	200	250	333	324	1	1	1	12
Total	78	11	9	44	---	---	---	---	26	8	6	14
Rice												
Upper Nile	---	---	---	---	---	---	---	---	---	---	---	---
Bahr El Ghazal	12	12	12	10	500	500	417	500	6	6	5	5
Equatoria	---	---	---	---	---	---	---	---	---	---	---	---
Total	12	12	12	10	---	---	---	---	6	6	5	5
Groundnuts												
Upper Nile	---	---	---	---	---	---	---	---	---	---	---	---
Bahr El Ghazal	65	67	65	32	754	731	615	375	49	49	40	12
Equatoria	3	18	15	85	333	228	133	329	1	4	2	28
Total	68	85	80	117	---	---	---	---	50	53	42	40
Sesame												
Upper Nile	8	11	32	48	125	91	125	63	1	1	4	3
Bahr El Ghazal	30	27	22	33	467	407	364	212	14	11	8	7
Equatoria	3	22	14	27	67	136	143	185	0.2	3	2	5
Total	41	60	68	108	---	---	---	---	15	15	14	15
Food Crop	---	---	---	---	---	---	---	---	252	278	181	301
Ar : Total	562	565	502	922	---	---	---	---	---	---	---	---

Source: Sudan Yearbook of Agricultural Statistics 1974.

Spread throughout the Southern Region are areas where overall production is close to subsistence levels and where small perturbations in weather, labor availability and pest levels result in recurrent food deficits. The Ministry of Agriculture has identified these areas as "Depressed Areas" and targeted priority assistance to them.¹ The Depressed Areas are largely concentrated in Bahr el Ghazal, Lakes, and Jonglei Provinces. Other areas in Upper Nile, Eastern and Western Equatoria Provinces are better off in terms of the availability and quality of natural resources, and consequently have higher rates of productivity. Common to both the depressed and better-off areas of the Sudan Region are a number of constraints which limit productivity and influence small farmer behavior:

- . lack of a knowledge base of "traditional" and improved technologies;
- . limited availability of physical production inputs;
- . lack of agricultural support services and the attendant infrastructure to plan, administer, and sustain such services;
- . lack of trained agricultural manpower at all levels;
- . poorly functioning marketing and transport systems; and
- . lack of credit, particularly to the small farm sector.

III. Farming Systems

Man has many ways of transforming natural environments into agricultural environments, which fulfill his survival requirements and meet his socioeconomic needs. These methods of transformation can be described as farming systems.

One consequence of the lack of knowledge about the physical indices of agricultural production in the Southern Region has been the development of an overly rigid and outdated classification of its farming systems. The principal categories usually identified are:

- . shifting cultivators, who use slash-and-burn techniques to clear land, farm it until the soil is exhausted, and move on to a new plot;

¹ Special Development Programme for the Depressed Areas, 1977.
Regional Ministry of Agriculture, Animal Resources, Forestry and Irrigation, Southern Region, Juba.

- sedentary cultivators who farm one area continuously;
- nomads/transhumant pastoralists whose life is centered on large herds of cattle, with crop cultivation being relegated to a minor activity carried out by women and youths to support the household;
- mixed farming producers, considered a very minor component of Southern agriculture, who combine cultivation with animal husbandry; and
- the modern farms, either mechanized, rainfed or irrigated, usually run by parastatal corporations (e.g., Renk Dura Scheme, Aweil Rice Scheme).

The problem with these typologies is that they tend to conceal or ignore the range of variation, the dynamics of change, and the interdependence and interaction (on both the macro- and micro-levels) within and among the different types of farming systems. They also do little to uncover the behavioral determinants of traditional farming practices. An example concerns shifting cultivators and the important point that they clear new fields periodically, or, that peoples such as the Azande have developed an understanding of vegetational indices of soil fertility that allows them to devise sustainable cropping patterns which meet their subsistence needs. Further, what does the label "shifting cultivator" tell us about the behavioral differences between a Zande farmer whose land in the Greenbelt receives 1,600 mm of rain annually, and another whose land in the Ironstone Plateau's red belt receives only 900 mm? Also, does "shifting cultivation" have any intrinsic constraints to or favorable implication for the introduction of new technologies?

Farms throughout the southern regions simply defy traditional stereotypes. For example, do shifting cultivators shift for reasons other than agronomic ones? The design team noted during its interviews with Azande farmers that homestead shifts are often caused by customary social sanctions rather than degradation of soil fertility. When a man's wife dies he must abandon his compound, possessions and fields and move to a new area.

The Kakwa around Yei are generally described as traditional sedentary cultivators, but the farm families visited by the design team presented a rather different picture. Surrounding the family compound was a field of two to three feddans called a "bor". The bor is cultivated continuously, with about one-half feddan in grass fallow at any one time. After a grass fallow of two to three years, maize and groundnuts are planted in April during the first rainy season. Green gram and/or sweet potatoes follow the maize and groundnuts harvest. In the

second year, part of the land is used for cassava and part for dura production. Cassava, groundnut, green gram, and sweet potatoes are grown in the third year. The next year the grass fallow is cultivated, the old cassava land laid fallow, cassava plantation shifted, and a new cycle begun.

These factors indicate a pattern of systematic crop rotation in a "sedentary" farming situation. However, the main grain-producing fields are located one to two kilometers from the bor in a high savannah forest area. Here two to six feddans of finger millet, bulrush millet, dura (sorghum), and sesame may be cultivated. The land is cleared, used until production is felt to be too low, then abandoned for new land. The farm management practices of the Kakwa are further complicated by the division of labor among males, females, neighbor work parties, and cash laborers from Kajukaji and Zaire. Males, worker parties, and hired labor usually do the heavy land clearing and cultivation. Thereafter, women have almost total responsibility for seeding, thinning, weeding, and harvest of the household's bor. Both men and women work on the main cereal and sesame fields.

Given the Kakwa farming system, what is its place among the traditional breakdown of farming types? Neither sedentary cultivation nor shifting cultivation apply, as both the bor and main cereal fields are major sources of food. The bor provides carry-over food (cassava) during the end of the dry season and first part of the rainy season. The bor also produces the first harvest, which has to sustain the household's food and cash needs until the main cereal and sesame crop is harvested in late fall. Classifying the Kakwa as sedentary and/or shifting cultivators does not advance understanding of their farming system. Examining the ecological and socioeconomic determinants of Kakwa farm management behavior, on the other hand, would advance understanding and enable the formulation of rational intervention techniques.

The Dinka are generally classified as semi-nomads or transhumant pastoralists. Yet, discussions with the Dinka Haggar of the Rumbek area revealed that, while cattle are the central medium of exchange within the culture and an important occasional source of cash income, food crop production plays an equally important role and is the basis for community survival. Thus, Dinka crop and animal production activities are better understood in the framework of environmental potentials and constraints than by a label such as a "cattle complex" which implies limitations on the Dinka's crop production management decisionmaking process.

The Dinka Haggar, for example, live in a transitional zone between the edge of the Ironstone Plateau and beginning of the Flood Plains Zone. Annually, they follow the receding flood waters to exploit the

pasturage with their herds. Before the onset of the rainy season, the Dinka herders bring their cattle to cattle camps located in the toich. Here there is sufficient fodder (though of low quality) to support the cattle until the rains initiate range growth.

Crop land is prepared by the men after the first light rains, for planting of groundnuts in association with late varieties of dura, millet, and sesame. Groundnuts and cassava are also grown in association. Maize and early sorghum varieties are grown in pure stands next to the compound where domestic refuse has accumulated. The Dinka explain that the early sorghum varieties (called "nyanjang") will not yield well when grown in less fertile soil. Cowpeas and green gram are grown in pure stands or intercropped among sorghum on land that has been in grass fallow for two years.¹

The Dinkas interviewed said that crop land could be used for ten years before the soil was exhausted and the epiphytic parasite Striga appeared. When this point in the fertility cycle is reached, the home-
stead is established on a new site in the same general area. There appears to be a good deal of variation in how land is managed. One Dinka mentioned periodically moving the household compound to a new location within the same field area. This would eventually restore some level of soil fertility over the entire crop area, and probably extend the useful lifetime of the field.

The impression gained from the Dinka interviews was that they had a "cattle complex" when discussing cattle and a "crop complex" when discussing crops. To call the Dinka men "pastoralists" and the women "sedentary" or "shifting cultivators" only obscures the point that the Dinka have developed an overall strategy to husband both plant and animal resources in a specific environmental and socioeconomic setting.

These examples of Azande, Kakwa, and Dinka farming practices illustrate the great diversity and complexity of farming systems and farm management behavior in the Southern Sudan.

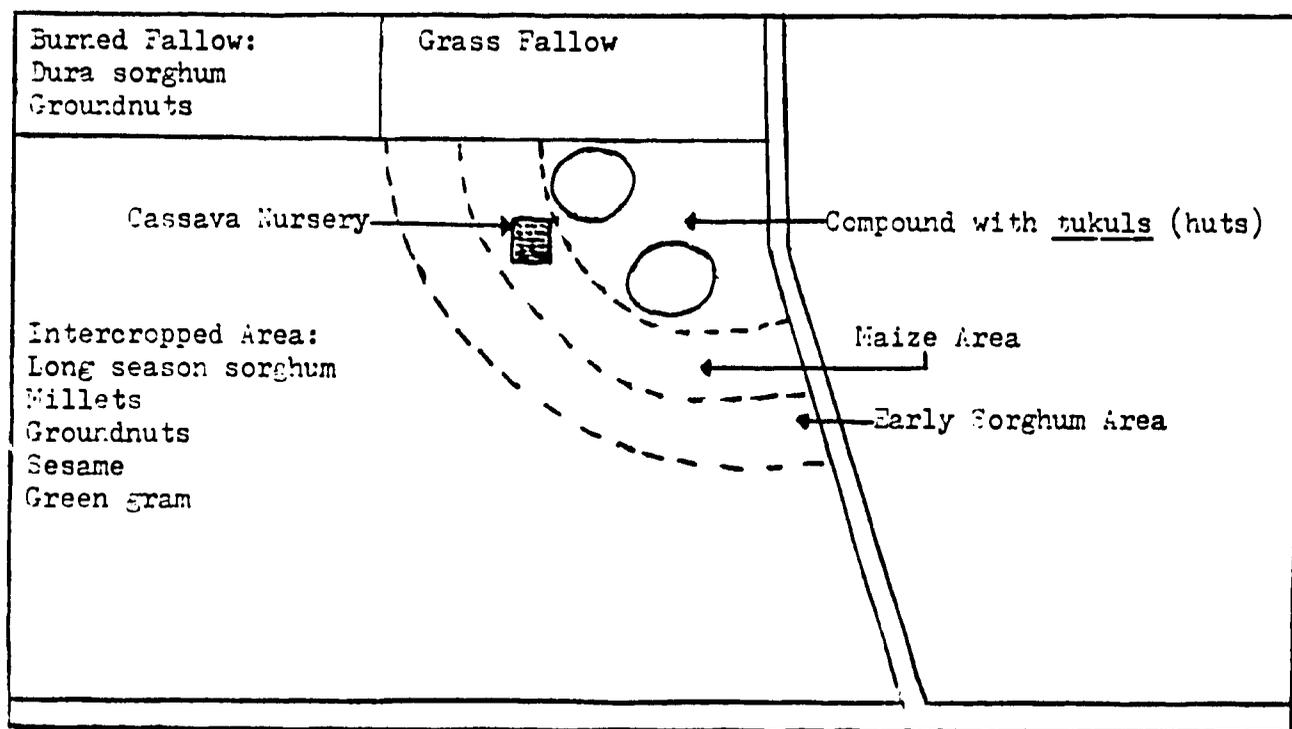
IV. The Potential for Change

The potential for change and development in agriculture in the Southern Region will depend largely on broadening the knowledge base, both from a technical and a socioeconomic point of view. Three sources of knowledge need to be more fully tapped:

- . the knowledge base of the African smallholder;
- . the lessons to be learned from modern farming schemes; and
- . the experimental results of research stations.

¹ See Figure A.1, Dinka Cropping Pattern.

FIGURE A.1 -Dinka Cropping Pattern



Not to scale. Total cultivated area about three feddans.

122

Understanding Smallholder Farming Systems

The technological knowledge base of the African smallholder has often been unexplored, undervalued, and underutilized in development projects. Besides the need to understand the agricultural environment as a basis for rational design of a project, there is a need to understand and build upon traditional agricultural practices and management systems.

123
Crop varieties in the Southern Sudan have been subject to greater selection than is usually supposed. De Schlippe¹ describes how Azande produce six varieties of Eleusine corocana (finger millet), ten varieties of maize, five varieties of ratooning and non-ratooning sorghum, ten varieties of groundnuts, nine varieties of sesame, and ten clones of cassava. The design team examined the seed supplies of Kakwa and Dinka farmers: farmers described the time of planting and maturation schedules, stand development, yield levels, pest resistance, and storage characteristics of a range of early- to late-maturing cereal and pulse crops. As areas of the Southern Sudan include possible sites of origin for Eleusine, collection of locally adapted propagation materials could go far in advancing the introduction of higher yielding traits from the imported millet varieties undergoing selection and trials at the IBRD/IDA-sponsored Production Development Unit Seed Bulking facility at Yei. Such collections would assist in the international effort to maintain germplasm banks of diverse genomes for future breeding needs. A more immediate result could be the identification of higher yielding varieties which are locally adapted and, thus, more quickly and easily bulked on the farmers' own fields.

Among "traditional" farmers and pastoralists there is great variation in the degree of technological sophistication and management capability. This variation needs to be examined and analyzed in order to select locally improved practices that are already culturally adopted and can potentially be spread across a locale to improve productivity. For example, the Dinka farmer who described the system of periodically moving his family compound was already engaging in a land management practice that may extend the useful life of his field, prolonging the period before he has to invest a great deal of labor in clearing a new field.

The cropping patterns and animal husbandry practices of the Southern Region are responses to the natural and socioeconomic environment. The ability to respond to an environment implies understanding

¹ Pierre de Schlippe 1956, Shifting Cultivation in Africa; The Zande System of Agriculture. Routledge and Kegan Paul, London.

of that environment: in the operational sense, knowing what has worked and what has failed in the recent past; and in the historical sense, knowing how present conditions and practices differ from the verbal descriptions of the conditions and practices of the prior generations. Besides information on climatic cycles, pest invasions, rotations and/or shifting patterns, grazing routes, etc., it should be possible to elicit responses from farmers about their management decisionmaking processes, e.g.:

- . allocation of decisionmaking authority with the family;
- . allocation of land, labor, and physical input resources (optimization);
- . risk perceptions;
- . production incentives;
- . consumption and marketing strategies; and
- . perceptions of and responses to innovation.

When this information is obtained, it should be possible to identify specific elements of a traditional input and management package which suggest directions for crop and animal production research, and the context and conditions in which experimentation should be done.

A case in point is the attempt to introduce ox-plowing in the Rumbek area. Ox-plowing is seen as the solution to the problem of limited labor availability at cultivation time. Attempts to convince the Dinka to bring their oxen to the Agricultural Training Center for training have met with little success. A common explanation for this failure is that Dinka have a "cattle complex": i.e., that their value system does not permit them to use oxen for plowing fields. A look at the ecological setting and cattle management of the Rumbek Dinka suggests alternative interpretations.

Discussions with authorities on animal production in the Southern Region indicate that the range of the tsetse fly, Glossina, has been and is continuing to expand in the Southern Region. The Rumbek environs are occupied by the tsetse. The tsetse presence and risk of typanosomiasis is cited by the Dinka as the reason why they do not establish lwak or cattle byres on their fields, but leave their cattle camps outside the tsetse range. Dinka in tsetse free areas very commonly use the lwak to augment the fertility of their fields. The Rumbek Dinka's refusal to bring oxen in for training may reflect to a large extent the perceived risk of oxen loss if they do so. A

. 124.

researcher or extensionist who recognized this ecological constraint to ox-plow introduction could have suggested an approach incorporating tsetse eradication and/or cattle prophylaxis into the ox-plow training program.

Besides this ecological constraint to the adoption of ox-plowing, a range of risk-averting management strategies may also be operating. For example, the ox-plow instructors mentioned that some Dinka were willing to rent trained oxen to plow their fields, but were not willing to have their own oxen trained until they saw results from the use of rented oxen. Three complementary strategies may be operating in this case:

- . the cultivator/pastoralist avoids any risk of animal loss by renting someone else's oxen;
- . the cultivator/pastoralist avoids a heavy time investment in training activities at the Rumbek Center which does not have an immediate impact on his own fields; and
- . the cultivator/pastoralist avoids the time and fodder material investment required to establish a management pattern for two to four draft animals which would be different from the one he now employs for herds ten to twenty times that size.

Lessons to be Learned From the Modern Sector

A second source of agricultural knowledge in the South is the modern sector. Before the period of civil disturbances, a fairly vigorous private sector involved in cotton, coffee, tea, tobacco, oil palm, forestry, dairy and poultry had been established. Very few of these enterprises survived the disturbances; most were nationalized at Sudan's independence and/or disrupted or destroyed in the following 17-year period.

The agro-industrial complex at Nzara in Western Equatoria Province survived with the least damage. It was inaugurated in 1949 as a self-contained sawmill, cotton production and weaving, and oil seed facility, to be supplied by Azande smallholders. In the original scheme, every taxpayer was required to grow one feddan of cotton under the close supervision of Tarabayi, village level overseers. The original production levels were sufficient to run three shifts a day in the ginning, spinning, and weaving mills. After independence, production dropped off and reached its lowest point in 1966, when the area was virtually abandoned due to intensification of the disturbances. Nzara was absorbed by the national Public Agricultural Production Corporation in 1967. It was split into the Equatoria Products Board, in charge of production, and the (now independent) Equatorial Trading Corporation,

125

in charge of trade. To keep Nzara in operation, cotton lint from the northern provinces of Sudan was imported into the South. Even after the Addis Ababa Accord of 1972, lint was still being imported to supplement southern production. Since 1975/76 the Nzara mills have been running at least one shift daily on cotton obtained from the districts of Nzara, Yambio, Meridi and Ezo in Western Equatoria Province, and from Yei and Acholi Districts of Eastern Equatoria Province.

Plant operations at Nzara are limited not only by cotton production levels, but by the vintage and poor repair of the ginning, spinning, and weaving machinery. At present a British Overseas Development Ministry mission is investigating the rehabilitation requirements of the physical plant. Whatever its physical plant problems are at the moment, the Nzara complex is an important part of the technological knowledge base of the Southern Region:

- . it has the largest continual record of involvement in smallholder cash crop production in the South;
- . it has the strongest marketing and transportation infrastructure in the South; and
- . it has the major large-scale, functioning farmer service delivery system in the South.

At present, however, no systematic analysis has been undertaken of the impact of the Nzara complex on the small farming systems with which it interacts.

Private plantations of coffee, tea, tobacco, and pineapple did not survive independence and the civil disturbances as well as Nzara. Most were abandoned and left to deteriorate. Some of the production knowledge was left behind with the former Sudanese employees of these plantations. The IBRD/IDA-sponsored Production Development Unit (PDU) attached to the Regional Ministry of Agriculture is actively involved in building on the residual knowledge base through their smallholder coffee and tobacco projects in Eastern and Western Equatoria. The British Overseas Development Ministry is assisting in the rehabilitation and development of the Iwatoka tea plantation. These single-product, cash crop endeavors, with their inherently vertical management structure, provide an excellent opportunity to examine the economic feasibility of smallholder cash crop production in the south and the attendant process of establishing efficient input distribution, and output transport, handling, and marketing systems for small-scale production units. To be effective such a study would have to examine the dynamics of the farming environment at the smallholder level, as well as the balance sheets in the central offices of these projects. However, neither the planning nor the trained manpower needed to conduct this kind of research is being supplied to these projects.

126

127

The last three to four years have seen the creation of new schemes for mechanized rainfed production at Aweil (rice) and Renk (sorghum). Again, these schemes can be used to identify the interactions between the level of technology applied, crop response, economic feasibility, and socioeconomic impact. While the priority after the Addis Accord was to rehabilitate and recreate the food production system of the South, now that continued development of this system is a Six-Year Plan Priority, careful consideration of the long-term feasibility of major mechanized schemes should be undertaken.

Results of Applied Research

The ability of a large and ecologically diverse geographic area to increase productivity in a sustainable way over the long term depends upon the ability to generate a useful technical knowledge base through agricultural research. In the Southern Region of the Sudan the civil disturbances destroyed, disrupted, and/or dispersed research facilities, research records, and research personnel.

There is a tremendous infrastructure and information void to be filled. In its first years the research program must be modest in scale and oriented to meeting the priority needs of the regions. This process has begun with the rehabilitation and reconstruction of a small network of research stations and trial substations by multilateral donors working with the Regional Ministry of Agriculture.

The major research facility is the Project Development Unit (PDU) Center for crop development activities located in Yei, Eastern Equatoria Province. The PDU is a largely autonomous branch of the Regional MOA supported by IBRD/IDA. The PDU's components include:

- . Agronomy and Plant Breeding Sections;
- . a Seed Multiplication Section;
- . a Nutrition Section;
- . an Extension Section;
- . a Coffee Section;
- . a Cotton Section;
- . a Food Section; and
- . a Workshop Section.

The first phase of the Yei PDU began with the IBRD Special Mission in 1973. Phase One is now ending, and IBRD is preparing Phase Two, to start in January 1979. The Yei station now occupies 500 feddans (210 Ha) and will expand to 1,500 feddans (630 Ha).

Production of improved food crop seed for sale to smallholders is the main focus of the station. The varieties of sorghum, maize, and groundnuts which are the mainstays of the seed bulking operation were chosen from among Kenyan, Ugandan, and Zairean materials during the first three years of trials. From discussions with the Yei staff it is clear that these early trials were hindered by the rapid turnover in expatriate personnel, competing demands on time by construction and administrative duties, and the lack of trained field personnel to run trials. Trial layout, observation, and data collection methods were not standardized, leading to high interval coefficients of variation and difficulties in interpretation. A plant accessions register was not started until 1976, after a good deal of plant material had already been collected. These problems were recognized by the PDU staff, and corrected through the training of a core group of trial technicians who now follow standardized trial procedures.

Three crops and six varieties form the nucleus of the seed multiplication effort:

- maize varieties Katumani (semi-dent) and Western Yellow (flint);
- groundnut varieties Makulu Red and Mani Pinter; and
- sorghum varieties Serena and Dwarf Lulu.

The Yei station is the main center for seed bulking and the production of limited quantities of certified seed. Substations at Maridi, Rumbek, and Torit carry out limited variety trials and small-scale seed multiplication. There is increasing use of local contract growers, government organizations, and cooperative agencies to produce certified seed. The quality of this certified seed varies considerably despite the PDU's efforts to supervise and inspect production.

Seed and tools are distributed and sold by the PDU on the basis of demand forecasts and quotas. Village level overseers survey farmers with headmen to determine the quantity of inputs desired. The accounting section at Yei then determines the quotas required by input availability and equity considerations. Trucks with seeds, tools, and a sales team are then dispatched to scheduled sale locations (churches, schools, traditional courts, etc.). Maize, groundnuts, and tools are sold from February through March. Sorghum is sold May through June.

128

Farmer demand for PDU-supplied seed consistently outstrips supply. However, it is difficult to know whether this great demand can be attributed to greater field performance of the seeds, or to the large effective price subsidies (40-70%) that PDU grants to farmers.¹ At the moment, little formal follow-up of varietal performance on the smallholders' fields has been done.

In order for any crop development research program to succeed, it must not only select and verify the performance of crops on its own stations and substations, but also determine the degree of appropriateness of the improved crops to the smallholder. Besides the flow of improved seed to the farmer, there must be a flow of evaluative information to the researchers. Only with this information can rational research strategy and design be devised. The intermediaries required to generate farmer-researcher information flow are extension workers. At present the PDU at Yei has 30 "extension agents." The agents' principal functions are to produce demand forecasts, sell tools and seeds, and supervise the production of certified seed by contract growers. Only five of the agents -- "technical assistants" -- have training in agriculture at the diploma level. The remainder undergo one month's training in handling sales records. Before the PDU can evaluate the impact of its improved seed and tool supply program, it will have to obtain more technically competent personnel and support them for farmer contact and crop survey work, rather than for sales.

It should be emphasized that the PDU is the only operating agricultural institution in the Southern Sudan that has generated technological improvements that directly affect the smallholder. To do so it has overcome problems in construction, transportation, logistic support, and skilled manpower deficiencies that have diverted much time and energy from the station's main goals.

The other major research center in the Southern Region is the Halima Soil Survey and Research Station near Wau. The station is administered by the Land Development Project of the UNDP/FAO. To date its work has been concentrated on studies for the 5,000-feddan Aweil rice scheme, but it is scheduled to begin soil surveys of the Southern Region.

There has been much less research in animal husbandry, even of a survey nature, than in crop production. The crop research has had the advantage of Kenyan, Ugandan, and Zairean research built up over the years. For livestock, the main sources of information are the FAO Country Perspective Study, the MAFAO Dairy and Poultry Project outside

¹ See Table A-2, PDU Seed and Tool Prices.

TABLE A - 2

PDU SEED AND TOOL PRICES COMPARED WITH OPEN MARKET PRICES (LS)

Tools	PDU Price	Yei Town Price	Yambio Town Price
Toria (large hoe)	1.75	2.50-2.75	0.75
Felling ax	1.10	2.25	----
Panga (machete)	1.00	1.25	1.00

Seeds	PDU Price LS/kg	Yei Town Price LS/kg	Rumbek Price LS/kg
Maize	0.07	0.17-0.20	----
Sorghum	0.08	----	0.13
Groundnuts	0.12	0.40	0.36

Note: Seed prices other than those for seed supplied by PDU were obtained in interviews and reflect prices paid by farmers for seed just before the rainy season.

Juba, and the first official livestock census and resource inventory of 1977.¹ Given that livestock statistics are among the most difficult to obtain accurately, there are probably large errors in the census. Also, a census in itself does not yield the information needed to design livestock management and research programs. Still needed are surveys to determine range species composition, carrying capacity, grazing intensity, and animal health status.

All of the research and quasi-research programs in the Southern Region suffer the material constraints inherent to the Region's present status. These programs, however, are constrained to a relatively greater extent by the lack of trained technical manpower. Accurate observation, experimental design, evaluation of results, generation of information flow and feedback, and program course-correction strategy, all require a high level of formal training. Existing programs have produced results which can be used in the field as the first steps in testing the potential for improved productivity in the South. While the programs are

¹ See Table A-3, Sudan Livestock Census and Resource Inventory.

still in an embryonic (and, therefore, most adaptable) form, it is incumbent upon policymakers in the Regional Ministry of Agriculture, and upon external donors, to obtain the technical assistance necessary to coordinate the activities of the separate programs and to orient them to:

- . meeting the basic and immediate food needs of the Region;
- . developing the potential for cash crop and commercial livestock production; and
- . evaluating their programs in terms of the ecological and socioeconomic environments that determine the long term sustainability of agricultural systems.

TABLE A - 3

SUDAN LIVESTOCK CENSUS AND RESOURCE INVENTORY

Province	Cattle	Sheep	Goats	Donkeys	Camels	Pigs
Bahr el Ghazal	1,227,787	718,238	604,099	1,346	---	---
Lakes	700,719	333,130	303,946	39	---	---
W. Equatoria	229	1,269	20,055	---	---	---
E. Equatoria	797,774	914,924	---	---	---	---
Jonglei	1,404,553	174,619	460,900	3,176	---	---
Upper Nile	1,428,092	1,047,465	375,866	3,081	4,922	7,979
Total	5,559,154	3,189,545	1,764,866	7,641	4,922	7,979

Summary

The problems addressed in this paper are complex. The scale and diversity of the Southern Region's agricultural development problems make the search for solutions difficult. The major first step towards finding solutions should be a strong effort to describe and understand the natural and socioeconomic environments in which the Region's many farming systems function. Then, options for husbanding the scarce resources of the South for the promotion of agricultural development can be explored and evaluated. The Southern Manpower Development Project is conceived to provide the skilled manpower capable of examining, analyzing, and acting effectively in the Southern Region's small-farming systems.

ANNEX B

HUMAN RESOURCE DEVELOPMENT FOR THE AGRICULTURE SECTOR

Introduction

Annex A has analyzed the overall agricultural development problems of the Southern Region with a special focus on the constraints and potentials for reaching and working with the small farmer. This Annex will concentrate on human resource development for the agricultural sector.

The Southern Regional Government has recently broadened its program of agricultural development to include, in addition to the earlier emphasis on state farms, "improvement of traditional crop and livestock production through service delivery, research, and extension" to small farmers. SRG policy is to help large numbers of small crop and livestock producers in widely dispersed and ecologically diverse areas to modernize their production, and to do so rapidly. This policy directive casts a new and different light on programs of human resource development for the agricultural sector. For it is one thing to train agriculturalists to work on state farms in which the main constraints to increased production are technical and ecological, quite another to work with small farmers in which the main objective is a change in human behavior.

Principles of Training for Smallholder Development

The subject of training for agricultural development among small farmers generates great debate. However, there are, perhaps, three principles of effective training on which some consensus can normally be reached.

The first is that trainees should achieve a level of technical competence appropriate to the work they will be expected to perform. Trainees at all levels must have a sound knowledge of the improved agricultural technologies and practices they would pass on to small farmers, but the ability to handle questions of "why" as opposed to "how" will necessarily be more developed in an agronomist than in a field assistant.

A second principle is that much training should be directed at achieving an understanding of the farm management practices of small holders. Most small farmers possess an intricate knowledge of the ecological determinants of successful farming within their areas, and

132

on the basis of this knowledge, have worked out a delicately balanced system for survival. Any recommended changes in that system must be based on an understanding of how the farmer will perceive the consequences of that change. In particular, does the farmer see the probable net benefits as outweighing the risk posed by adopting the recommended technique?

Finally, change agents must be carefully selected and trained in techniques of communication with small farmers. They must be ready to learn from the farmer as well as transfer knowledge to him. And they must be sensitive to how differences in community values and community organization might change their methods of introducing and spreading ideas within the community.

Alternative Approaches to Agricultural Training

Beyond general consensus on these principles, there is little agreement on what levels and types of training are needed to reach small farmers. Besides the substantive issue of what ability of knowledge agricultural training programs should impart, disagreement occurs over who the trainees should be, how they should be taught, what jobs are most appropriate for different levels of training, what ministries should sponsor the training (Agriculture, Education, Rural Development, etc.) and so on. There is a natural tendency to regard one's own training as effective and appropriate; but to transfer that training to a foreign situation without appraisal of alternatives or local adaptation is ill-advised.

In discussions with Sudanese officials, representatives of international organizations, USAID staff, administrators and instructors at universities and training institutes, students and farmers, the design team explored the possibility of a number of approaches to agricultural training, including:

- Basic education, in which local farmer groups are encouraged and given financial support to identify their learning needs and seek out their own learning resources;
- Farmer training, in which groups of farmers are brought to a central location for short courses in specific agricultural techniques;
- Training of farmers' sons or daughters, in which groups of farmer offspring are instructed in techniques to be transferred to their parents' fields;

- Farmer-demonstrator training, in which farmers from a broad geographic zone are trained to train other farmers in specific technologies and improved practices;
- Paraprofessional training, in which farmers with a certain degree of literacy/numeracy are trained to serve as adjuncts to extension agents, veterinary assistants, etc.;
- Ruralization or Agriculturalization of Primary and Secondary School Curricula, in which primary or secondary schooling is recognized as terminal for the majority of rural students and reoriented to include training in agricultural techniques;
- On-the-Job/In-Service Training, which may consist of workshops, short courses, or project specific training for government officials, public and private sector employees who have knowledge of their field but require additional training to improve their performance or redirect their careers; and
- Formal Agricultural Training Institutions, including universities for professional and top management positions, diploma institutes for middle management and field supervisory staff, certificate institutes for field assistants and village extension staff, and vocational agricultural schools for directed training in specific technical or management tasks.

Each of these approaches has been tried in various settings in Africa. Each has a set of advantages and disadvantages and varying records of successful implementation. No two among them are mutually exclusive, but resource constraints inevitably force the planner to choose among the alternatives. The choice of which approach (or approaches) is to be followed should depend as much on the setting in which it will be applied as on a theoretical proclivity toward one or another.

In areas like the Southern Region, where the service support base is very modest and skilled manpower is in short supply, a strong prima facie case can be made for basing agricultural training on techniques of nonformal or basic education, direct farmer training, or other forms of para-professional training. Such approaches require little investment in training institutions or administration; they make optimal use of scarce resources by rapidly turning out people who can quickly utilize single factor or minimum input type packages to immediately increase productivity.

However, when examined in the light of the special conditions of the Southern Region, there are major problems with these approaches. To be effective, these approaches presuppose certain conditions:

- . that a body of knowledge exists that permits identification of constraints to increased productivity;
- . that locally-tested technologies are available to overcome these constraints;
- . that informal or aggregate evaluatory mechanisms (e.g., farmer demand for improved seed, increased corn production for a district) are sufficient and timely indicators of the relative appropriateness of technological innovations; and
- . that an adequate number of extensionists or community development workers trained in techniques of community organization and intervention exists.

In the Southern Region there is almost a complete lack of accurate basic data on agricultural production. The surveys that have been conducted have been limited in scope and conducted under conditions conducive to large errors. The basic education approach would attempt to resolve this difficulty by drawing upon the recognition by farmers of a specific locality that some of their number have knowledge or skills that could improve their own productivity. But this bootstrap approach depends not just upon locally significant variation in productivity, but also upon the ability of change agents to recognize the reasons for this variation and make farmers aware of it. Without a data base, it is extremely difficult to evaluate the conditions in which productivity increases occur; further, as indicated previously, the South has few, if any, individuals trained in the intervention techniques necessary to make this approach work.

Training of farmers, farmers' sons, or farmer demonstrators are approaches which are all heavily dependent upon proven technology for their success. There is an inherent danger in these approaches that training will consist of transfer of stereotyped production methods that may or may not be appropriate to local ecological or socioeconomic conditions. When such training is closely linked to a highly subsidized input package, adoption of the package may be due more to its price attractiveness than to its productivity increase potential. In the Southern Region the people who would participate in these types of programs would be predominantly illiterate and non-numerate and thus, unable to generate the data necessary to determine the need for, direction and rate of program adjustment to, the varied areas and farming systems of the South.

The major problem with ruralization and agriculturalization of primary and secondary curricula is that formal schools are not well adapted for the teaching of skills leading to specific jobs. Teachers are not properly trained, equipment is costly and difficult to maintain and the general attitude of a classroom is not conducive to learning "hand-on" skills. Further, students trained in technical, vocational, and agricultural skills within the formal school system emerge with at best, pre-apprentice level skills.

In evaluating the weaknesses of these approaches as applied to the Southern Region, a number of delimiting factors recur. The most obvious and pervasive is the lack of manpower itself: even self-help programs, such as certain variants of the basic education approach, require trained extensionists or change agents. Individuals with this type of training simply do not exist in the South. Another factor is the sheer lack of knowledge about what will work and what will not work in the diverse agricultural settings of the South. Little is known about the ecological and socioeconomic determinants of small farm management in the Region and few technologies have been developed and tested for local effectiveness and acceptability. Only through establishing an effective system of two-way communications with small farmers can a sound knowledge base on small farming systems be established; and this body of knowledge is required in order to evaluate the appropriateness and effectiveness of alternative technologies.

Alternative Levels of Training

In addition to pursuing questions of approach, the design team also held extended discussions with GOS and other interested personnel on appropriate levels of agricultural manpower training for the Southern Region. It was generally agreed that agricultural manpower may be grouped into four levels:

- . professionals to plan and manage research, training, and development programs;
- . middle managers and technicians capable of technical and supervisory support of extension activities and applied research;
- . extensionists capable of transferring technical knowledge to farmers and feeding back information gained from farmers; and
- . farmer/pastoralist demonstrators who can spread information and knowledge within their communities.

136

Manpower Situation At The Four Levels

137
The design team attempted to obtain information on the relative availability or scarcity of manpower at these four levels, but was only partially successful. The lack of information about the farmer/pastoralist level was not unexpected since these demonstrators, if they exist, are frequently not on the public payroll. The problems encountered in obtaining information about numbers of publicly employed agricultural personnel were illustrative of the organizational problems in the extension services.

The Ministry of Agriculture is responsible for training extension personnel. However, a complicated series of secondments and transfers have resulted in extension placements being spread among the Ministries of Agriculture, Regional Administration and Cooperatives and Rural Development, as well as the Project Development Unit (PDU) and other semi-autonomous donor schemes.¹ Job titles, moreover, are not used in a consistent fashion in the various Ministries and projects or even between departments in the same Ministry. The same job title used in different departments may refer to different jobs as well as to different levels of training or experience needed to occupy the position.

The Regional ministries, the PDU and the other donor schemes together list over 50 occupational titles. When grouped into high (administrative and professional) and middle (sub-professional and technical) levels, it may be estimated that there are about 150 filled posts in the former category, perhaps 500 in the latter.² Fewer than half of these work in agriculture per se.³ The sub-professional and technical level includes middle-level managers, technicians and extensionists. In this category, it is unlikely that more than 200 individuals occupy positions requiring actual or potential contact with farmers.

The agricultural manpower outlook for the future, given the current recruitment and training situation, is not promising. In 1976, less than 50 percent of the posts in the Ministry of Agriculture requiring baccalaureate degrees or diplomas were filled.⁴ By 1980, the ratio of

¹ The Project Development Unit is an autonomous budgetary and administrative entity created for purposes of managing part of the IBRD Southern Region Agricultural Rehabilitation Project.

² Extrapolated from Mills, op. cit., Table 1.

³ The majority of the positions are in fisheries, forestry, veterinary sciences, engineering, drafting and various categories of management.

⁴ Mills, op. cit., page 9.

TABLE B-1
 CLASSIFIED POSTS IN THE REGIONAL MINISTRY OF AGRICULTURE:
 1976 Posts and Filled Posts and Total Posts Projected
 at the End of the Six-Year Plan 1977/78 - 1982/83

Occupational Level	1976 Posts	1976 Posts Filled	Six-Year Plan Requirements to 1982/83
Administrative and Professional	100	34	183
Sub-Professional and Technical	367	150	624
Clerical	105	55	154
Total	572	239	961

Sources: L.R. Mills, 1976, Classified Manpower in Agriculture in the Southern Region; and data collected by design team March-April, 1978, Juba.

total projected MOA manpower supply to agricultural manpower requirements at the same two levels will be even lower, about 1:2.5.¹ Table B-1 shows MOA posting provisions and posts filled in 1976 and the projected MOA classified manpower needs required by the Six-Year Plan in 1982-83.

Choosing Between Levels

The available data demonstrate that there is an absolute lack of manpower within all four categories, but since resource limitations

¹ Ibid. Tables 36 and 37. In this study, Mills (page 5) sums up the relationship between the agricultural manpower situation and agricultural development as follows:

"When one examines the underutilized budget of the Southern Region it is most evident that skilled and semi-skilled manpower, rather than finance, is probably the major retarding factor in the development process of the Region. To orient the whole spectrum of development planning with regard to this problem is crucial. What is possible during the next six years or so will largely be related to the trained manpower that will be available."

138

(human, institutional and financial) preclude the possibility of massive and simultaneous training programs at all levels, the initial question becomes what level should be handled first.

139.
The design team considered the possibility of concentrating efforts at the top through training of professionals at the university and post-graduate levels. In addition to helping fill the manpower gap at the top, such an approach might provide individuals who could be used to train others. However, the social rate of return to higher education in most African countries -- including the Sudan -- compares unfavorably to the returns that can be expected to investments in training and education at lower levels. The 1976 ILO study of the Sudan found that the social rate of return to university education was only half the social rate of return to secondary education (four versus eight percent); the study concluded that Sudan's investment in higher education was already (in 1976) much higher than could be justified on economic grounds.¹

The feasibility of beginning at the other end of the scale -- with the training of farmer demonstrators -- has already been explored, and the critical constraint to the implementation of this approach was the lack of trainers, or extensionists or change agents: in short, the lack of middle-level manpower. Thus, viewed from almost any angle, it seems clear that it is the shortage in the middle that constitutes the single greatest human resource constraint in the agriculture sector.

Objectives in the Training of Middle-Level Agricultural Manpower

The great ecological and socioeconomic diversity of the farming systems in the South make it essential that agricultural personnel be given training that will enable them to:

- . understand the production environment and systems in which they are working;
- . identify potentially appropriate interventions;
- . verify the appropriateness of the selected interventions; and
- . transfer knowledge and technologies to smallholder/pastoralists.

¹ International Labor Office, Growth Employment and Equity, A Comprehensive Strategy for the Sudan, 1976, page 407. This finding was made before the opening of the University of Juba.

In order to sustain any positive effects of intervention there must also be a capacity to:

- . evaluate the degree and variation of intervention effectiveness; and
- . collect and use farmer/pastoralist feedback to redesign field activities and to orient Ministry policy and program design to field conditions.

Within each of these capabilities it is possible to identify a range of technical competence necessary to the achievement of relatively simple tasks (e.g., farmer counts, field area estimation, herd counts) or relatively more complex ones (e.g., farm labor budgets, trial lay-outs, pest population determinations, grazing intensity measurements, meteorological data collection). As tasks increase in complexity they also increase the required level of basic functional skills -- literacy, numeracy -- and the degree and facility with which such skills are integrated with disciplinary knowledge. In other words, the more complex a task is the more likely it is that the person doing the task will need skills and information that are usually obtained through a higher level of education. This difference in required skills and concomitant level of education make it possible to think in terms of subdividing the middle-level into two or more complementary levels of training.

At one level, field-oriented extensionists who have a minimal level of functional reading, writing and numeracy skills should be trained in techniques of crop and animal production, in rudimentary agricultural survey methods and in extension methodology. The environment required for such training must be oriented to the "hands-on" application of agricultural skills to field conditions with appropriate theoretical backstopping. At this level, questions of "how" take precedence over questions of "why."

At a higher level, technicians can be trained who, in addition to acquiring "hands-on" knowledge of agricultural production techniques, should also be able to interpret data and conduct evaluations of the reasons for the success or failure of a particular activity. This ability generally requires a higher level of formal education and indicates the need for more theory in the coursework at the agricultural training institution.

In the Southern Region there are only two institutions with the potential to produce extensionists with these skill requirements: the Yambio Institute for Agricultural Technicians and the Rumbek Agricultural Training Center. The Southern Manpower Development Project proposes support to both these institutions. It will also assist the Ministry of Agriculture to rationalize the relationship between these two

institutions and will draw upon the support of the College of Adult Education and Training at the University of Juba in establishing a teaching methods workshop for the staff at Yambio and Rumbek and a series of continuing education seminars for the Yambio and Rumbek graduates. This annex concludes with a discussion of each of these institutions.

Regional Ministry of Agriculture

The Six-Year Plan of Economic and Social Development (1977/78 - 1982/83) states that development programs should be oriented to:

- . equity in growth and distribution of income and services;
- . the rural population, since 90% of the population resides in the rural areas; and
- . agricultural development as the basis for economic development of the Region as a whole.

Within the agricultural sector itself the Plan places major emphasis on:

- . improvement of traditional crop and livestock production through service delivery, research, and extension;
- . increased revenue generated through limited mechanization of rice, dura, maize, oil seed, and cotton production;
- . import substitution through the establishment of state farms for coffee, tea, and tobacco production; and
- . cash crop diversification.

The top priority is development of the traditional agricultural sector, and is thus in harmony with the New Directions Mandate.

The Regional Ministry of Agriculture (MOA) has been, and will continue to be, the chief implementing agency for regional development. Since the February elections, a new Minister of Agriculture, His Excellency Sayed Benjamin Bol, has been appointed, and a reorganization of Ministry structure begun. During the design team's visit to the Southern Region, the MOA was changed from a one directorate (Director of Agriculture) to a two directorate structure (Director of Agriculture and Director of Animal Resources).¹ Few projects have as yet been affected by this structural revision since reorganization of intra-ministry lines of authority is still in a fluid state.

¹ See the MOA organizational charts: Part Four, Section C.

The operational characteristics of the Ministry of Agriculture have important implications for the agricultural development process. Disbursement of budgeted funds is particularly important. The MOA divides its financing into recurrent and development budgets. The recurrent budget supports the personnel and operating costs of the Ministry and of those projects which have been judged successful. Project costs, including salaries and operating costs for projects in the start-up or unproven stages are applied against a development budget.

The Southern Region depends on its own revenues, a central government subsidy, and external assistance to meet its budgetary needs. SRG revenues and the central government subsidy cover most of the recurrent budget, but the disbursement rate of development budget funds has generally been less than one-third of projected and approved budgetary needs. This lack of funds often affects development projects in the form of:

- . lack of administrative support;
- . delays of weeks or months in salary payments;
- . lack of transport, commodity, and housing support for field staff; and
- . heavy dependence on donor schemes for financial as well as technical support of field programs.

The Six-Year Development Plan proposes over 37 million Sudanese pounds of project activity for the Ministry of Agriculture. Before the recent Ministry reorganization, these projects were allocated to five departments. (A complete list of MOA project titles is given in Table B-2.)

Agricultural Extension

Responsibility for planning and administering agricultural extension services is presently diffused among several departments within the MOA. Logically, extension should be the responsibility of the Assistant Director for Extension who, until recently, reported to the Deputy Director of Agriculture. However, several other departments run by Deputy Directors, e.g., animal production, plant protection, and fisheries, also have responsibility for extension activities. To confuse matters further, the entire Ministry is currently undergoing a reorganization. The division of the Ministry into two directorates -- Agricultural and Animal Resources -- appears also to have placed the Departments of Extension and Agriculture on an equal footing with the Deputy (or Assistant Director) of each Department, reporting directly to the Director of Agriculture.

¹ See organization charts, Part Four, Section C.

142

TABLE B - 2
MINISTRY OF AGRICULTURE SIX-YEAR PLAN
PROJECT TITLES BY DEPARTMENT
BEFORE APRIL 1978 REORGANIZATION

Department of Agriculture

- | | |
|------------------------------------|-------------------------------|
| 1. Yambio Institute | 11. Pengko Project |
| 2. Agricultural Extension Services | 12. Jebel Lado Scheme |
| 3. Ox-Plow Extension | 13. Horticultural Development |
| 4. Horticulture Nurseries | 14. Aliab Valley Dura |
| 5. Amathadol Dura Scheme | 15. Malakal Rice |
| 6. Planning and Evaluation | 16. Pineapple Production |
| 7. Tobacco Development | 17. Plant Protection |
| 8. Aweil Rice Scheme | 18. Coffee Development |
| 9. Soil and Crop Investigations | 19. Tea Development |
| 10. Potato Project | 20. Agricultural Marketing |

Department of Forestry

- | | |
|-------------------------------|--|
| 1. Re-equip sawmills B.G.P.* | 9. Afforestation B.G.P.* |
| 2. Establish sawmills U.N.P.* | 10. Afforestation W.E.P.* |
| 3. World Food Program | 11. Afforestation Jonglei |
| 4. Re-equip sawmills E.E.P.* | 12. Afforestation and Gum Arabic U.N.P.* |
| 5. Establish sawmills W.E.P.* | 13. Species Trials |
| 6. O.D.M. Sawmill - Imatong | 14. Afforestation L.P.* |
| 7. Extension of Nurseries | 15. Afforestation O.D.M. Imatong |
| 8. Afforestation E.E.P.* | |

Fisheries Department

1. Fish Resource Development
2. Regional Training Institute
3. Fish Farming

Irrigation Department

1. Bedden Falls Study
2. Shambe Port
3. Establishment of Irrigation Department

Department of Animal Resources

- | | |
|------------------------------|---------------------------------------|
| 1. Bor - Hides and Skins | 8. Juba Poultry Farm |
| 2. L.P.* - Hides and Skins | 9. Juba Dairy Farm |
| 3. U.N.P.* - Hides and Skins | 10. Malakal Dairy |
| 4. E.E.P.* - Hides and Skins | 11. Wau Dairy |
| 5. B.G.P.* - Hides and Skins | 12. Range Survey and Extension |
| 6. W.E.P.* - Hides and Skins | 13. Strengthening Veterinary Services |
| 7. Yambio Poultry/Dairy Farm | 14. Hapoeta Sheep Breeding |
| | 15. Rumbek Ranch |

Interdepartmental Projects

1. Mongalla Agro-Industrial Complex

* B.G.P.= Bahr El Ghazal Province; U.N.P.= Upper Nile Province; E.E.P.= Eastern Equatoria Province; W.E.P.= Western Equatoria Province; L.P.= Lakes Province

143

Operational responsibility for the agricultural extension service devolves to the Assistant Commissioners for Agriculture in the six provinces. Under the Assistant Commissioners are District Inspectors, Assistant Inspectors, Agricultural Officers, Extension Officers, and Agricultural Overseers.

At present, agricultural extension personnel are assigned and used at the district and provincial levels in ways that give them few opportunities to promote and support agricultural development among small farmers. The largest number of agricultural personnel at field levels are assigned to large estate-type agro-industrial schemes or to special donor projects, such as the seed multiplication units of the World Bank's Project Development Unit. The more educated or capable individuals are assigned to teaching or training positions, or are given office jobs.¹ Even the few who are assigned to line positions in provincial or district-level field posts remain largely ineffective in the absence of direction, support, or supervision. Utilization of the available extension personnel is also constrained by lack of housing, vehicles, fuel and agricultural inputs which means that extensionists spend most of their time in the provincial capitals, making only occasional visits to farmers. These conditions tend to produce low morale and a disinclination to work in remote and isolated rural areas. Instead, they stimulate demand for additional training that will ensure career mobility: upward, in the administrative hierarchy, and away from positions in direct contact with small farmers.

The Six-Year Plan suggests a reorganization of the extension service. Senior extension officers would be posted to each of the provinces and one to the Regional Ministry. A further 22 extension officers would be allocated at the district levels. All these posts would require agricultural graduates with appropriate training for extension work. Each district extension officer would be supported by four assistants at diploma level and six extension overseers who would have primary schooling and some in-service training.

However, neither the structure nor the operations of the extension services is fixed. In discussions with Ministry officials a variety of alternatives was discussed. For example, it has been proposed that the extension service be structured around multipurpose Agricultural/Rural Development Centers modelled after six pilot Rural Development Centers being run by Norwegian Church Relief (NCR) in East Equatoria Province. The centers would be foci for service delivery as part of the Special Development Program for Depressed Areas of the Six-Year Plan. Current MOA thinking on the matter is that Yambio graduates would run

¹ See Postings of 1977 Yambio Graduates, Part Four, Section A.

the centers with the assistance of three to four Rumbek graduates. The design team visited the NCR center in Hillu. From discussions with the director and staff of the overall NCR program it appears that the multi-purpose center concept is still in embryonic form and requires more intensive analysis and testing before it can be used as a model for the extension service.

Research and Training

The Department of Research and Training in the Ministry of Agriculture has responsibility, as the name implies, for the planning, coordination, and administration of all research and training activities in the Southern Region. Recently, the Department has been split into two parts -- Research and Human Resources Development (or Training) -- although it is not clear whether these two entities are meant to be separate departments or divisions of the same department.¹ Whichever, for the moment, the entire responsibility for these two fields within the Ministry of Agriculture resides with one person, whose title is Deputy Director for Research and Training. At present, the Deputy Director has no staff, either professional or clerical. However, the 1978-79 budget submission calls for the Deputy Director to obtain two assistants.

Nominally, all research operations in the Sudan fall under the Agricultural Research Corporation. In practice, research operations in the South are usually financed and run by foreign donors.

The principal role of the SRG Department of Research and Training is to lend policy guidance to research operations and to coordinate research and training. The Department processes budgetary submissions from the various research stations for application against special development funds.

Details on the operations of research projects and research stations in the South have been presented in Annex A.

Before the disturbances, the only formal agricultural training in the South was provided by the Yambio Agricultural School, established in 1947. The school produced both junior agricultural technicians and agricultural overseers. By the time it closed down in 1955, the Yambio School had graduated 120 students.

Between 1955 and 1975, there was no formal training of any kind for agricultural personnel in the Southern Region. Late in 1975, the Yambio School re-opened a two-year diploma-level course for agricultural technicians. In November 1977 the Ox-Plow Training Center in Rumbek was

¹ Pre-election and post-election organization charts for the Ministry of Agriculture are presented in Part Four, Section C.

transformed into the Rumbek Agricultural Training Center, offering a six-month certificate-level course for extensionists or agricultural assistants. Yambio and Rumbek are, at present, the only two institutions in the Southern Region giving pre-service sub-degree level training to future agricultural technicians and extension workers. It is the intention of the Ministry of Agriculture that these two institutions should complement each other with respect to level and content of training and that they should serve the entire Region in preparing young men and women for technical and sub-professional work in agriculture.

Project Assistance

A major near-term achievement of the extension service would be the generation of a system of accurate region-wide agricultural data reporting. As discussed earlier, without this information base it is unlikely that sustainable productive interventions in the South's farming systems can be either identified or evaluated. With an improved information base, the currently available improved input "package" of seeds, tools, prophylactic and curative veterinary materials can be used to obtain a first look at the potentials and problems of increasing productivity among small farmers.

The present apportionment of extension activities among three ministries and various donor projects makes field support, information flow and program evaluation exceedingly difficult to coordinate. The Southern Manpower Development Project proposes to strengthen the capacity of the MOA to employ Yambio and Rumbek graduates in a carefully planned, centrally administered and well supported manner. The present Extension Department of the Ministry of Agriculture is in nascent form and will require assistance at the administrative level in conceiving, planning, and implementing its program.

Both the organizational and operational characteristics of an effective extension structure should be determined by the job to be done, i.e., to increase agricultural productivity.

Yambio Institute for Agricultural Technicians

The Yambio Institute for Agricultural Technicians offers two years of introductory studies in agriculture leading to the receipt of a diploma. Established in 1947, the Yambio Institute was shut down in 1955 at the beginning of the 17-year period of civil disturbances. In 1973, rehabilitation of the physical facilities of the Institute was begun with the assistance of UNDP/FAO and SIDA. Classes were started in 1975 and 29 students from the first class received their diplomas in the summer of 1977. The second class, 33 in number, will graduate in June of 1978. The current 1977-1978 first year agriculture class is

much larger, with 53 students, eight of whom are women. In addition, a forestry program consisting of 24 students was initiated for the 1977/78 school year. The MOA's target is 60 diplomates a year to work as middle management, extension supervisors, and technical assistants in agricultural and forestry projects.

147. The teaching staff of the Institute currently consists of one Southern Sudanese, who is also the Vice-Principal; eight Northern Sudanese, whose salaries are topped off through UNDP assistance; and two United Nations volunteers. Two expatriates are under recruitment. Three Southern Sudanese are currently undertaking B.Sc. studies, under UNDP fellowship, with the intention of joining the Yambio teaching staff once they graduate; one of those fellowship recipients was formerly a demonstrator (assistant teacher-diploma level) at Yambio. It is the policy of the SRG to "Southernize" the Yambio staff. The Southern Manpower Development Project will assist in this effort by offering two B.Sc. fellowships to two demonstrators who will begin work at Yambio in 1978-1979.

The Yambio curriculum is general and introductory. In outline form, it contains a good representation of the subject matter necessary for any general agriculture course:

- . plant studies; botany, propagation, agronomic crops, horticultural crops, tree crops, storage;
- . plant protection;
- . soil science;
- . animal husbandry;
- . agricultural engineering; and
- . agricultural extension and related socioeconomic studies.¹

However, little of the actual teaching within these courses is related to the agricultural environment of the South, still less to the particular problems of small farming systems. For lack of teaching materials concerning, or personal knowledge of, the agricultural problems of the South, Yambio teachers lecture mostly from their own university lecture notes. In most cases, this means notes taken at courses at the University of Khartoum. In the case of the Vice-Principal, it means lecture notes from Krasnodar University in the USSR. It should be noted that the instructors at Yambio recognize the limits of their training and are eager for assistance in curriculum reorientation and teaching methods.

¹ The full curriculum is presented in Part Four, Section A.

The Yambio curriculum was originally designed to contain 50% "theoretical" and 50% "practical" instruction. In reality it is heavily weighted toward the theoretical. Interviews with instructors and students revealed several related problems:

- . most lecture time is spent dictating notes to students who then memorize them for examinations;
- . fully half of the assigned practical periods are spent covering the theory behind the practical session;
- . practical sessions tend to be oriented to observation rather than participation because materials (seed, insect specimens, collecting equipment, soil testing kits, etc.) are in extremely short supply;
- . the school farm (500 feddans) and its equipment are underutilized as sources of practical experience for students;
- . testing, even for practical skills, is done by written examination which concentrates mostly on theory (see Figure B-1 for an example of a final examination);
- . practical periods for student extension work are carried out in the late afternoons when farmers are usually not working;
- . evaluation of student extension work is based primarily on the written logs students produce; logs contain highly speculative data and much irrelevant commentary; and
- . student trial plots on school grounds are prepared just before the rainy season; most students go on summer vacation before the trial plots are ready for harvest and, thus, have little opportunity to develop data collection and analysis skills.

It is the aim of the Southern Manpower Development Project to assist the Ministry of Agriculture and UNDP in strengthening the capacity of the Yambio Institute for Agricultural Technicians to train technicians who have the skills and capacity to understand small farming systems and apply that knowledge to technology transfer through extension.

As described in Annex A, there is a great diversity and complexity in the farming systems of the Southern Region. The graduates of Yambio will be facing the challenge, and the opportunity, of laying the informational groundwork that will enable this farming system diversity to be defined and understood. They will also be prime actors in the attempt to increase smallholder/pastoralist productivity.

FIGURE B - 1

SPECIMEN FINAL EXAMINATION
Yambio Institute Agricultural TrainingInstitute of Agriculture
Final Examination 1978
Farm Management

Class:	Second Year	Total marks:	100
Subject:	Farm Management	Pass marks:	50
Time:	Two Hours	Date:	12-4-78

1. The following paragraph has been taken from a written statement of the Vice President and President of the High Executive Council. Explain what suggestion you would make to achieve the goals outlined in this quotation:

"Agriculture is the backbone of the economy in the country, it is everything which makes life possible in the Region.. ...In short, we cannot move and have our moral and physical being without agriculture. We cannot indeed establish and maintain a variety of social prosperity and justice without agriculture."

2. Enumerate and explain the advantages of mixed farming.
3. Define soil conservation. What conservation practices would you suggest to be adopted in the Southern Region?
4. Describe the basic principles which are important for the smooth running of a cooperative society.
5. Write short notes on any four of the following:
 - a. crop rotation
 - b. supplementary enterprise
 - c. valuation of capital method
 - d. specialization vs. diversification
 - e. opportunity cost
 - f. declining balance method of depreciation
 - g. measurement of the area of a triangle and a trapezium
 - h. farm surveys vs. land surveys

Courtesy: Mr. Mobdi Nawab Khan - Farm Manager and Lecturer Farm Management
UN volunteer

The project activities in Yambio outlined in the project description are designed to develop the capacity of the Institute to produce graduates who have the functional skills needed to investigate, understand, and work in the farming systems of the Southern Region. This capacity will be developed by:

- . provision of technical assistance to orient the curriculum to the Region's farming environment;
- . provision of technical assistance to strengthen the training of women at Yambio;
- . instituting a program of in-service and continuing education integrated with the MOA and College of Adult Education and Training at the University of Juba;
- . provision of a teaching methods seminar to upgrade staff teaching ability;
- . upgrading of professional qualifications of the Yambio staff; and
- . establishment of a library and provision of complementary teaching and learning materials.

Curriculum reorientation and development will be done gradually and will depend to a large extent on the information gathered by the students themselves during their home area small farming systems data-gathering assignments. However, in preparation for these assignments, there are certain basic skill areas that need to be developed by the Yambio students.

Students entering Yambio from secondary schools have varying literacy and numeracy abilities. Yambio faculty mentioned that enumeration, simple tabulation and computation, and basic geometric calculations were often inaccurately performed. These basic skills, which are vital to further training in survey and trial methodology, data collection and analysis, basic bookkeeping, and report writing, should be given early attention in the first semester at Yambio.

Field training is vital to the transfer of skills to Yambio students. There is no way to test technical competence, the ability to translate and adopt technical knowledge to a working context, or communication ability other than in field situations. Field training sponsored by the project will occur:

during the school year on Zande smallholder fields, the school farm, and the Yambio Research Station;

- . during the December-January vacation in the students' home districts;
- . during the summer vacations on Zande fields, home areas, Yambio Research Station; and
- . during the first year of work as MOA personnel.¹

The intensive use of field training to impart functional skills is designed to produce graduates with a proven ability to understand and work in smallholder/pastoralist farming systems. Field training outside of the Yambio area is particularly important for the animal husbandry component since Yambio is located in a tsetse infested area with little or no cattle production activity.

Rumbek Agricultural Training Center

The Rumbek Center was established by the Sudan Council of Churches in 1975 to provide ox-plow training to farmers from the Rumbek area. In November 1977, the Ministry of Agriculture formally assumed responsibility for the Rumbek Center. The MOA announced that the new function of the Center would be to train secondary school leavers recruited from all six provinces in a six-month certificate course designed to prepare extensionists for direct work with traditional farmers. The Center is thus intended to complement the Yambio Institute, whose students are trained as technicians and supervisors, by becoming the Southern Region's training center for grass-roots extension personnel at the village level.

The Rumbek Center is in a state of transition. Policy and operating procedure have not been firmly established. The Ministry of Agriculture's Department of Research and Training considers the Rumbek Center's immediate objectives to be:

- . to train youth as extension workers to work with farmers;
- . to train youth in forestation to establish forest nurseries;
- . to train stockmen to improve livestock production; and
- . to train youth in ox-plowing.

¹ See Part Four, Section A, for the proposed schedule for student participation in Yambio Institute Field Trials and Farming Systems Data Collection.

During two six-month courses a year the MOA proposes that the Center teach up to 60 trainees:

- . how to design demonstration and trial plots;
- . how to conduct farm surveys and social surveys;
- . soil conservation techniques;
- . farm management and how to keep simple accounts and records;
- . principles of crop production, forestry management, and livestock improvement;
- . the use of ox-plowing and other draft animal tools as warranted by the agricultural situation; and
- . extension methods.

These objectives are supposed to be met by a curriculum which is literally a carbon copy of the Yambio Institute's curriculum. Neither staff nor students have the background to handle this curriculum.

While students are supposed to be junior secondary leavers, only about half of the present class completed junior secondary school, and some have only two to four years of primary schooling. Consequently, their capacity to absorb anything resembling the Yambio curriculum is very low. Four of the first group of 38 students at the Center cannot speak English, the language of instruction. There is a great need to improve the literacy and numeracy skills of the students. For example, in one class on field measurement observed by the design team, the majority did not understand the concept of the fraction.

The instructors at Rumbek Center are all diplomates. The teaching staff numbers eight: two, including one American volunteer, are provided by the Sudan Council of Churches; two are assigned to the Center by the MOA; two are seconded part-time to the Center from the Lakes Province Agricultural office; and one gives lectures when he can spare time from his Project Development Unit position.¹

Teaching assignments are not clearly defined. Ad hoc arrangements based on the instructors' time availability and feelings of personal competence have determined course content. Lectures consist mainly of notes dictated to students. Four of the instructors have strong ox-plow training backgrounds and this practical component of the curriculum is

¹ See Part Four, Section B, for the Rumbek staffing pattern.

152

153. rather well taught. Other practical training is limited by the scheduling of the six-month course. In its baptismal session, the first three months (January-March) took place during the dry season when land preparation is the only farming activity engaged in. The Dinka cattle herds are in transit during this time, from their dry season pasture in the flood plains to their cattle camps in the toich area. Assuming sufficient rains fall in mid-April, there are 2½ months available for crop trials and observations and extension work with Dinka cultivators/pastoralists. Actual time available is more likely to be two months or less since field training would be suspended for final examinations. The second six-month course is due to begin in May and end in November. This schedule falls more in harmony with the area's cropping cycle and herd movements.

As the Rumbek graduates are supposed to serve under the supervision of Yambio graduates, it is important that they develop complementary skills. The Rumbek graduates will be the prime contact with farmers and the enumerator base for all survey work. It is suggested that with these functions in mind USAID assistance can best be rendered in the form of technical assistance and support to:

- . provide assistance to the Center Director in planning and management of the Center;
- . strengthen and make appropriate to the needs of small farmers and pastoralists the core training curriculum for entering students;
- . work with the Center staff and MOA, Lakes Province, to organize and support a program of field training for Rumbek students which will provide extension services to the areas surrounding Rumbek; and
- . evaluate the results of field training and extension and, working with the proposed Ministry of Agriculture technical assistance team, reorient and improve the Center's recruitment criteria, its curriculum, and its overall approach to the training of village-level extensionists.

At the end of classroom and field training the Rumbek certificate holders should have:

- . basic knowledge of the farming environment;
- . crop general and crop specific practices ability;
- . ability to evaluate animal health status and to carry out simple prophylactic and curative treatments;

- basic mathematic and literacy skills that will enable them to undertake field and crop surveys, inventory, and simple bookkeeping; and

ability to use extension techniques in the smallholder/pastoralist context.

The College of Adult Education and Training

The Act under which the University of Juba was founded states that the University will involve itself closely with the development of the Southern Region. A particular charge is to assist in providing the balance of skilled manpower at different levels best suited to the utilization of the Region's natural resources. In establishing the University in 1977, the GOS was acutely aware that normal educational opportunities were not available in the South for a period of almost 20 years. This created, in effect, an entire generation in need of special education and training attention. For these reasons, the College of Adult Education and Training (CAET) has become one of the four constituent colleges of the University of Juba.

CAET is divided into four departments. One of these, the Department of Undergraduate Studies, prepares administrators and professionals for careers in adult education and community development. The other three -- Vocational Training, In-Service Training, and Extra-Mural Studies -- are directed specifically at adult out-of-school training programs. In these latter three departments, courses are aimed at transforming human opportunities within a particular setting, at rectifying the shortcomings of the existing education system, or at extending further learning opportunities through adult life. Courses may be short or long, award-bearing or not. In short, these departments are set up to provide a flexible response to the developmental learning needs of the adult population of the Southern Region.

One of the main functions of the CAET is in-service training. The Department of In-Service Training is set up specifically to give tailor-made courses to government agencies. It is, therefore, this Department that will be the main cooperating agency in organizing and institutionalizing the continuing education program for agricultural technicians and extensionists as proposed in this project.

Although CAET has a small staff of its own, the instructors that it uses for its adult education courses are most often drawn from other sources. These other sources might include the teaching staff of other

The others are the College of Natural Resources and Environmental Studies, the College of Education, and the College of Social and Economic Studies.

151

155
University Colleges or other teaching institutions in the South, professionals from various government ministries, or simply private citizens with a particular expertise. Thus, CAET acts more as a broker or organizer of education than as a teaching force itself. It functions mainly to identify the learning needs of a particular group and to help that group find a learning resource to fill that need. This approach is well-suited to the continuing education program of the Southern Manpower Development Project since it is anticipated the learning needs of the agricultural personnel in the South will be as multiple and diverse as the socioeconomic and ecological work settings which will determine them. CAET's flexible response capability will also be an asset in organizing and preparing the teaching methodology courses proposed in the project since, ideally, the instructors for these courses should be from different subject-area fields in order to tailor their courses to a particular teacher audience.

ANNEX C

SOCIAL SOUNDNESS ANALYSIS

Introduction

157
The nature of the Southern Manpower Development Project calls for a broad perspective on "social soundness" issues. The project is designed to serve a vast and diverse area in one of the world's least developed countries. Its target population, in the most meaningful sense, is the entire rural population of the Southern Region. The immediate objective is strengthening human resource capabilities within the agricultural sector. However, in the project design agricultural manpower development is conceived as a means to an end (increased productivity and income among small farmers) rather than an end in itself.

These features of the project raise several complex questions regarding its probable impact on social and economic development in the Southern Sudan. In the short term -- within the life of the project itself -- the tangible impact on the rural population at large will be modest. The decision to focus initially on the human resource problem was based on the design team's conclusion that this is essential to the success of longer-term efforts.

The history of agricultural extension programs in Africa contains comparatively few success stories, and numerous instances in which failure could largely be attributed to socio-cultural factors. Examination of these factors suggests that many are not unique to specific cultural settings, but are built in to formal extension efforts wherever they are undertaken: e.g., poor motivation of educated youth to work directly with small farmers; disinclination on the part of farmers themselves to heed the advice of young, newly trained extensionists, and an almost total failure to establish lines of communication with women, who are key participants in agricultural labor and in household decisionmaking.

The design of the Southern Manpower Development Project has been shaped by an awareness of these factors and by a sensitivity to the numerous unknowns in the project environment. The socio-cultural feasibility of the proposed activities is not taken for granted. Rather, the project has been designed with a healthy appreciation for the numerous pitfalls and problems of extension work and extension training. The design does not presume an intimate knowledge of the social and cultural terrain in which project activities will occur. No such knowledge exists for the Southern Region as a whole, or even for individual ethnic groups within the Region. The premise of the design is that as particular socio-cultural "barriers" are identified empirically, the training and utilization of agricultural manpower can be adjusted so as to overcome them.

This paper outlines the major issues as addressed in the project design. Resolution of the issues will be sought during project implementation. To set the stage for this discussion, the main features of the Southern Region are briefly described in the following section.

Background and Setting

159
Viewed as a whole, the Southern Region presents striking contrasts with the northern areas of the Sudan. Its people have strong ethnic, cultural and linguistic ties with groups in the adjoining sub-Saharan African countries. They have been only marginally affected by the Islamic and Arab influences that have shaped northern Sudanese history, culture and social institutions. There are enormous disparities, too, in levels of prosperity and economic development between the North and the South. These were a major cause of the severe civil disturbances that ravaged the South between 1955 and 1972, the effect of which was to further retard the pace of development in the Region. In the wake of the political settlement which terminated the disturbances, a general consensus has emerged -- among international donors as well as Government of Sudan policymakers -- regarding the need for a distinctive development strategy to tackle the unique problems that confront the Southern Region.¹

In working out the details of this strategy, particularly for the agricultural sector, development planners and practitioners must come to terms with the internal diversity of the Region. Broad racial and linguistic classifications (e.g., "Negroid", "Nilotic") are sometimes used to distinguish the Southern peoples from their counterparts in the North. In the same vein, agriculture in the South is usually characterized as "traditional" and the constituent farming systems are labelled as "semi-nomadic," "shifting cultivation," etc. Inevitably, however, these generalizations are superficial and convey an impression of uniformity and homogeneity which is at variance with the facts.²

Ethnography and Social Change

There are inherent problems in any attempt to generalize about the Southern Sudan and the people who live there. The ethnographic literature on the Region is fairly extensive, but contains few contemporary studies; the majority of the published monographs are based on field work carried out at least 25 years ago -- in other words, before the Sudan gained independence, and before the outbreak of the civil war.

¹ The rationale for such a strategy is clearly spelled out in Chapter 15 of the 1976 ILO report entitled Growth, Employment and Equity: A Strategy for the Sudan.

² A discussion of the Region's farming systems is contained in Annex A.

Several of these ethnographic studies are widely regarded as classics in the development of anthropology as a social science. The Nuer and Azande, for example, are probably among the best known of all African peoples, due to the pioneering field work and prolific writing of Evans-Pritchard.¹ The major monographs were based on long periods of field research, and contain a wealth of detail on kinship and social structure, indigenous political institutions, religious beliefs and customary law. They also contain descriptions of economic life, based on participant observation and systematic inquiry, in some instances supported with extensive quantitative data.

Despite this wealth of information, a major limitation of these early studies -- conducted in a period when British colonial administration was imposed (sometimes forcibly) on the peoples of the Southern Sudan -- was their failure to explain or even acknowledge processes of social and economic change. The "tribes" of the South were generally represented as stable, smoothly functioning systems with self-regulating social and political institutions. The "ethnographic present" used in these descriptions conveyed the impression that these systems were essentially static and impervious to change. In the real world, social and political organization rarely conforms to abstract theoretical models. It is unlikely that ethnic boundaries were ever as clear-cut as the early anthropological studies suggest. Now, in the aftermath of a prolonged conflict -- during which hundreds of thousands of people were displaced and many of them forced to seek refuge across international boundaries -- the societies of the Southern Region are best understood as open systems, rather than neatly bounded "tribal" units.

Demographic Considerations

Settlement patterns have been shaped to a significant degree by ecological adaptations and the nature of the interface between pastoralism and cultivation. Exclusive dependence on cultivation is limited to the tsetse-infested areas, while exclusive dependence on pastoralism (of which "nomadism" is one variant) is virtually unknown in the Southern Region.

Year-round residence at one site by all members of the domestic unit is unusual in situations where cattle must be driven to pasture during the dry season. Among the Jinka and Nuer, for example, several members of the domestic group -- particularly young men -- spend several months of the year in cattle camps, which are moved from time to time as water and grazing needs dictate. Other members of the group remain at a more or less permanent homestead site where dura (sorghum) and other staple crops are grown during the wet months of the year.

¹ See the Bibliography in Part Four of this Project Paper.

In the "green belt" areas where tsetse-infestation precludes cattle husbandry, settlement patterns tend to be more firmly rooted. The composition and density of settlements, however, varies considerably among and even within ethnic groups. Among the Azande, the norm is for each nuclear family to establish itself in an independent homestead, often several kilometers away from the homes of close relatives; one result is that each such family must usually be self-sufficient in terms of agricultural labor. Among the Acholi, on the other hand, the settlement pattern traditionally consisted of localized clan segments, each composed of homesteads headed by men tracing descent from a common ancestor.

In many localities, postwar settlement patterns appear to differ significantly from the prewar situation, although no detailed studies have been made of this subject. The overall impression is that individual mobility and autonomy have increased, as a result of the displacement and forced evacuation that occurred. In Acholi, the local communities reconstituted after 1972 were reported to be more heterogeneous in kinship terms than those that existed in the past.¹ Among those groups involved with pastoralism, generally more mobile to begin with, the tendency towards diffusion and realignments of settlement patterns has probably been even more pronounced.

These considerations make it very difficult to generalize about social and political organization at the local level, at least until detailed micro-studies are carried out. These are major questions bearing on the planning of an intervention strategy in agriculture -- e.g., how groups are formed, how leadership is exercised, how formal and informal decisionmaking processes operate -- that need to be answered in situation-specific terms. Sweeping judgments about "traditional" social systems are clearly inappropriate in the postwar context.

Estimates of population size for the major Southern groups should be treated with considerable caution. Current population estimates for the Region as a whole vary widely, with most falling in the range between 3.5 and 4.5 million. The variation reflects differences of opinion regarding the rate of population growth during the past two decades and the demographic impact of the civil war. The 1956 census recorded a regional population of 2.8 million. A census undertaken in 1973 (one year after the end of the war) reported virtually no increase in the latter figure, but this was generally regarded as an underestimate.² Whatever the exact population figure, it may be safely concluded that overall population density in a Region which is territorially larger than France is quite low.

¹ G. Haaland, et al., "Report of the NCR Socio-Economic Project", Torit, 1977.

² L. R. Mills, "Towards a Study of Population and Manpower in the Southern Sudan," 1975, page 8.

Estimates of the sizes of the major ethnic groups in the South are even more speculative. Table C-1 shows the estimated populations for the principal groups at the time of the 1956 census. The differential impact of the disturbances within the Region makes it exceedingly difficult to generalize about rates of population growth. However, it is probable that the relative magnitudes have not changed markedly. The Dinka, for example, are still believed to constitute approximately 40 percent of the total population of the South.

The larger groups in the South, notably the Dinka, Nuer and Azande, are known to have assimilated large numbers of people over the past several centuries. Indeed, the history of the Dinka and Nuer (who occupy the same general ecological zone, and practice similar modes of subsistence) is so closely interwoven that the two cannot always be distinguished. The Atuot, for example, are a group living to the northeast of Rumbek who consider themselves "Dinka" and are regarded as such by their Dinka neighbors, yet speak a Nuer dialect.

The fluidity of the situation is even greater in the case of those ethnic groups that are divided by international boundaries. Azande live in Zaire and the Central African Empire, as well as Sudan; Kakwa, Madi and other Bari-speakers are found on both sides of the Sudan-Uganda border; and Anuak live on both sides of the Sudan-Ethiopia border. Among these groups, shifts of homesteads and migrations of family groups have traditionally occurred within the recognized "homeland", with little or no regard for international boundaries. During the disturbances, the volume of such movements greatly increased, but these were mostly of a temporary nature, the vast majority of refugees were reported to have re-entered the Southern Sudan within one or two years after the end of the civil war.

Social Dimensions of the Proposed Project

The preceding discussion highlighted some of the problems that arise from any attempt to provide a superficial ethnographic survey of the Southern Region. While static descriptions of the major groups may be obtained from published sources (most of which are now dated), there is a serious lack of contemporary data which would illuminate the dynamics of social and political organization. The program of socioeconomic research to be initiated under the project will attack this problem.

Field observations and interview data gathered by members of the design team suggested a number of specific topics for in-depth study. Several of these are examined in the accompanying technical paper on agriculture. For the purpose of assessing the social dimensions of the project design, five general questions are identified and discussed below.

162
-291

TABLE C-- 1
MAJOR ETHNIC GROUPS OF SOUTHERN SUDAN^a

<u>Category</u>	<u>Estimated Population (1956 Census)</u>	<u>Principal Location^b (by Province)</u>
Dinka	1,152,000	Lakes, Bahr el Ghazal
Nuer	460,000	Jonglei, Upper Nile
Shilluk	100,000	Upper Nile
Bari ^c	211,000	Eastern Equatoria
Lotuko	116,000	Eastern Equatoria
Toposa	120,000	Eastern Equatoria
Didinga	51,000	Eastern Equatoria
Azande	212,000	Western Equatoria
Moru	110,000	Western Equatoria
Bongo and Baka	47,000	Western Equatoria Bahr el Ghazal
Ndogo	71,000	Bahr el Ghazal
Other	133,000	-----
TOTAL	<u>2,783,000</u>	

^aAdapted from the Area Handbook for the Democratic Republic of Sudan, revised edition, 1973, p. 74.

^bThe listing conforms to the recent division of the three original Southern provinces into six.

^cIncludes the Kakwa, Kuku, Mandari, Madi, Nyangbara, Fejulu, and Bari, whose languages and cultural institutions are closely related.

1. What kinds of agricultural manpower are needed in order to develop a system capable of delivering benefits to small farmers?

The Regional Ministry of Agriculture is confronted with serious shortages of trained manpower at every level: many classified positions exist only on paper, and are not likely to be filled within the foreseeable future.¹ In these circumstances, any investment in training poses difficult choices. One of the most critical involves a decision on what kinds of manpower need to be trained first.

This project supports the MOA decision to concentrate initially on middle-level agricultural manpower development, with Yambio and Rumbek designated as the institutions for training technicians and extension agents, respectively. The economic analysis contained in the Project Paper evaluates the various options and explains the rationale behind this decision in terms of cost-effectiveness.

The question also has an important sociological dimension, insofar as it affects the communication process between technical specialists and policymakers on the one hand, and the target population of small farmers and pastoralists on the other. The long-term success or failure of efforts to raise productivity and incomes will hinge on this communication process. Given the enormous gaps in the available data on agricultural production levels, yields, and farm management strategies within the diverse farming systems of the region, it is clear that information must flow in both directions. But the channels of communication needed to support this information flow have not yet been established.

In an area development project focusing on a discrete population within a single ecological zone, the first priority in initiating this communication process might be to recruit and train farmer/demonstrators or paratechnicians from among the target population. In a typical situation, an area development project will have been designed to impact on one basic farming system, or perhaps several variants of a particular system. Under such conditions, the immediate involvement of farmers familiar with that system offers the potential for rapid assimilation of new knowledge and adaptive field trials of new inputs and techniques.

The situation in the Southern Sudan is considerably more complex, however, since the MOA must plan for the long-term development of six provinces which contain a great diversity of ecological zones and farming systems. Eventually, area development projects may be

¹ See Annex B for details.

164

designed and implemented in high-potential zones, and these may be based on direct participation by small farmers who are trained in techniques of knowledge transfer. Very little is known at present about the dynamics of community organization in the various societies of the South. As knowledge of this subject improves, a range of different intervention strategies (rather than one uniform strategy) can be defined to fit specific local circumstances.

165
Taken together, these factors suggest that an initial concentration on middle-level manpower makes sense in sociological terms, to the degree that it lays the groundwork for sustained small farmer involvement in the medium and long term. If this potential is to be realized, however, the larger numbers of technicians and extension agents must actually be posted to work in the field, and their functions and job descriptions must be defined much more clearly. More rational utilization of trained manpower by the MOA is intended to be one of the major outputs of the project: it will be a special concern of the two technical advisors based in Juba.¹

2. From what sources should middle-level agricultural personnel be recruited and trained?

The resolution of this issue will depend on careful evaluation of the MOA's present practice, which is to recruit senior secondary school-leavers for training as technicians, and junior secondary school-leavers for training as extensionists.² The assumption underlying the present policy is that a secondary school education provides the needed foundation for acquiring the technical skills and knowledge that will be transferred to small farmers. It is also assumed (at least implicitly) that secondary school-leavers can be motivated to pursue professional careers involving assignments in remote, underdeveloped rural areas.

Experience in other developing countries, especially in Africa, suggests that these assumptions should not be accepted uncritically. The socialization process which secondary school students have undergone through many years spent in academically-oriented institutions tends to create expectations (or at least aspirations) of salaried employment in "white-collar" jobs. There are comparatively few

¹ Other dimensions of this problem are discussed below in the analysis of question 5.

² Most of the trainees currently enrolled at Yambio possess the requisite qualification, though many were educated outside the Sudan during the period of the civil disturbances. At Rumbek, however, many of the present group of trainees have not completed junior secondary school; and several have had only two or three years of primary schooling.

incentives to attract members of the tiny educated minority to careers in agriculture or to sustain them once they are in it.¹

Discussions with trainees at both Yambio and Rumbek indicated that almost all hoped to obtain additional qualifications beyond the diploma or certificate level. (Many at Yambio expressed the desire to proceed to a B.Sc. course, while Rumbek trainees voiced an interest in continuing their training at Yambio.) While these hopes may not be realized, they reveal a concern with upward mobility and a general disinclination to undertake or stick with the work (direct involvement with small farmers) for which they are supposedly being trained.

These "warning signals" have serious implications for the Ministry's stated aim of fielding large numbers of extension personnel who will work directly with small farmers. The goals and motivations of those currently in training appear to be poorly matched with MOA plans to expand coverage of the remote and underdeveloped "depressed areas".

During the life of the project, it may prove appropriate to examine and test various alternatives to the current recruitment policy; the principal options are spelled out in Annex B. Sufficient flexibility appears to exist within the Rumbek component for testing alternative approaches (e.g., training farmer-demonstrators or paratechnicians) if the MOA decides to do so. On another front, the technicians to be posted in Juba will work with MOA officials to devise a system of incentives and rewards that might increase the attractiveness of a career in agricultural extension.

3. What role should women play within the overall agricultural development program of the Southern Region?

Throughout the Region, women perform a wide range of tasks in the production, processing and marketing of agricultural crops, and in day-to-day farm management and family decisionmaking. In the design team's interviews with Kakwa families near Yei, for example, women proved more knowledgeable than men on certain details of crop production. Among the Toposa, women are exclusively responsible for the cultivation of dura (sorghum), which is the only crop grown by most families.²

¹ Statistically, a Southern Sudanese with a senior secondary school must be viewed (and probably views himself) as a member of the "educated elite" for he has attained a higher level of schooling than 95 to 99 percent of his age group.

² Haaland, op. cit.

166

These findings, which have their parallel among many other groups in the South and elsewhere in Africa, indicate that women constitute a critical element within the rural population targeted for development assistance.

691
The experience of conventional extension programs in reaching rural women has been generally disappointing. Such programs tend to be managed and staffed almost exclusively by men, who are much more likely to interact with other men than with women, and are often unable to contact married women due to social and cultural restrictions. Where women are trained for careers in rural development, their job descriptions are usually limited to home economics with little or no scope for agricultural extension work.

In the past two years, the MOA has taken tentative steps to recruit and train women professionals: women are now included in the Yambio course (there are eight in the current first-year class), but as yet there is no clear definition of their long-term career roles within the Ministry's overall program. The lone woman among the 1977 Yambio graduates was assigned to work as a nutritionist at Yei, although the MOA has no formally constituted nutrition program and Yambio itself has almost no course work in nutrition. While at Yambio, women trainees follow the same curriculum as men, although they are not likely to work as agricultural technicians after they graduate.

To help resolve these contradictions, the project will provide a women's extension/development specialist, initially through short-term assistance,¹ and then on a continuing basis through a qualified woman recruited locally. The first step in this assignment will involve measures to improve the knowledge base on the participation of women in the rural economy. The data collection and survey efforts to be organized within the Yambio component will include one thrust specifically directed at women, utilizing the women trainees at the Institute. This activity will generate material that can be directly incorporated into the core curriculum: both in general courses -- since both men and women working in the agricultural sector need a better understanding of women's roles -- and in specific courses on nutrition, household decisionmaking, crop processing and other subjects of particular concern to women.

Equally important will be the project's assistance to the MOA in rationalizing the overall position of women professionals within the Ministry's program. If women are to serve different roles than technicians, then roles need to be much more clearly defined. The design

¹ Ideally provided by AID's Women in Development office.

team felt, however, that both nutrition and home economics per se were rather narrowly defined vocations, in relation to the breadth of involvement by women in agriculture. Through their access to the large audience of rural women, trained women professionals have the potential to impact directly on production, as well as on the preparation of food and management of the household.

The provision of an integrated team within the framework of the project should contribute to the resolution of these outstanding issues. Specifically, the experience gained at Yambio will be communicated directly to the MOA and will provide a useful guideline for elaboration of policy in this critical area.

4. What skills do agricultural technicians and extension agents need to work effectively with small farmers and pastoralists in the Southern Region?

As explained in Part I, one output of the project will be a substantial improvement in knowledge of the technical and socioeconomic features of farming systems in the Southern Region. Middle-level agricultural personnel require a more thorough and detailed understanding of the environment in which they are destined to work than can now be acquired through existing curricula at the two institutions. The period of time allotted for formal training (especially at Rumbek, where the entire training course is scheduled to last only six months) places a premium on instruction which has immediate relevance to conditions in the South.

Acquiring a basic technical competence is only the first stage in this training process, however. Beyond this stage, two types of skills can be identified which are critical to the performance of technicians and extension agents, respectively:

(a) The technicians' place in the chain of communication demands a problem-solving capacity: that is, the ability to formulate technical solutions that are appropriate to specific farming systems. This in turn requires the ability to diagnose key constraints within a given farming system; to select potentially promising interventions; to test each such intervention and evaluate the results; and on that basis, to recommend the adoption of proven interventions by farmers and/or pastoralists in the particular farming system.

(b) The significance of the extension agent's role, on the other hand, depends on communication skills which have been adapted to specific patterns of authority, social structure and community organization. In his interaction with members of a given community, the extension agent must be concerned more with how particular innovations and techniques are applied and how ideas can be introduced and spread within a community than with questions of why the particular technology or intervention technique is appropriate.

In this sense, the two roles are complementary: without the problem-solving skills of the technician to back him up, the extensionist would be "empty-handed" in terms of his ability to assist small farmers; similarly, the technician's solutions to farmers' problems are of little or no value if no one can be persuaded to adopt them.

169
It will obviously take many years to establish and fully staff a system in which middle-level personnel consistently perform their designated roles. Within the life of the proposed project, however, it should be possible to reorient the MOA's training program towards this long-term objective. Increased emphasis will be given to practical field experience in the courses at both Yambio and Rumbek, with specific inputs from the project to initiate these activities. The content of these activities (adaptive field trails at Yambio, and direct extension activities at Rumbek) will be tailored to the particular skills that the graduates of each institution will need when they are assigned to work in the field.

The project design team recognized that these skills need to be continuously refined and upgraded, and that an in-service training capacity should be developed to support middle-level agricultural personnel over the course of their professional careers. The project therefore includes specific inputs directed towards creating this capacity within the MOA and the College of Adult Education and Training at the University of Juba.

5. What measures can be taken to ensure the widest possible spread of benefits from the project?

The SRG is formally committed, through the Six-Year Plan for the period 1978-83, to a policy of equitable development for all areas within the Region and all groups within the population. Obviously, the development of a capacity to fulfill this commitment is a long-term proposition. The vastness of the Region, the inaccessibility of many areas within it, the range and magnitude of the constraints to rapid economic growth, and the very low density of human settlement all pose major obstacles to an even distribution of services. These problems are aggravated by the absolute scarcity of trained manpower within the MOA and all other ministries of the SRG.

Against this background, the Southern Manpower Development Project is designed to strengthen the MOA's ability to serve the entire South. Project-supported activities at Rumbek, though modest in scale, will assist the MOA in initiating direct assistance to farmers and pastoralists in one of the "depressed areas" targeted for special attention under the Six-Year Plan. MOA personnel assigned to Lakes Province will be directly involved in supervision and implementation of the field

training program. The Yambio component will also provide a direct stimulus to MOA activities in an area where no effective extension program presently exists.

The magnitude of inputs and outputs in these direct-impact activities will be very small, in comparison with the level of assistance provided in many area development projects. The comparison is misleading, however, since the main thrust of the Southern Manpower Development Project is in the domain of human resource development. Future USAID involvement in area development projects in the South -- which the SRG has said it would welcome -- is certainly possible. But the conceptual basis of the present project is that middle-level manpower constraints need to be resolved first, to lay the groundwork for more ambitious direct-impact projects.

It should also be pointed out that the Yambio and Rumbek field training activities represent a departure from the systems used in other donor-assisted projects. To date, linkages between these projects and MOA field staff have been weak or nonexistent, and involvement of Sudanese counterpart staff in management and decisionmaking has been minimal. The Southern Manpower Development Project will work through existing MOA institutions and through an existing MOA administrative and extension structure. Thus, even though the scale of "outreach" activities planned for Yambio and Rumbek is modest, the approach being taken is sound from a developmental viewpoint.

Within the MOA in Juba, the project's technical advisors will also help to rationalize the placement of agricultural personnel, with particular attention to assignment in the "depressed areas" which have been poorly served or neglected until recently. One issue to be explored is the advisability of assigning personnel to work in their home areas after training. In the more remote and inaccessible parts of the Region, at least, this policy might provide important incentives for sustained job performance. Under the existing system (which conforms to Government of Sudan policy directives), MOA employees are usually assigned to work outside their home areas. Whether or not this practice actually reduces conflicts of interest and loyalties (as it is intended to do) is only one among several considerations to be weighed in evaluating strategies for utilizing scarce manpower.

Summary

The questions reviewed in this paper are complex, and the analysis underlines the fact that the problems of agricultural development in the South are not susceptible to a "quick-fix" approach. A vast information vacuum needs to be filled before proven interventions can be identified, tested and introduced on a scale wide enough to significantly

170

raise productivity and incomes. The design of the Southern Manpower Development Project has isolated several key social impact issues that will form important elements in the evaluation of the implementation experience. Once these issues have been systematically resolved, priorities for a more extensive and longer-term program of AID-funded development assistance will come into sharper focus.

PART FOUR

CHARTS, LISTS, FIGURES AND TABLES

175

SECTION A

YAMBIO INSTITUTE FOR
AGRICULTURAL TECHNICIANS

A - 1

YAMBIO INSTITUTE FOR AGRICULTURAL TECHNICIANS
STAFFING PATTERNTEACHING STAFFSudanese

Sayed Isaac Manyeun, Vice Principal and lecturer in Agronomy
Dr. Ali Daymar Mohammadein, lecturer in Animal Husbandry
Sayed Mirghani Maatoug, lecturer in Extension
Sayed Ibrahim Abdullah, lecturer in Agricultural Engineering
Sayed Ibrahim Bashir Shaygoog, lecturer in Soil Science and
Agronomy
Sayed Eluzai Ginaba, lecturer in Forestry
Sayed Shams el Din, lecturer in Horticulture
Sayed Yahia el Deel, lecturer in Forestry
Sayed Awad Mohammed, lecturer in Forestry

International

Mr. T.M.S. Cunliffe, Project Manager
Mr. Birger Hatlebrette, Mechanical Supervisor
Mr. Newab Khan, Farm Manager and lecturer Farm Management
Mr. Ronald van Nijnanten, lecturer Entomology and Plant
Protection

Under Recruitment

Mr. Prattley, Manager for Animal Husbandry
Mrs. Prattley, Nurse

176

ADMINISTRATIVE STAFF

Mr. Isaac Lurungwa Bishop, Head Clerk
Mr. Peter Juma Mukasi, Bookkeeper
Mrs. Zarufa Juma Othoniel, Typist
Mrs. Charity Isaac Elias, Typist
Mr. Andrew Ysuaac, Despatch Clerk
Mr. Godfrey Manzuru, Storekeeper
Mr. Francis Ataba, Technical Storekeeper
Mr. Salathiel Elikana, Catering Officer
Mr. Salathiel Ibrahim, Librarian

HEADS OF SECTIONS

Mr. Philip Juma, Field Overseer
Mr. Elisama Mairo, Field Headman
Mr. Njale Algiab, Head Mechanic
Mr. Didi Dada, Head Driver
Mr. Levi Paul, Head Carpenter
Mr. Enosa Manzigo, Head Builder
Mr. Ezekia Manzigo, Head Painter
Mr. Ferdinande Misigo, Head Plumber
Mr. Ali Koroni, Head Electrician
Mr. Jean Wani, Head Blacksmith
Mr. Tiote Okelo, Nurse in Charge
Mr. Daudi Wbati, Head Cook
Mr. Edward Saderaka, Head Guard

A - 2

YAMBIO INSTITUTE FOR AGRICULTURAL TECHNICIANS
BUDGET FIGURES

In its first year, 1976-77, and during the current year 1977-78, the operating costs of Yambio have been funded out of the MOA development budget. As shown below there was a large gap between the amount that was budgeted and approved for 1976/77 and the amount actually disbursed and spent. For the current year, 1977-78, only budgeted/ approved figures were available.

Budget Figures 1976/77

	LS
Amount Budgeted/Approved	131,192
Amount Spent	38,985

Approved Budget 1977/78

	LS
Building and Construction	25,000
Machinery and Equipment	18,000
Fuel and Lubricants	3,000
Wages and Salaries	22,994
Bursaries, catering, etc.	53,000
Other	19,000
Total	140,994

For 1978/79, the proposed Yambio budget will be funded from the MOA recurrent budget, rather than the development budget, with a concomitant increase in the probability that actual expenditures will come closer to proposed expenditures.

Proposed Budget 1978/79
Operating Expenses

	LS
Salaries	65,706
Departmental Services	1,700
Feeding and Transport of Students	23,960
Student Bursaries	6,400
Student Practical Work Payments	4,800
Student Field Tours	1,500
Medical Supplies	1,280
Hand Tools	250
Insecticides	350
Vegetable and Farm Seeds	250
Publications	---
Dorm & Kitchen Equipment (Replacements)	500
Building Maintenance	3,000
Stationery and School Supplies	2,000
Total	111,696

178

Proposed 1978/79 MOA Budget (continued)

<u>Capital Expenses</u>		<u>LS</u>
Building and Construction		<u>16,000</u>
Machinery and Equipment		20,000
Vehicles		12,000
Fuel and Lubricants		<u>7,000</u>
	Total	<u>55,000</u>

179

281

ORGANIZATIONAL DIAGRAM

YAMBIO INSTITUTE FOR AGRICULTURAL TECHNICIANS 1978 APRIL

BOARD OF MANAGEMENT

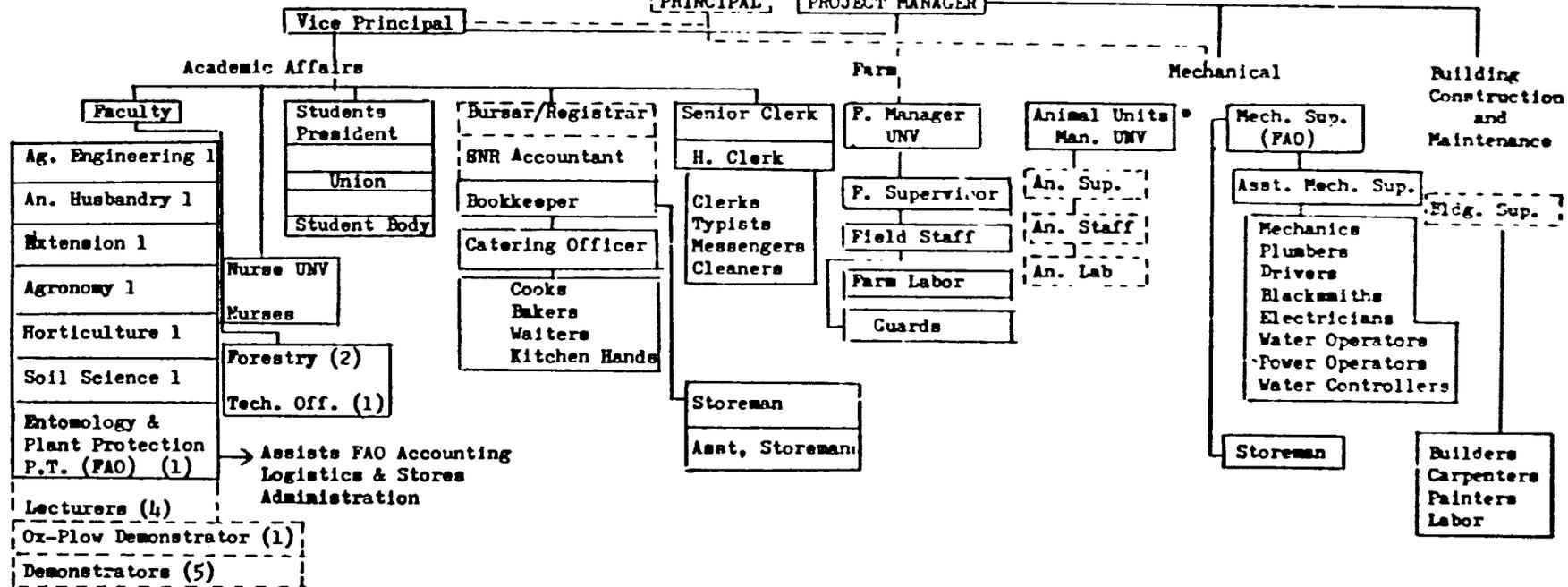
MINISTER

DIRECTOR

DEP. DIR. RES. & TRAINING

PRINCIPAL

PROJECT MANAGER



*Under recruitment

A - 4

CURRICULUM
YAMBIO INSTITUTE FOR AGRICULTURAL TECHNICIANS

Group A: Agricultural Extension and Related Socioeconomic Studies

1. Agricultural Extension Methods
2. Agricultural Marketing
3. Agricultural Cooperatives
4. Farm Surveys for Data Collection and Preparation of Statistics
5. Farm Management Studies
6. Agricultural Bookkeeping
7. Human Nutrition and Social Relations
8. Agricultural Mathematics for Extension Workers

Group B: Plant Studies

1. Plant Botany
2. Plant Propagation
3. Agronomic Crops
4. Horticultural Crops
5. Storage of Agricultural Crops
6. Tree Crops

Group C: Plant Protection

1. Agricultural Entomology
2. Pests and Disease: Recognition and Survey
3. Cultural Plant Protection
4. Chemical Plant Protection Methods and Materials
5. Prevention of Losses in Storage

Group D: Soil Studies

1. Elementary Soil Science
2. Soil Fertility and Its Maintenance
3. Soil Erosion and Its Control

Group E: Agricultural Engineering

1. Hand Tools and Animal-Drawn Equipment
2. Farm Machinery
3. Soil Conservation Techniques

181

CURRICULUM
YAMBIO INSTITUTE FOR AGRICULTURAL TECHNICIANS
(Continued)

Group F: Animal Husbandry

1. Selected Farm Animals of the Southern Region:
Feeding, Breeding and Animal Health
2. Animal Management, Fodder Conservation, Management
Systems in Use
3. Sample Farm Veterinary Practices: Dosing, Drenching,
Dipping, Castration, Care of Breeding Animals and
Young Animals
4. Poultry Production for Eggs and Meat

YAMBIO INSTITUTE FOR AGRICULTURAL TECHNICIANS
TIMETABLE FOR AGRICULTURAL CURRICULUM, 1977/79: YEAR 1 AND 2

YEAR 1	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10	
	0700										
P-1	0825	Study	Ext.	Agr. (Bot.)	Study	Hort.	Ext.	Pl.Prot.	Soil Sc.	Agr.Eng.	Ext.
	0835										
P-2	1000	Agr.Eng.	Hort.	An.Husb.	Agron.	Ext.	Agron.	Agron.	Agr.Eng.	Agron.	SoilSc.
	1100										
T-1	1140	Ext.	Hort.	Agron.	An.Husb.	Pl.Prot.	An.Husb.	Soil Sc.	Agr.Eng.	Ext.	Ext.
	1150										
T-2	1230	Agr.Eng.	An.Husb.	Pl.Prot.	Ext.	Agr. (Bot.)	Ext.	Agron.	Agron.	Hort.	Agron.
	1240										
T-3	1320	Pl.Prot.	Ext.	An.Husb.	Hort.	Ext.	Agron. (Bot.)	An.Husb.	Soil Sc.	Agr.Eng.	Study
<hr/>											
YEAR 2											
	0700										
P-1	0825	Ext.	Soil Sc.	Agr.Eng.	Ext.	Agr.Eng.	Pl.Prot.	Ext.	Ext.	An.Husb.	Pl.Prot.
	0835										
P-2	1000	An.Husb.	An.Husb.	Ext.	Hort.	Agron.	Ext.	Agron.	An.Husb.	Hort.	Ag.Eng.
	1100										
T-1	1140	Pl.Prot.	Ext.	Agr.Eng.	Soil Sc.	Agron.	Ext.	Pl.Prot.	An.Husb.	An.Husb.	Hort.
	1150										
T-2	1230	An.Husb.	Soil Sc.	Ext.	Pl.Prot.	Agr.Eng.	Hort.	An.Husb.	Ext.	Pl.Prot.	An.Husb.
	1240										
T-3	1320	Soil Sc.	Study	Soil Sc.	Ext.	Pl.Prot.	Agron.	Projects	Hort.	Hort.	Agr.Eng.
<hr/>											
Regional Ministry of Agriculture, Irrigation, Forestry and Animal Production Southern Region, Democratic Republic of Sudan											

A - 6

YAMBIO INSTITUTE FOR AGRICULTURAL TECHNICIANS
TIMETABLE FOR FORESTRY CURRICULUM, 1977/79: YEAR 1

		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10
P-1	0700 0825	---	Forestry pract.	Agron. (Bot.)	Pl.Prot.	---	Forestry Mensura- tion	---	Soil Sc.	Agr.Eng.	Silvic.
P-2	0835 1000	Agr.Eng.	Forestry pract.	Forest Mensura- tion	---	---	---	Silvic.	Ag.Eng.	---	Soil Sc.
T-1	1100 1140	---	Pl.Prot.	---	Silvic.	Mens.	---	Soil Sc.	Agr.Eng.	Silvic.	Mens.
T-2	1150 1230	Agr.Eng.	---	Silvic.	---	Agron. (Bot.)	F.I.	Silvic.	Pl.Prot.	---	---
T-3	1240 1320	Mens.	---	Pl.Prot.	Mens.	---	Agron. (Bot.)	Silvic.	Soil Sc.	Agr.Eng.	F.I.

POSTINGS OF THE YAMBIO INSTITUTE CLASS OF 1977

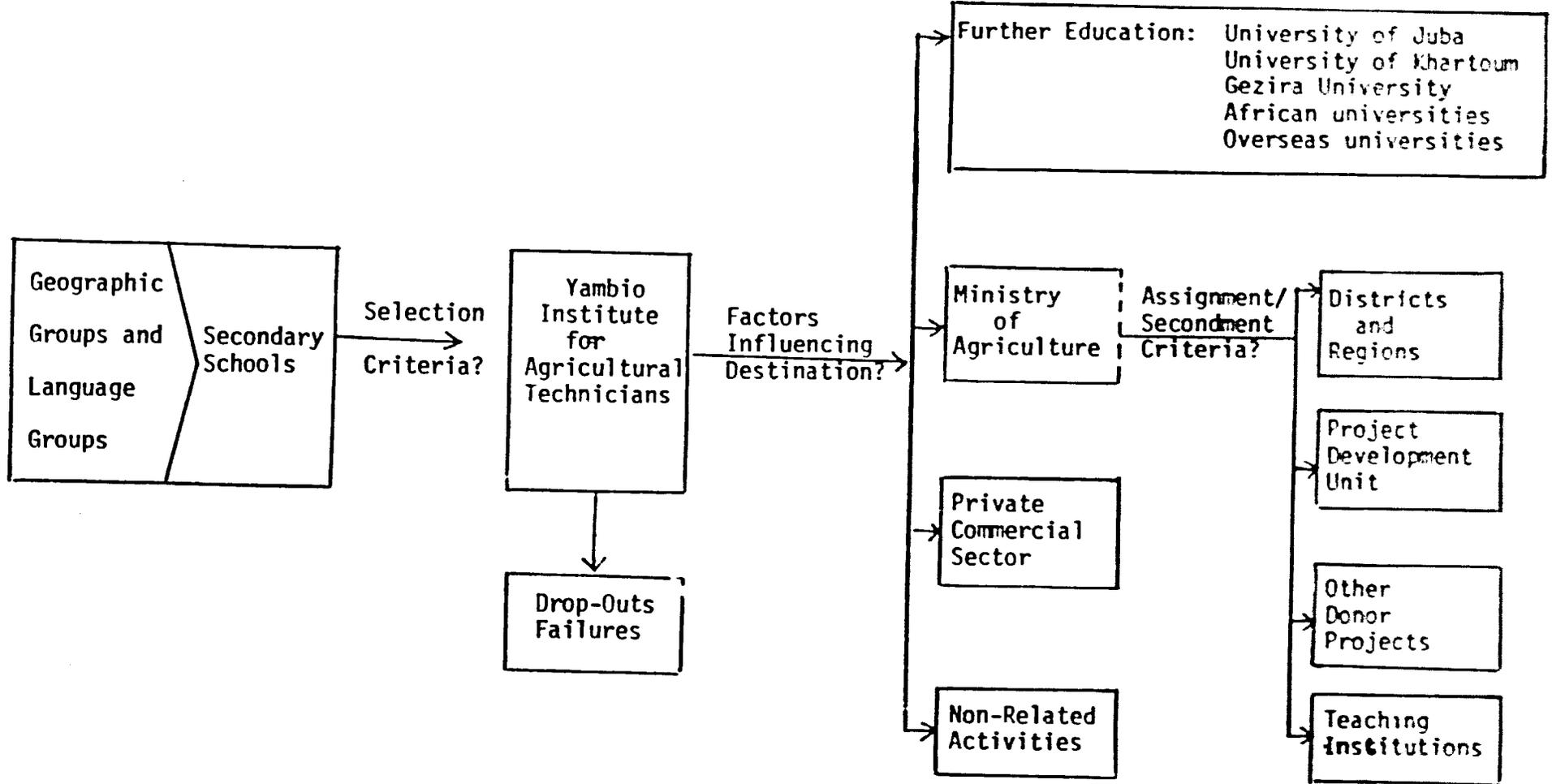
<u>Name</u>	<u>Location</u>	<u>Job Description/Organization</u>
Luka Pagan	Kodok	District Extension Officer
James Adam Elikana	Maridi	District Extension Officer
John Mongalla	Raga	District Extension Officer
Mathew John	Tonj	District Extension Officer
Benedict Oleng	Nasir	District Extension Officer
Odwa I. Amwal	Bentieu	District Extension Officer
Mario Deng	Yei	Project Development Unit
John Mangu	Yei	Project Development Unit
Tomino Julius	Yei	Project Development Unit
Beda Machar	Yei	Project Development Unit
Edward Daniel	Yei	Project Development Unit
Baptiste Udong	Yei	Project Development Unit
Sara Awate	Yei	Project Development Unit (Nutritionist)
Augustino Agume	Aweil	Aweil Rice Scheme
Gabriel Badri	Aweil	Aweil Rice Scheme
Adwok Akok	Aweil	Aweil Rice Scheme
Nicola Odwa	Aweil	Aweil Rice Scheme
Hozea K. Cornelio	Aweil	Aweil Rice Scheme
John Longa	Aweil	Aweil Rice Scheme
Adrew Vol	?	Teacher, Secondary School
Chan Duk	?	Teacher, Secondary School
Simon Akol	?	Teacher, Secondary School
Joel Datiro	Amadi	Teacher, Amadi Rural Development Institute
Peter Beyo	Nzara	Agro-Industrial Scheme
Othniel Bima	Nzara	Agro-Industrial Scheme
Richard Gemenzo	Maridi	Coffee Estate
Eliakima Kenyi	Wadyu	Coffee Estate
Mark Maku	Yambio	Coffee Estate
Anthony Duko Dumo	?	?

581

SCHMATIC INPUT - OUTPUT CHART FOR YAMBIO STUDENTS

STUDENT ORIGINS

STUDENT DESTINATIONS



A - 9

STUDENT PARTICIPATION IN PROPOSED SCHEDULE FOR
YAMBIO INSTITUTE FIELD TRIALS AND
FARMING SYSTEMS DATA COLLECTION

<u>Years/Semesters</u>	<u>Activity</u>
YEAR ONE	
First Semester	Elementary Course Work in agricultural and socioeconomic observations, data gathering, data recording and data analysis for small farming systems.
Christmas Break	Students sent to home areas to perform data collection assignments among 10 to 20 small farmers.
Second Semester	Home area data collection assignments reviewed and critiqued. Introduction to techniques for conducting and monitoring field trials. At beginning of rainy season, students assigned in groups to work with traditional farmers in Yambio area; also to conduct field trials on Yambio farm.
SUMMER BREAK	Students divided into three groups: <ol style="list-style-type: none"> 1. The majority remain in Yambio area to follow their traditional farmer through the entire cropping cycle. 2. Some students return to home areas to observe and work with small farmers in different settings. 3. Some students work with ongoing variety trials at Yambio Research Station.
YEAR TWO	
First Semester	Students continue to work with traditional farmers to see them through the final harvest.

187

	Students make oral and written reports on the results of their summer work.
Christmas Break	Students again return to home areas, this time to contextualize the sample of home area farmers from whom they will collect data.
Second Semester	Results of field trials reviewed and critiqued.
SUMMER BREAK	Students assigned to extension work with small farmers.
YEAR THREE	Students do full time extension work with small farmers under supervision of Ministry of Agriculture personnel.
	Students prepare written reports on their observations, activities and problems in their first year's work.
	Students return to Yambio in groups, starting about April to file reports on first year's work.
	Students' first year work and written reports evaluated by MOA and Yambio staff.
END OF YEAR THREE	Students whose entire three years of work is deemed satisfactory are awarded diplomas and given a raise in pay.

881

A - 10
UNDP/FAO Support to Yambio¹
(US \$000)

Category	FY78	FY79	FY80	FY81	Total
I. Technical Assistance	159	174	194	130	657
II. Construction	17	15	5	-	37
III. Commodities	73	58	42	23	196
IV. Training	60	40	21	11	132
V. Other	6	7	6	7	26
Sub-total	315	294	268	171	1,048
Inflation	-	-	-	-	-
Contingency	-	-	-	-	-
Total	315	294	268	171	1,048

1. This schedule reflects the fiscal year framework and budgetary categories of the UNDP/FAO. Consequently, these figures do not completely correspond to those given in the main body of the Project Paper (e.g., pages 53-55) which were reworked to accommodate the USAID fiscal year and budgetary categories.

SECTION B

RUMBEK AGRICULTURAL TRAINING CENTER

191

B - 1

STAFFING PATTERN
RUMBEK AGRICULTURAL TRAINING CENTER

Jacob Taban Lupai	Principal
Roggers Malis Lasu	Instructor, Ox-plow, Poultry and Crop Husbandry
Sebit Ndoromo ¹	Instructor, Plant Studies and Soil Sciences
Ernesto Ocheng ²	Instructor, Ox-plow, Animal Husbandry and Nutrition
Ali Mohammed	Instructor, Agricultural Engineering and Horticulture
Pasquale Moussa ¹	Instructor, Veterinary Practices
Abdu Gall ³	Instructor, Horticulture and Plant Protection
Ed Resor ²	Instructor, Surveying, Farm Management and Agricultural Extension

-
- ¹ Part-time, seconded from Ministry of Agriculture
² Paid by the Sudan Council of Churches
³ Part-time, seconded from PDU.

192

B - 2

CURRICULUM
RUMBOK AGRICULTURAL TRAINING CENTER

The Curriculum contained in the official documentation for The Rumbek Agricultural Training Center is exactly the same as for the Yambio Institute for Agricultural Technicians. However, since the Rumbek training is scheduled to last six months while the Yambio training is given in two eight-month periods, and since the entry level for Rumbek is junior secondary school standard compared to senior secondary school for Yambio, it is clear that the curriculum cannot be the same for the two schools. One obvious difference is that the Rumbek students receive instruction in ox-plowing while the Yambio students do not. During the four days that the team was present in Rumbek, the principal was absent and none of the instructors was able to provide the team with an actual curriculum for the Center.

193

B - 4

RUMBOK AGRICULTURAL TRAINING CENTER
PROPOSED BUDGETS: 1977, 1978, 1979

Personnel - Classified	LS Per Year		
	1977	1978	1979
Principal	680	680	680
Agriculturalist	560	560	560
Veterinarian Assistant	560	560	560
Forest Ranger	560	560	560
2 Ox-plow Instructors	780	780	780
Bookkeeper	390	390	390
Clerk	390	390	390
Junior Clerk	260	260	260
Store Keeper	390	390	390
Assistant Store Keeper	260	260	260
Typist 1st Class	390	390	390
Typist 2nd Class	260	260	260
Bursar	390	390	390
<u>Total</u>	5,870	5,870	5,870

Personnel - Unclassified	LS Per Month		
Cook	17	18	19
Waiter	17	18	19
Lorry Driver	23	24	25
1 Ton Pick-up Driver	17	18	19
2 Tractor Drivers	38	40	42
2 Mechanics	38	40	42
2 Engine Operators	34	36	38
2 Electricians	38	40	42
2 Plumbers	34	36	38
2 Carpenters	38	40	42
2 Builders	38	40	42
3 Guards	51	54	57
2 Messengers	34	36	38
3 Field Supervisors	38	40	42
10 Laborers	170	180	190

561

SECTION C

MINISTRY OF AGRICULTURE,
ANIMAL RESOURCES, FORESTRY,
AND IRRIGATION

197

RUMBEK
PROPOSED BUDGETS: 1977, 1978, 1979
(Continued)

<u>Buildings</u>	<u>LS</u>
1 Two-bedroom House	5,500
1 One-bedroom House	2,300
2 Dormitories	600
1 Dining Room-kitchen & Food Storage Room	4,000
1 Office and Storeroom	2,250
1 Block of two classrooms	1,350
1 Storage Room for Farm Chemicals and Fuel	360
1 Cattle Shed	320
1 Garage	500
1 Library Room	1,000
1 Laboratory Room	1,000
1 Poultry House	820

<u>Equipment and Supplies</u>	<u>LS Per Year</u>		
	<u>1977</u>	<u>1978</u>	<u>1979</u>
Furniture for housing	400		
Furniture for students	600		
Furniture for classroom	500		
Furniture for dining room	400		
Furniture for office	300		
Furniture for equipment	500	50	50
Plows	1,200	1,200	1,200
10 Bullocks	500		
Other cultivation equipment	1,500		
Fencing	1,000		
Animal feed	750	750	750
Supplemental food for students	2,000	2,000	2,000
Water supply	1,500		
1 Lorry	10,000		
1 Land Rover (station)	7,000		
Spare Parts	500	750	1,000
2 Tractors	14,000		
Fuel, oil, lubricants	4,000		
Seeds	150	150	150
Fertilizer, Insecticides	300	300	300
Books	1,000	2,000	3,000
Laboratory equipment	1,500	2,000	2,500
Poultry equipment	2,000	2,500	3,000
Portable electric generator	2,000		
Sprayers	4,000		
<u>Total</u>	<u>57,600</u>	<u>11,700</u>	<u>13,950</u>

198

RUMBEK
PROPOSED BUDGETS: 1977, 1978, 1979
(Continued)

Miscellaneous

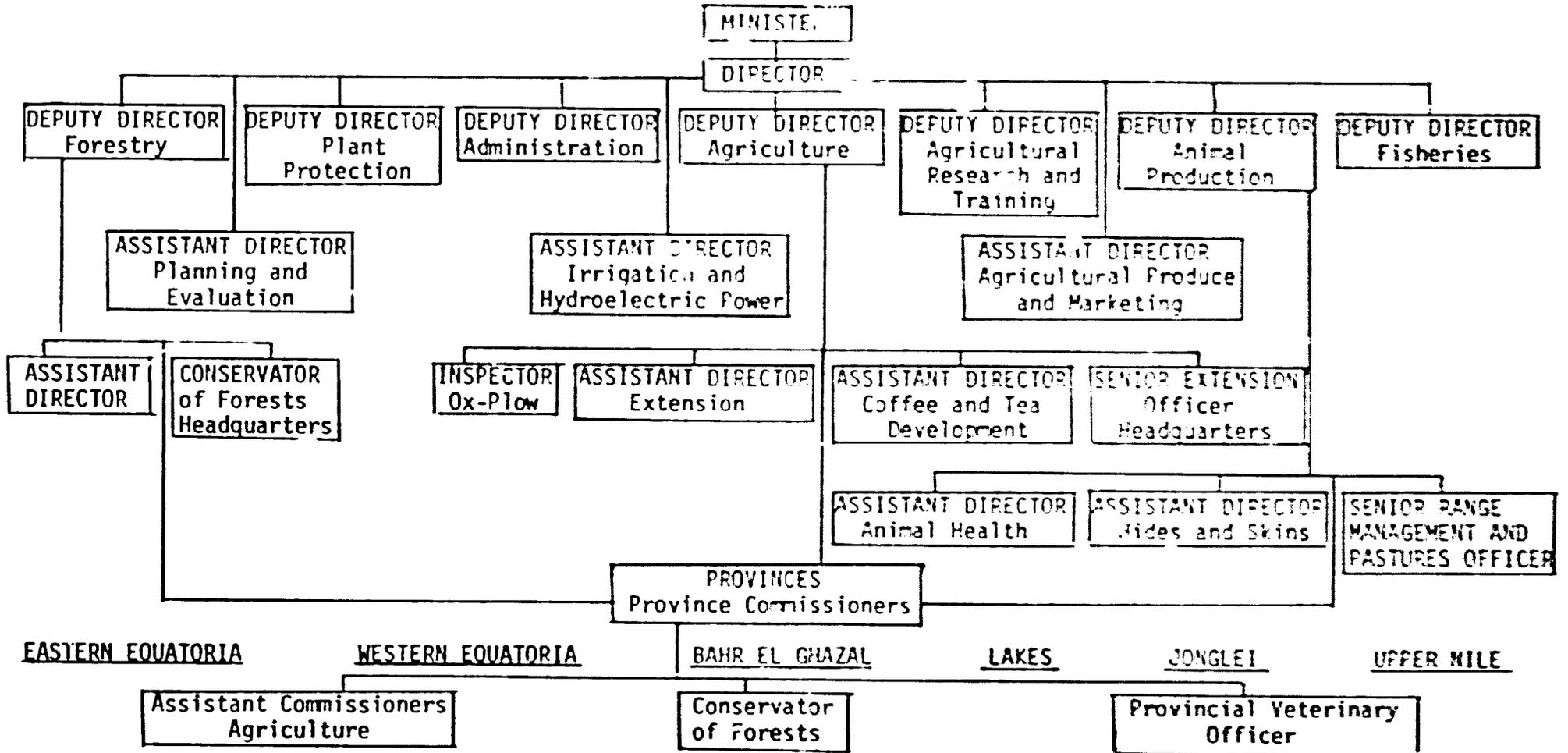
Maintenance of buildings	900	1,800	2,700
Maintenance of vehicles	400	600	850
Maintenance of materials	350	700	700
Animal health	150	300	300
Office supplies	200	300	300
Fuel wood	500	650	650
Timber	800	1,000	1,000
Contingencies	3,000	3,000	3,000
<u>Total</u>	6,300	8,350	9,500

<u>Summary</u>	1977	1978	1979
Personnel	13,598	14,030	14,462
Buildings	20,000	---	---
Equipment and supplies	57,600	11,700	13,950
Miscellaneous	6,300	8,350	9,500
<u>Total</u>	97,498	34,080	37,912

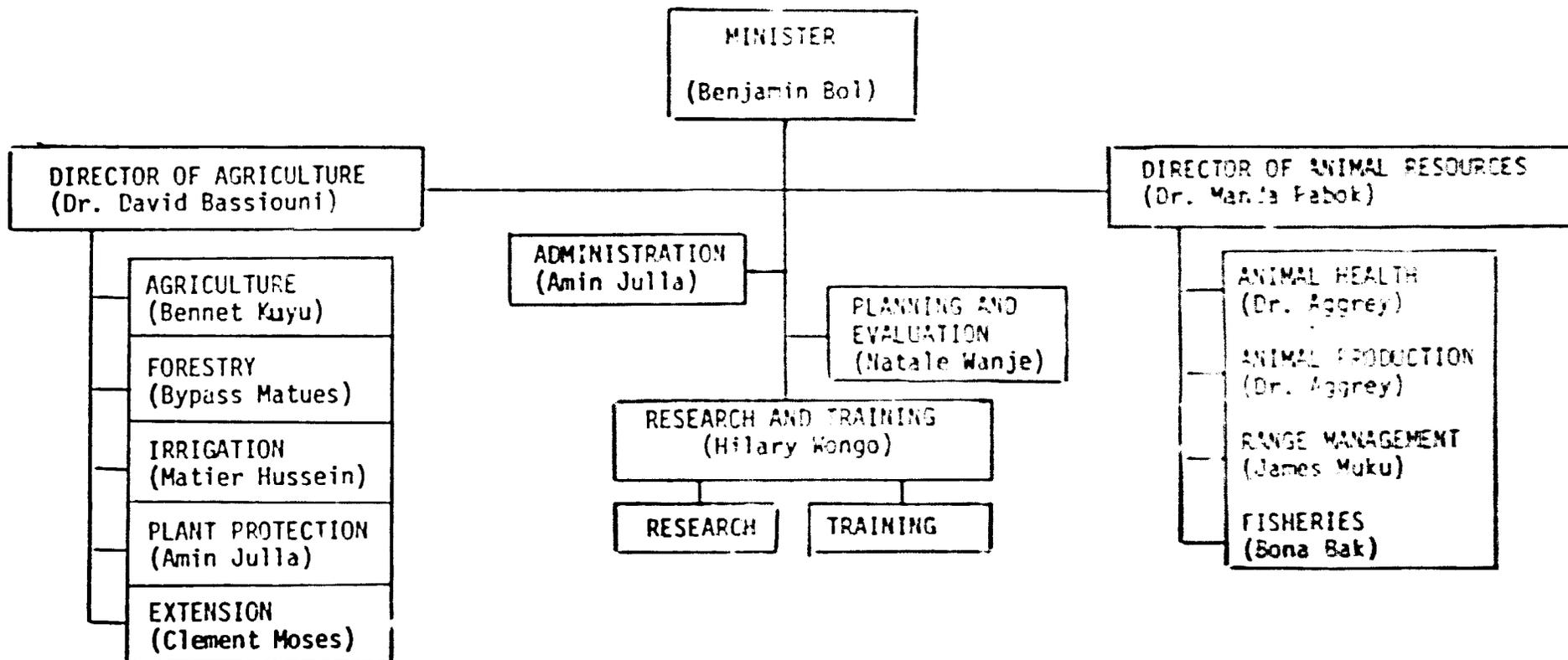
197

C - 1

PARTIAL ORGANIZATION CHART FOR THE MINISTRY OF AGRICULTURE, ANIMAL RESOURCES, FORESTRY, AND IRRIGATION, BEFORE THE 1975 ELECTIONS



PARTIAL PROPOSED ORGANIZATION CHART FOR THE REGIONAL MINISTRY
OF AGRICULTURE, ANIMAL RESOURCES, FORESTRY AND IRRIGATION,
FOLLOWING THE 1978 ELECTIONS



SECTION D

DETAILED FINANCIAL SCHEDULES
SOUTHERN MANPOWER DEVELOPMENT PROJECT

203

YAMBIO COSTS

I. Technical Assistance	\$ 640,000
A. Long Term U.S.	
. Socioeconomic Farming Systems Specialist \$100,000 per year, 2.5 years = \$250,000	
. Agricultural Farming Systems Specialist \$100,000 per year, 2.5 years = \$250,000	
. Women's Extensionist/Development Specialist \$22,000 per year, 2.5 years = \$ 55,000	
B. Short Term U.S.	
. Agricultural Information Systems (2.5 months)	
. Curriculum Development (2.5 months)	
. Agricultural Research (1 month)	
. Agricultural Institution (credit, cooperatives, marketing) (1 month)	
. Extension Evaluation (1 month)	
8 months @ \$10,000 per month =	\$ 80,000
C. Local Hire	
. Drivers (2)	
5 years @ \$1,000 per year =	\$ 5,000
II. Construction	138,800
A. Two-bedroom House (2) @ \$35,000 =	\$ 70,000
B. Site work, fence and road =	2,000
C. 15-Student Dormitory and Classroom= 17,300 Modular Structures	
D. Transportation of Construction Materials to Yambio =	25,000
E. Local Materials and Labor	15,300
F. Renovation of Existing Building for Ablution Block	1,700
G. Water System Revision and Development	7,500

402

III. Commodities

\$ 279,200

A.	To support construction	\$ 30,600
	• Septic tanks (2) @ \$1200 =	\$2,400
	• Water tanks (2) @ \$3,600 =	7,200
	• Household furnishings and appliance package (2) @ \$8,000 =	16,000
	• Dormitory/classroom furnishings	
	Equipment	1,400
		3,600
B.	Vehicles/Radios	97,950
	• Land rover, diesel	
	(3) @ \$15,200	45,600
	(One for Yambio Extensionist/Instructor)	
	20% Spares	9,100
	• Five-ton lorry	27,700
	20% Spares	5,550
	• Radios	
	Base (1) @ \$5,000	5,000
	Mobile (2) @ \$2,500	5,000
C.	Recurring Procurement	65,250
	• Diesel for Land Rover	
	\$4,500 per year, 3 vehicles	
	2.5 years	33,750
	• Diesel for lorry	
	\$4,500 per year, 2.5 years=	11,250
	• Kerosene for appliances	2,750
	\$550/yr./house X 2 houses	
	X 2.5 years	
	• Gasoline for MOA Extension vehicle, \$1,000/yr., 5 yrs.=	5,000
	• Maintenance and service of vehicles, 2.5 years	12,500

205

D. Project Support		\$ 66,700
. Office equipment, supplies, materials (typewriters, duplicators, calculators, etc.)	\$10,000	
. Training equipment/materials (Audio-visual aids, cameras, tape recorders, etc.)	10,000	
. Reference Library	18,700	
. Bicycles, 70 @ 250	17,500	
. Data collection instruments	10,500	
a) Fixed meteorological stations (Recording thermograph, rain gauge, solarimeter, sling psychrometer) Transport, stands, housing and installation, 5 @ \$1,000 = \$5,000		
b) Student field data collection kits (tape measure, pocket knife, measured roll twine, line level, clipboards, graph paper, etc.) 55 @ \$100 =	\$5,500	
E. Local Procurement		18,700
. Agricultural inputs		
a) Seeds, \$2,500 per year, 2 years	5,000	
b) Hand implements for student field work, 120 sets @ \$20	2,400	
c) Sprayer/chemicals 10 sets with chemicals @ \$250	2,500	
. Field training data collection stipend for off-institute work 2 months per year X 110 students X \$20 per month X 2 years	8,800	

202

IV. Training \$ 112,630

- A. One 6-week instructional tour for 3 people
to five African agricultural training
institutes, air fare plus expenses -
\$2,000 x 3 staff = \$6,000
135 days @ \$60 = 8,100
- B. Nine third-country short courses
(average length 6 weeks) 3 per year,
in extension methods or farming systems
Air fare plus expenses -
1,000 x 9 trips = 9,000
45 days @ \$40 per day x 9 staff = 14,580
- C. Two third-country B. Sc. fellowships
for staff
5 years @ \$15,000 per year = 75,000

V. Other 26,250

Special Commodity Shipments

4 lorry trips per year @ \$2,000 x 2.5 = \$ 5,000
6 Land Rover trips per year @ \$2,500 x 2.5 = 6,250
4 aircraft trips per year @ \$6,000 x 2.5 = 15,000

207

SCHEDULE D - 2

RUMBOK COSTS

I. Technical Assistance		\$ 316,250
A. Long Term U.S.		\$ 250,000
. Field-level agriculturist		
\$100,000 per year, 2.5 years		
B. Short Term U.S.		45,000
. Veterinarian (2 months)		
. Animal Tractor Specialist (1.5 months)		
. Marketing Specialist (1 month)		
4.5 months @ \$10,000 per month		
C. Local Hire		21,250
. Field Training Assistant		
\$2,000 per year, 2.5 years =	\$5,000	
. Logistics/Supply Assistant		
\$1,800 per year, 2.5 years =	4,500	
. Bookkeeper/Secretary		
\$1,500 per year, 2.5 years =	3,750	
. Drivers (2)		
\$1,000 per year x 2, 2.5 years =	5,000	
. Guards (2)		
\$600 per year x 2, 2.5 years =	3,000	
II. Construction		58,000
A. Two-bedroom house	35,000	35,000
B. Site works, fence, road	1,000	1,000
C. Transportation of construction supplies	12,000	12,000
D. Water well with pump and motor		10,000

208

III. Commodities

\$ 341,755

A. To support construction \$22,200

- . Septic tank \$1,200
- . Water tank 3,600
- . 12-1/2 kv generator, diesel 7,900
- . Household furnishings and appliance package 8,000
- . Large kerosene refrigerator for cattle serum 1,500

B. Vehicles/Radios 59,000

- . Land Rover 15,200
 - 20% spares 3,050
- . Five-ton lorry 27,700
 - 20% spares 5,550
- . Radios
 - Base (1) 5,000
 - Mobile (1) 2,500

C. Recurrent Procurement 106,375

- . Diesel for Land Rover \$4,500/yr., 2.5 years 11,250
- . Diesel for lorry \$4,500/yr., 2.5 years 11,250
- . Diesel for generators \$28,000/yr., 2.5 years 70,000
- . Kerosene for appliances \$550/yr., /house X 2.5 yrs. 1,375
- . Gasolene for MOA Extension vehicles, 5 yrs. @ \$1000/yr. 5,000
- . Maintenance and service of vehicles (Land Rover and lorry) 7,500

209

D. Project Support		\$ 43,750
. Office equipment, supplies, materials (typewriters, calculators, duplicating machines, etc.)	\$ 10,000	
. Training equipment, materials (Reference materials, files, cameras, blackboards, etc.)	10,000	
. Bicycles, 65 @ \$250 =	16,250	
. Tents for 6 students in cattle camps 10 @ \$750	7,500	
E. Local Procurement		110,430
. Agricultural/livestock Inputs	12,590	
a) Seeds (4 cycles)	4,310	
Maize 3,000 kilos x .20 =	600	
Sorghum 1,800 kilos x .20 =	360	
Groundnuts 4,500 k.x .30 =	1,350	
Experimental, local seeds 4,000 kilos x .50 =	2,000	
b) Agricultural implements	5,280	
66 implements sets (hoe, axe, machette, sickle, pickaxe, rake) per cycle, 4 cycles @ \$20		
c) Ox-plow (chains and plow)	3,000	
2 sets at each of 10 field compounds, 20 sets, 2 cycles, @ \$75		
. Animal Health Package	26,680	
a) Kerosene burners/pot	480	
24 units @ \$20		
b) Syringes, 90 @ \$20	1,800	
c) Sprayers, 20 @ \$200	4,000	
d) Spray chemicals, 800 gal. @ \$12	9,600	
e) Cattle serum	10,000	
5,400 inoculations @ \$2		

- . Field training living allowance for 120 students per year x 2 years @ \$37.50 per month \$ 54,000
- . Farmer field days, 600 participants/yr. x 2 yrs. x \$9.05/participant 9,660
- . Field training shelter allowance 7,500

IV. Training

None

V. Other

\$ 26,250

Special commodity shipments

4 lorry trips per year, \$2,000 x 2.5 5,000
 6 Land Rover trips per year, \$2,500 x 2.5 6,250
 4 aircraft trips per year \$6,000 x 2.5 5,000

211

SCHEDULE D - 3

MOA/JUBA SUPPORT COSTS

I. Technical Assistance		\$ 680,000
A. Long Term U.S.		
. Agricultural Planning and Extension Specialist, \$100,000 per year, 2.5 years	\$ 250,000	
. Agricultural Research and Training Specialist, \$100,000 per year, 2.5 yrs.	250,000	
B. Short Term U.S.	90,000	
. Teaching Methods (3 months)		
. Extension Strategies (2 months)		
. Agricultural Research (2 months)		
. Agricultural Information System (1 month)		
. Agricultural Institutions: credit, cooperatives, marketing (1 month)		
9 months @ \$10,000 per month = \$90,000		
C. Local Hire		
. Drivers (2), 5 years @ \$1,000 per year	5,000	
D. Manpower Development Studies	85,000	
II. Construction		72,000
A. Two-bedroom Houses (2) @ \$35,000	70,000	
B. ½ cost of Juba Compound, site works, fence, road	2,000	
III. Commodities		196,230
A. To support construction	28,700	
. Septic tank	\$ 1,200	
. Water tanks @ \$3,600	3,600	
. 12½ kv motor generator, diesel	7,900	
. Household furnishings and appliances, 2 @ \$8,000	16,000	

2/2

B. Vehicles/Radios		\$46,500
. Land Rover, diesel		
2 @ \$15,200	\$30,400	
20% Spares	6,100	
. Radios, Base (1)	5,000	
Mobile (2) @ \$2500 =	5,000	
C. Recurring Procurement		84,000
. Diesel for Land Rovers		
\$3,500 per year, 2 X 2.5 yrs.	17,500	
. Diesel for generator		
\$21,500 per year, 2.5 years	53,750	
. Kerosene for appliances		
\$550/yr/house X 2 houses		
X 2.5 years	2,750	
. Gasoline for MOA vehicles		
\$1,000 per year, 5 years	5,000	
. Maintenance and service of		
Land Rovers, 2.5 years	5,000	
D. Project Support		30,000
. Office equipment, supplies,	10,000	
materials for the Extension		
Department, MOA (typewriters,		
calculators, duplicators,		
equipment, etc.)		
. Office equipment, supplies,	10,000	
materials for the Research		
and Training Department, MOA		
(typewriters, calculators,		
duplicating equipment, etc.)		
. Training materials and refer-	10,000	
ence aids for the College of		
Adult Education, University		
of Juba		

E. Local Procurement \$ 7,030

- . Continuing education subsistence \$ 5,750
for in-service training, 4 sessions
per year, 23 days' duration, 25 stu-
dents/staff each session
4 x 25 x 23 days x 2 years x \$1.25 per
day subsistence

- . Teacher training methods classes 1,280
support, 4 sessions per year, 8 day
duration
4 sessions x 4 instructors x \$10 stipend
x 8 days x 2 years

214

SCHEDULE D - 4

LOGISTICS SUPPORT COSTS

I. Technical Assistance		\$ 538,600
A. Long Term U.S. or TCN		\$396,000
. Logistics/Supply Expeditor/Juba		
3 years @ \$100,000 per year =	\$300,000	
. Administrator/Accountant/Juba		
3 years @ \$20,000 per year =	60,000	
. Procurement Specialist, Nairobi		
3 years @ \$12,000 per year =	36,000	
B. Short Term U.S.		124,000
. Logistics Procurement Juba/USA	64,000	
8 months @ \$8,000 per month		
. Contract Supervisor/Coordinator	60,000	
6 months @ \$10,000 per month		
C. Local Hire		18,600
. Warehouseman, 3 years @ \$2,000	6,000	
. Secretary/Bookkeeper, 3 years	6,000	
\$2,000		
. Driver, 3 years @ \$1,000	3,000	
. Guards (2), 6 years @ \$600	3,600	
II. Construction		77,000
A. Office/Warehouse/Juba		40,000
B. Two-bedroom House		35,000
C. $\frac{1}{2}$ cost of Juba Compound		2,000
(site works @ \$4,000)		

III. Commodities		\$ 170,350
A. To support construction		\$30,200
. Septic tank	\$ 1,200	
. Water tank, 1 @ \$3,600	3,600	
. 12-1/2 kv motor generator, (diesel)	7,900	
. Household furnishings and appliance package, 2 @ \$8,000	16,000	
. Large kerosene freezer	1,500	
B. Vehicles/Radios		44,000
. Land Rovers(diesel) (2) 20% Spares	30,400 6,100	
. Radio Base, 1 @ \$5,000 Mobile, 1 @ \$2,500	7,500	
C. Recurring Procurement		90,150
. Diesel for Land Rovers \$3,500 per year, 2 X 3 yrs.	21,000	
. Diesel for generator \$21,500 per year, 3 years	64,500	
. Kerosene for appliances \$550 per yr. X 3 years	1,650	
. Maintenance and service of vehicle, 3 years	3,000	
D. Project Support		6,000
. Office supplies and equipment	5,000	
. Transport containers 10 @ \$100	1,000	
E. Local Procurement		
None		

IV. Training

None

V. Other

\$ 185,000

A. Shipment of equipment, furniture, supplies to Juba	\$55,000
B. Air shipment, Nairobi-Juba 1,000 lbs. per year @ \$1 per pound	18,000
C. Procurement expenses, Nairobi/USA	27,000
. Telecommunications	\$12,000
. Local transportation	15,000
D. Manpower Development Studies	85,000

217

SECTION E

HIGH EXECUTIVE COUNCIL
AND UNITED NATIONS DEVELOPMENT PROGRAM

2-19

E - 1

HIGH EXECUTIVE COUNCIL
SOUTHERN REGIONAL GOVERNMENT
DEMOCRATIC REPUBLIC OF THE SUDAN

H.E. Sayed Joseph Lagu	President of the High Executive Council
H.E. Sayed Samuel Aru Bol	Vice President of High Executive Council and Minister of Regional Administration, Police & Prisons
H.E. Sayed Clement Mborg	Speaker, People's Regional Assembly
H.E. Dr. Lawrence Wol Wol	Regional Minister of Finance & Economic Planning
H.E. Sayed Simon Mori Didomo	Regional Minister of Information and Culture
H.E. Sayed Ezekiel Kodi	Regional Minister of Commerce, Industry and Supply
H.E. Sayed Benjamin Bol	Regional Minister of Agriculture, Animal Production, Forestry and Irrigation
H.E. Sayed Samuel Lupai	Regional Minister for Coordination and Legal Affairs
H.E. Sayed Matthew Obur Ayang	Regional Minister of Education
H.E. Sayed Joseph Oduho	Regional Minister of Cooperatives and Rural Development
H.E. Sayed Barnaba Dumo	Regional Minister of Housing and Public Utilities
H.E. Dr. Pacifico Lolik	Regional Minister of Health and Social Welfare
H.E. Sayed James Tombura	Regional Minister of Communications, Roads and Transport
H.E. Sayed Akuot Atem DeMayan	Regional Minister of Public Service and Administrative Reform

HIGH EXECUTIVE COUNCIL
SOUTHERN REGIONAL GOVERNMENT
DEMOCRATIC REPUBLIC OF THE SUDAN
(Continued)

H.E. Sayed Samuel Gaitut	Regional Minister of Wildlife and Tourism
H.E. Sayed Daniel Kot Matthew	Regional Minister of Youth and Sports
H.E. Rev. Nereo Lope	Regional Minister of High Executive Council
H.E. Sayed Alexander Nagib	Commissioner, Eastern Equatoria Province

E - 2

UN PROJECTS IN THE SOUTHERN REGION

MAY 1978

FAO

SUD/72/035	Institute for Agricultural Technicians	Yambio
SUD/73/001	Land Development Project	Aweil/Wau
TF/SUD/19(DEN)	Regional Fisheries Training Centre	Malakal
*SUD/73/002	Livestock Adviser	Juba
SUD/78/004	Regional Dairy and Poultry Project	Juba
SUD/78/010	Horticultural Development (Southern Region) Phase II	Juba/Gilo
*SUD/77/015	Artisanal Sugar Production Mission	Juba
*SUD/76/021	Wildlife Conservation and Management	Juba
*SUD/77/013	Asst. to Project Preparation Unit National Forest Inventory and Survey of Land Use and Range Management	
*SUD/75/025	Agriculture Training Courses (Fellowship)	
SUD/77/017	Crop and Soil Investigation Project Bahr El Ghazal	Wau

ILO

SUD/76/023	Manpower Survey (Southern Region)	Juba
SUD/77/010	Strengthening of Cooperatives Department	Juba
SUD/76/029	Agricultural Machinery Training Centre	Malakal
SUD/74/022	Multi-Service Training Centre	Juba
*SUD/75/031	Personnel Management and Community Development Training Courses (Fellowship)	

Note: * Indicates proposed; all others are ongoing.

UN PROJECTS IN THE SOUTHERN REGION
(Continued)

OTC

SUD/76/017	Financial Policy and Planning Adviser	Juba
SUD/76/018	Economic Policy and Planning Adviser	Juba
SUD/73/024	Adviser on Public & Financial Administration - Southern Region	Juba
SUD/76/027	Strengthening of Road Improvement Programme	Juba
*SUD/75/022	Promotion of Local Building Materials and Low Cost Housing	Juba
*SUD/74/015	General Economic Policy Planning (Fellowship)	
*SUD/75/014	Development Administration Training Courses (Fellowship)	

UNESCO

SUD/73/026	Educational Planning Adviser	Juba
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UNIDO

*SUD/72/030	NZARA Project
*SUD/73/040	
*SUD/75/029	Industry Training (Fellowship)

UNDP/OPE

SUD/72/022	Administrative and Logistic Support Unit
*SUD/74/024	Student Accommodation
SUD/76/016	Supply of Fuel to the Southern Region
SUD/76/019	Supply of Vehicles for Agricultural Field Staff Southern Region
*SUD/76/008	Small-Scale Industry Training (Fellowship)

Note: *Indicates proposed; all others are ongoing.

UN PROJECTS IN THE SOUTHERN REGION
(Continued)

ICAO

*SUD/75/030 Advanced Telecommunications (Fellowship)

FAO

SUD/77/009 Development of Cooperative Boatbuilding Malakal
and Fisheries Industries in the Southern
Region

Note: *Indicates proposed; all others are ongoing.

SECTION F

PROJECT PAPER DEVELOPMENT

225

F - 1

PROJECT DESIGN TEAM

USAID/Sudan

E. Thomas Chapman, Project Officer

REDSO/EA

Gene Swanson, Engineer

Development Alternatives, Inc.

Donald Mickelwait, Economist, President of DAI

Craig Olson, Design Evaluation Specialist,
Field Team Leader

A. H. Barclay, Anthropologist

Donald Humpal, Agricultural Training/Extension Specialist

F - 2

DESIGN TEAM ITINERARY

26 - 29 March	-	Khartoum
30 March - 5 April	-	Juba, Mongalla
6 - 7 April	-	Yei
8 April	-	Meridi
9 - 12 April	-	Yambio, Nzara
13 - 14 April	-	Rumbek
15 April	-	Amadi
16 - 20 April	-	Juba, Torit
21 April - 12 May	-	Khartoum

F - 3

PEOPLE INTERVIEWED FOR PROJECT DESIGN

KHARTOUMUNDP

Mr. Charles H. LaMuniere, UNDP Resident Representative
 Mr. Michael Hyland, Deputy Resident Representative
 Mr. Nini Hla, UNDP Project Officer

Ford Foundation

Mr. John Bruce, Resident Representative

FAO

Mr. Adnan Schuman

JUBAHigh Executive Council

His Excellency Joseph Lagu, President

Regional Ministry of Agriculture, Animal Production, Forestry and Irrigation

His Excellency Sayed Benjamin Bol, Minister
 Dr. David Bassiouni, Director of Agriculture
 Sayed Bennett Kuyu, Deputy Director of Agriculture
 Sayed Clement Moses, Deputy Director for Agricultural Extension
 Sayed Waragak Gatluck, Assistant Deputy Director for
 Agricultural Extension
 Sayed Natale Wanji, Assistant Director for Planning
 Sayed Hilary Sabit Wongo, Deputy Director for Research
 and Training
 Sayed Amin Julla, Deputy Director for Administration and
 Plant Protection
 Dr. Aggrey A. Majok, Assistant Director for Animal Production
 Sayed Eliseus Lemi Taban, Assistant Director for Forestry
 Sayed Justin, Chief Afforestation Officer
 Mr. Michael Brazis, Sr. Planning Economist, Planning,
 Evaluation, Marketing Department

Regional Ministry of Education

Sayed Clement Sebit, Acting Deputy Director
 Mr. F.H. Garvey-Williams, UNESCO Educational Planning Advisor
 Mr. Trevor C. Bailey, Statistics Advisor

Regional Ministry of Finance and Economic Planning

Sayed Stanislaus Awad, Assistant Director for External Assistance, Manpower and Manpower Training
Mr. K.C. Cheriyan, UNDP Economic Policy and Planning Advisor

Regional Ministry of Public Service and Administrative Reform

Mr. Bob Barclay, Director, Multi-Service Training Center

Regional Ministry of Cooperatives and Rural Development

Sayed Caesar Zemangi Ndogo, Director

Regional Ministry of Regional Administration, Police and Prisons

Sayed Ajaang Bior, Deputy Director
Mr. J.R. Malik, UNDP Advisor

Regional Ministry of Housing and Public Utilities

Sayed Bernard Boda, Deputy Director for Housing

UNDP

Mr. Hans H. Heep, Deputy Resident Representative
Mr. Steve Orsino, Chief, Administrative and Logistics Support Unit
Mr. Ule Vogt, Site Manager (Construction)

University of Juba

Sayed El Samani A. Yacoub, Vice-Chancellor
Professor Robin Mills, Acting Dean, College of Social Studies and Economic Studies

ACORD/CUSO, Juba

Mr. Neil Walton, ACORD/CUSO Coordinator for East Africa

Sudan Council of Churches

Sayed Abraham Bandere, Deputy Secretary General
Sayed Kostl Manijo, Public Relations Officer

YAMBIOYambio Agricultural Training Institute

Mr. T.M.S. Cunliffe, Acting Principal, Project Manager,
Sudan 72/035 (UNDP)
Sayed Isaac Manyon, Vice-Principal and Lecturer in Crop Science
Mr. Ronald van Nijnanten, FAO Training Officer and Lecturer in
Plant Protection
Dr. Ali Daynar Mahammadein, Lecturer in Animal Husbandry
Sayed Ibrahim Ahmad El Bashir, Lecturer in Plant/Soil Science
Sayed Ibrahim H. Abdalla, Lecturer in Agricultural Engineering
Mr. Mohdi Nawab Khan, UN Volunteer and Farm Manager
Sayed Mirghani Maatoug, Lecturer in Extension
Sayed Eluzai Ginaba, Demonstrator in Forestry
Sayed Shams-el Din, Lecturer in Horticulture
Sayed Yahia el Deel, Lecturer in Forestry
Sayed Awad Mohammed, Lecturer in Forestry
Mr. Birger Hatlebrekke, Mechanical Supervisor
Sayed Salethiel Abraham, Librarian

Provincial Government, Western Equatoria Province, Yambio

Kamillo Wani Swaka, Acting Assistant Commissioner for Agriculture
Sayed Urbano Cirillo, Acting Executive Officer, Yambio People's
Rural Council

Nzara Agro-Industrial Scheme

Sayed James Hakim Galla, General Manager
Sayed Othniel Bima, Senior Agriculturalist, Yambio Graduate
Sayed Louis Johnson, Extension and Seed Distribution Supervisor

RUMBOKAgricultural Training Center

Sayed Roggers Malis Lasu, Lecturer in Horticulture and
Ox-Plow Instructor, Acting Assistant Principal
Sayed Sebit Ndoromo, Agricultural Instructor
Sayed Ali Mohamed Aggrey, Ox-plow Instructor
Sayed Abdu Ghalil, Instructor in Horticulture and Plant
Protection, P.D.U. Administrative Officer
Sayed Ernesto Ocheng, Ox-plow Instructor
Mr. Ed Resor, Extension Officer/Instructor
Sayed Aboubakar Moussa, Building Supervisor

Provincial Government, Lakes Province, Rumbek

Sayed Tito Tipo Adibo, Executive Officer and Acting Commissioner
 Sayed Luka Akror Modut, Acting Assistant Commissioner for
 Information and Culture
 Sayed Adriano Njiel Abot, Acting Executive Officer, Lakes
 Province Rural Council
 Sayed Joseph U. Ramadan, Acting Assistant Commissioner for
 Agriculture

YEIProject Development Unit

Mr. Ted Bosse, Chief Executive Officer
 Sayed Bullen Wani, Extension Training Officer
 Sayed John Mangu, Extension Training Officer, Yambio Graduate
 Miss Sara Awate, Nutrition Assistant, Yambio Graduate
 Sayed Machor Deng, Extension Technical Assistant, Yambio Graduate
 Sayed Edward Daniel, Extension Technical Assistant, Yambio
 Graduate
 Sayed Udong Baptiste, Extension Technical Assistant, Yambio
 Graduate
 Sayed Tomijo Julius, Acting Coffee Officer, Project Development
 Unit, Yei District, Yambio Graduate

Yei Township

Sayed Bullen Latio Modi, Chairman, Yei People's Rural Council
 Sayed Enok Mac Ayol, Executive Officer, Yei People's Rural Council

AMADIAmadi Rural Training Center

Mr. Gerard Cortie, Director
 Mr. Al Smith, Administrator
 Mr. Peter De Ville, Instructor in Agriculture
 Mr. Frank Vutabwarda, Cultural Anthropologist
 Mr. Ed Boresinko, Construction Supervisor

TORITNorwegian Church Relief

Mr. Øystein Stabrun, Director, NCR/Sudan Program
 Mr. John French, Well Drilling Supervisor
 Mr. John Ladit Lapolo, School Agriculture Program Supervisor
 Mr. Ernst Bakke, Agricultural Coordinator
 Mr. Redaegzy Gebremedhin, Agricultural Supervisor
 Mr. Arne Sandres, Agriculture/Cooperatives Coordinator.
 Mr. Jim Hart, Lutheran World Federation/NCR Support Office,
 (Juba)
 Sayed Paul Modi, Chief Agricultural Field Assistant (1953
 Yambio Graduate)

OTHERJonglei Commission

Dr. Thayer Scudder, UNDP Senior Consultant, Jonglei Commission
 Mr. William Payne, UNDP Senior Consultant, Jonglei Commission

Farmers

YEI: 2 Kakua farm families
 YAMBIO: 5 Zande farm families
 RUMBOK: 2 groups of Dinka herdsmen/cultivators

Students

The team conducted individual or group interviews with the majority of the students at Yambio, Rumbek and Amadi.

SECTION G

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Check — Section Criteria + Harold - Coments Return to Mac

PROJECT AUTHORIZATION AND REQUEST FOR ALLOTMENT OF FUNDS

PART II

Country: Sudan

Project: Southern Manpower Development

Project No.: 650-0021

Pursuant to Part I, Chapter 1, Section 103, of the Foreign Assistance Act of 1961, as amended, (the "Act"), I hereby authorize a Grant to the Democratic Republic of the Sudan (the "Cooperating Country") of not to exceed Two Million United States Dollars (\$2,000,000) to assist in financing certain foreign exchange and local currency costs of goods and services required for the project as described in the following paragraph.

The project will consist of four components designed to assist the Cooperating Country to strengthen the human resource base in the agricultural sector (Southern Sudan region) through improvement in the training and utilization of agricultural personnel who work, or will work, with small farmers and pastoralists. These components are: (1) Strengthening the capacity of the Yambio Institute for Agricultural Technicians to train, and retrain, diploma-level technicians in gaining an understanding of small farming systems and applying that knowledge to techniques of extension and knowledge transfer; (2) Strengthening and lending direction to the Agricultural Training Center at Rumbek through curriculum reorientation and revision and through the introduction of a program of direct extension activities in the Rumbek area involving students and staff of the Training Center, Provincial and District agricultural staff, and the participation and training of small farmers and pastoralists; (3) Strengthening the capacity of Ministry of Agriculture in Juba to plan, manage and support viable programs of agricultural training and extension in the Southern Region, through provision of advisory assistance to the Department of Extension and the Department of Research and Training, and through establishment of operational linkages between these Departments, the College of Adult Education and Training at the University of Juba, and the institutions at Yambio and Rumbek; (4) Establishment of a logistical capacity to support the

project (hereinafter referred to as the "Project"). To carry out the objectives of this project, A.I.D. will provide financing for technical assistance, commodities, training, and construction and other services.

I approve the total level of A.I.D. appropriated funding planned for the project of not to exceed Five Million Four Hundred Fifty Seven Thousand United States Dollars (\$5,457,000), Grant, during the period FY 1978 through FY 1982, subject to the availability of funds in accordance with A.I.D. allotment procedures.

I hereby authorize the initiation of negotiations and execution of the Project Agreement by the officer to whom such authority has been delegated in accordance with A.I.D. regulations and Delegations of Authority, subject to the following terms and conditions, together with such other terms and conditions as A.I.D. may deem appropriate:

a. Source and Origin of Goods and Services.

Goods and services financed by A.I.D. under the project shall have their source and origin in the Cooperating Country and in countries included in A.I.D. Geographic Code 941, except as A.I.D. may otherwise agree in writing.

b. Covenants.

The Project Agreement shall contain covenants providing in substance as follows:

1. The Cooperating Country and A.I.D. (acting through the A.I.D. Representative, Khartoum, or his designee) will agree on the sites or locations of the structures to be erected in Juba, Yambio and Rumbek.

2. The Cooperating Country will agree to provide funding to meet the operating costs of the Yambio and Rumbek training institutions.

3. The Cooperating Country will provide, on a timely basis, personnel from the Ministry of Agriculture, the Yambio Institute for Agricultural Technicians, and

the Rumbek Agricultural Training Center to work with the long-term United States technical advisors. The Cooperating Country will ensure that these personnel possess necessary basic skills so as to maximize their counterpart training experience.

c. Waivers.

Notwithstanding paragraph a, above, and based upon the justifications set forth in the Project Paper, Part Two, Appendix D, I hereby

1. Approve a procurement source waiver from Code 000 (U.S. only) to Code 935 of the A.I.D. Geographic Code Book for the procurement of motor vehicles, and spare parts, provided that the amount of such waiver shall not exceed \$212,550. I certify that the exclusion of procurement of these motor vehicles and spare parts from the requested countries in Code 935 would seriously impede attainment of U.S. foreign policy objectives and the objectives of the foreign assistance program. I find that special circumstances exist to waive, and do hereby waive the requirements of Section 636(1) of the Act;

2. Approve a procurement source and origin waiver from Code 941 to Code 935 of the A.I.D. Geographic Code Book for the procurement of commodities specified in the Project Paper, Part II, Appendix D-2, provided that the amount of such waiver shall not exceed \$223,860. I certify that the exclusion of procurement of these commodities from the requested countries in Code 935 would seriously impede attainment of U.S. foreign policy objectives and the objectives of the foreign assistance program.

Date: _____

9/23/78

G. T. Butcher
Goler T. Butcher
Assistant Administrator for
Africa