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**STUDY OF MANPOWER NEEDS, EDUCATIONAL CAPABILITIES,
AND OVERSEAS STUDY**

Report Number 4

**Study Committee on
Manpower Needs and
Educational Capabilities
in Africa**

July 30, 1965

**A.I.D. HISTORICAL AND
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SUDAN

Report Number 4

FOREWORD

Frame of Reference for this Report

This report, based on a survey of Sudan made during the fall and winter of 1964-65, is submitted in partial fulfillment of USAID Contract AID/afr-198 dated June 2, 1964.¹ The study, undertaken at the request of AID, includes the following: (1) an assessment of available data concerning high-level manpower needs,² (2) an appraisal of the capabilities of indigenous African educational institutions to meet those manpower needs, and (3) a survey of opportunities for study overseas as they relate to high-level manpower needs. The data and conclusions from this study are intended to provide information and guidance useful to the Bureau for Africa in the programming of technical and economic assistance, particularly with regard to institutional development.

¹This report is one of nine country studies, including Ethiopia, Guinea, Kenya, Liberia, Nigeria, Sudan, Tanzania, Tunisia, and Uganda. In addition, a summary report containing general conclusions and recommendations based on the individual country reports is being submitted to AID.

²The term "high-level manpower" has been given different meanings. As used in these reports, it generally includes two categories: (1) Class A occupations which are those requiring a university education or its equivalent and (2) Class B occupations which require two or three years of post-secondary training or its equivalent. Other categories which require less training were not examined closely, although some attention was given to middle-level or Class C occupations, which require secondary school education or the equivalent.

The study director and members of the study committee are grateful to the many individuals in the Sudan and elsewhere who gave generously of their time, sharing their experience and providing advice and guidance. They particularly wish to thank members of the EWA staff who assisted directly in the preparation of this report: Sally V. Allen, Eugene Burgess, Patricia Mulvey, Rhoda Pauley, and James R. Sheffield.

John W. Masland
Director of the Study

INTRODUCTION

The Sudan, with an area of over 967,000 square miles, is the largest country in Africa and the ninth largest in the world. Its present population is estimated at between 12 and 12.5 million, with a density of roughly 12 persons to the square mile.

The Sudan gained its independence in 1956, when the Anglo-Egyptian condominium which had governed the country for 56 years came to an end. Since then development, including educational expansion and improvement, has been retarded by the Sudanese preoccupation with internal problems: regional tension between the northern and southern provinces and, in particular, general political instability which followed the change of government in October 1964.

NATIONAL AND HUMAN RESOURCE DEVELOPMENT

The Basic Structure of the Economy

The Sudanese economy is characterized by the predominant role of agricultural and pastoral activities and by dependence on one crop -- cotton -- for over half the country's income from exports. In the southern, eastern, and western regions, there are many groups which follow traditional ways and live on a subsistence level. These groups use little or no modern technology and form a large pocket of disguised unemployment. The country is generally deficient in technical and organizational skills; it relies on imports of consumer goods, raw materials, and equipment. The standard of living is low, due to the poor agricultural and industrial productivity. The country's per capita GNP is probably less than \$100 and varies from \$60 in traditional sectors to \$130 in the more modern sectors. Consequently, the level of savings and investment is also low.

Handicaps in Development. The limitations that this economic situation imposes on development are twofold. On the one hand, there is the great handicap of financial restriction. On the other hand, there is the manpower shortage, which is so great that even if the funds for development were available, there would not be enough skilled manpower to implement plans.

When the Sudan became independent in 1956, there were many expatriates in government and in the private sector -- in industry, commerce, and agriculture. Most of these expatriates were Syrians, Greeks, persons of Egyptian origin, and other foreigners with the status of permanent residents. Although some Sudanization has taken place since 1956, still very few southern Sudanese are represented in the skilled and high-level categories.

The Ten-Year Development Plan, 1961-1970

The Ten-Year Plan of Economic and Social Development for 1961-62 through 1970-71 was formulated by the Economic Planning Secretariat of the Ministry of Finance and Economics. It was originally a seven-year program; the goals of the original plan have now been extended by three years. The revised plan is conservative and reasonable. During the initial phase of the plan period, emphasis has been upon investments designed to provide the base for later development, with less attention to the social services. The theory behind the plan is that most of the country's resources should be allocated at this stage to the productive side of the economy, which will provide a base for later development. Health and education will receive more attention later, after investment in land and water show productivity.

The plan aims: (1) to increase the national income at a greater rate than the rate of population growth; (2) to increase, diversify, and improve agricultural products; (3) to improve educational and health services; (4) to establish industries and begin to reduce imports; (5) to create opportunities for regular and continuous employment; and (6) to train manpower at all skill levels, both technical and professional.

The development budget is allocated as follows: 29.9 per cent for education, health, housing, and other social services; 29.9 per cent for the agricultural sector; 22.1 per cent for transport and communication; 14.6 per cent for industries, mining, and public utilities; and 3.5 per cent for miscellaneous items.

Implementation of the development plan is expected to result in an increase of 63.6 per cent in gross domestic product and of 23.6 per cent in per capita income by 1970-71. It is expected that the composition of the gross domestic product will show a decline in the contribution of agriculture --

from 57 per cent of the total in 1960-61 to 51 per cent -- and a rise in industry, mining, and public utilities -- from 9 per cent to 16 per cent.

The Present Economic Picture

Half of the total plan expenditures are in eight major productive projects. The net investment targets in the plan are being met. Completion of the bigger projects, however, is behind schedule. Because of financial difficulties during the last year, some projects have not yet been started. Delays are also due to the shortage of skilled manpower, particularly engineers, managers, and administrators.

The country is experiencing financial difficulties because the heavy investment in the productive side of the economy has not yet yielded the expected returns and because the Sudanese government does not manage its controls, such as support prices, well. The uncertain political situation poses some threat to continued price stability. The harvest of this year's cotton crop has not yet been begun, and delay could, of course, be expensive.

Manpower Data

As in most developing countries, manpower data in the Sudan is scarce and too general in nature to be of great assistance in planning for high-level human resource development. Whatever manpower research has been undertaken in the Sudan has been the product of foreign advisers (from the ILO, USAID, the UN, and the UN Special Fund), and the research process has never been institutionalized. In fact, the records of some of the research have been lost or mislaid. The ten-year plan attempted to outline the magnitude of the manpower problem, but it also emphasized that information on the country's manpower situation is fragmentary.

The Crosby Report. The only manpower analysis of note undertaken in the Sudan was done by the ICA in collaboration with various Sudanese ministries. The report, dated April 1960, was prepared by the education division of ICA/Sudan under the direction of Edwin S. Crosby.¹ Unfortunately for the purposes

¹"Sudanese Manpower: 1956-65, With Special Reference to Technical Training for Commercial and Industrial Occupations." A summary of the report was prepared by Rajai Abou Khadra for UNRWA (January 19, 1962).

of this present study, the main objective of the report was to provide a guide for assistance to technical training below the university level.

The principal defect of the Crosby report is that it relied on the 1955-56 census which contained miscalculations of the size and distribution of the economically active population. The census estimated that the labor force participation rate was 37 per cent. In 1960, however, a demographic expert estimated that the actual labor force participation rate was 46.7 per cent, an increase in the labor force of 1,044,000 -- or from 3,799,303 to 4,844,000.¹ A comparison of the original and the revised data suggests that the largest upward revisions were in the unskilled labor force categories, particularly for males; namely, in agriculture, fishing, hunting, and animal husbandry.

The following table from the Crosby report shows distribution of workers in the various skill-level categories according to the unrevised 1955-56 census.

TABLE 1

LABOR FORCE DISTRIBUTION ACCORDING TO CROSBY REPORT

Level	Percentage	Number of Persons
Professional	0.4	746
Semi-Professional	1	2,129
Clerical	8	16,075
Skilled & Semi-Skilled	34	68,619
Total Trained Workers	43	87,569
Unskilled Workers	57	114,725
Total	100	202,294

¹Manpower and Employment Division, Labour Department, Ministry of Information and Labour, "Some Basic Information in Narrative and Tabular Form on the Overall Manpower Situation in the Sudan with Estimates of the Growth of the Population and the Labour Force, 1956-1971," prepared in consultation with the Department of Statistics and the ILO manpower adviser (Khartoum, Sudan: Manpower and Employment Division, October 1961). (Manpower Report No.1)

Revisions of the Crosby Report. The Manpower and Employment Division's revised occupational tables cover all sectors of the economy and indicate that the modern sector (which includes the commercial and industrial sectors) was underenumerated in the Crosby report by 23 per cent and the rural sector by more than 25 per cent. However, it seems that very little change was recorded in the trained worker categories in either the modern or rural sectors. Nonetheless, for the purposes of this report the percentages given in the table above for professional and semi-professional employment are fairly accurate.

The Manpower and Employment Division's paper cited above gives revised distribution of the labor force as of 1960. (See Table 2 on page 6.)

Manpower Supply Calculations

Although the Manpower and Employment Division's calculations are understood to be inaccurate, nonetheless they can be combined in general skill classifications to indicate roughly the occupational levels of the economically active population as of 1960. (See Table 3 on page 7.)

Assuming that the professional level would require a university degree or the equivalent for satisfactory performance, there are almost 6,000 people in this category, according to the revised figures. At the next lower level there are some 129,000 people who have probably finished secondary school and have some further formal or in-service training. The figures for these two categories are much larger than those suggested by the Crosby report, chiefly because the revised totals include the professional services category, which combines higher civil servants, teachers, doctors, dentists, veterinarians, pharmacists, army officers, and others. It would appear also that the revised census figures included a substantial number of females in the skilled group who were in subprofessional occupations -- mostly textiles and cottage industries. This phenomenon is reflected in Table 3 by a numerically greater female than male participation.

The Civil Service. Apparently there has been no effort to compile comprehensive civil service records and data on the number of government employees, the level of their schooling, and their ratio to employees in the private sector. Although individual dossiers are available, nothing has been done to

TABLE 2

1960 LABOR FORCE DISTRIBUTION

	Males	Females	Totals	Percentage of Labor Force
Pastoral Activities:				
Farming, Hunting				
Fishing, Forestry	2,207,000	1,048,000	3,255,000	...
Animal Husbandry	837,000	63,000	900,000	...
Subtotal	3,044,000	1,111,000	4,155,000	85.76%
Manufacturing	63,000	178,000	241,000	4.97%
Construction	30,500	500	31,000	.64%
Commerce	91,700	8,200	99,900	2.06%
Transport	31,000	...	31,000	.64%
Services ^a	176,700	46,500	233,200	4.51%
Unclassified Unskilled	53,900	9,800	63,700	1.32%
Total Economically Active	3,490,000	1,354,000	4,844,000	100.00%

^a Includes 70,000 central and local civil service personnel, 17,000 members of the army and firemen and policemen, and 12,300 teachers.

TABLE 3

OCCUPATIONAL ANALYSIS OF ECONOMICALLY ACTIVE POPULATION
(5 YEARS OF AGE AND OVER) AT TIME OF CENSUS, 1960,
AS ADJUSTED FOR UNDERENUMERATION

Occupation	Totals	Percentage
Professional: Nontechnical	2,979	
Professional: Technical	1,164	
Managerial: Commerce & Industry	1,538	
Farm Owners & Managers	<u>240</u>	
TOTAL Professional	5,921	.012%
Semi-Professional: Nontechnical	43,351	
Semi-Professional: Technical	11,163	
Supervisors & Business Owners	70,552	
Senior Clerical & Kindred	<u>3,858</u>	
TOTAL Semi-Professional	128,924	2.6%
Craftsmen & Mechanics	264,801	
Skilled Personal Services	92,641	
Junior Clerical & Kindred	21,416	
Machinery Operations	<u>34,607</u>	
TOTAL Skilled & Semi-Skilled	413,465	8.5%
Total Unskilled: Nonagricultural	141,453	2.9%
Total Unskilled: Agricultural	4,154,237	85.8%
TOTAL ECONOMICALLY ACTIVE	4,844,000	100.0%

gather any such data for analysis. The Deputy Director of Establishments in the Ministry of Finance hopes to establish better controls over the Civil Service through better record-keeping and use of a tabulation center. It does seem clear, however, that government practices with regard to pay scales and bases for promotion have not been incentive-oriented. The government has been following the Wakefield Commission recommendations, made in 1951, which in effect set up guidelines for wage increases on the basis of years of service rather than on merit or position responsibilities. Since the Wakefield report was issued before the Sudan became independent, it is probable that the report was prepared to provide the terms of service more for expatriates than for the Sudanese -- a situation that has created harsh problems as the Sudanization program proceeds to the higher levels.

Planning Machinery

The planning machinery looks impressive on paper. At the top is an Economic Council whose chairman is the Prime Minister and whose membership includes seven ministers. A larger subcommittee, designated the Development Committee, considers recommendations, scrutinizes economic development budgets, decides on areas of study, determines whether or not the national goals are considered in the submitted plans, and passes on to the Economic Council a comprehensive economic plan for the country.

The work of these two committees is supported by an even larger "working committee," called the National Technical Planning Committee (NTPC). This committee is under the chairmanship of the Governor of the Bank of Sudan and has a membership covering all the government ministries, public utilities, and public corporations, but it has no representatives from labor or the private sector.

This committee-dominated structure is presumably supported by a working staff known as the Economic Planning Secretariat. This secretariat is in the Ministry of Finance and Economics, under the supervision of an Undersecretary for Economic Planning and Development. Responsibility for planning and coordination in the manpower field exists only in the person of the undersecretary.

The soundness of the data on which the plan has been based is questionable and the planning machinery far too cumbersome. According to the Director of Establishments in the Ministry of

Finance, the government is three years behind in its accounting records, and therefore it is impossible either to rely on plan estimates or to determine whether actual achievements to date are in line with projections.

The Ministry of Education is doing some consistent and reasonably sophisticated educational planning, but it is seriously hampered by the paucity of manpower data. The basic manpower problem in the Sudan is the lack of information on the labor force. Some analysis of labor needs is being done in a section of the Ministry of Labor that is interested in recruiting carpenters, brick layers, and other construction workers for the government. But there is no employment service in the Sudan and no guidance of skilled individuals to appropriate jobs.

Both USAID/Sudan and the Ford Foundation have been standing by to offer assistance in manpower planning, possibly through the Ministry of Finance or the University of Khartoum. To date, however, circumstances in Khartoum and particularly governmental indecision have hindered use of such support.

Future Manpower Needs

The ten-year plan estimates that the additional manpower requirement over the plan period for clerical and commercial workers is 88,000, and for semi-skilled and unskilled workers, 456,700. Roughly 7,300 additional managerial, professional, and sub-professional personnel, and 39,300 skilled craftsmen and drivers will be required over the plan period. Replacement requirements for these categories of skilled workers might amount to a further 12,000, bringing the total need for skilled workers to approximately 59,000.

The needs outlined in the plan seem somewhat low. They can be refined according to other calculations. Using the plan's 1961 labor force estimate of 5.6 million, the percentage distribution indicated in Table 3, and the growth rate of 6 per cent projected in the plan itself, the professional category would total 6,720 in 1961; the professional category needs over the plan period would be 11,424; and the average annual increase would be 1,270. The replacement rate (calculated on a mortality formula of two per cent per year, considered conservative for developing countries) would increase the total of 11,424 by another 1,354 -- or 150 a year -- thus necessitating an annual average output at the university level of 1,420 professionally trained persons in order to reach a total increase of 12,778 over the plan period.

If it is also assumed that many managerial-owner positions require university-level training, the high-level manpower supply needed by 1970-71 should be placed at about 12,800, or approximately double the supply that existed at the beginning of the ten-year plan. The figure should probably be raised to 13,000 or so, on the grounds that the need for teachers and the Sudanization of high-level government posts will be accelerated.

According to the revised Manpower and Employment Division estimates, the 1960 middle-level supply (semi-professional status implying at least secondary and possibly some college or higher technical training or equivalent experience) totaled 128,924 or 2.7 per cent of the estimated economically active population. If the same growth and replacement formulas used in the calculation of high-level manpower were applied, and an economically active population of 5.6 million was used as a base, then the semi-professional supply would have been 150,528 at the beginning of the plan period. The total need by 1970-71, including an annual increase rate of six per cent and an annual replacement rate of two per cent, would be 286,102. This assumes an average annual increase of 15,050.

In summary, the manpower requirements over the plan period, based on the above calculations, are as follows:

TABLE 4

MANPOWER REQUIREMENTS 1960-61 to 1970-71

Category	University Graduates	Secondary Graduates
1960-61 Supply	6,720	150,528
Growth over Plan Period	11,424	105,369
Replacement Needs	1,354	30,115
TOTAL 1970-71 Needs	19,498	286,012
Additional Personnel to be Supplied	12,778	138,484

The high-level needs outlined in the plan itself are calculated to be 7,300 persons, without any consideration given to

government, education, social services, health, and similar needs. At the semi-professional level, the needs are estimated at 128,100 people, if it is assumed that all persons in the administrative and clerical categories have less than university training. Note that high-level needs are slightly more than one-half of those required according to the calculations made on an overall population basis; at the semi-professional level, however, the calculated needs are approximately those stated in the plan.

EDUCATIONAL CAPABILITIES

When the Sudan gained independence in 1956, the academic and technical education needs of only a small part of the population were being met. At that time 86 per cent of the population over five years of age had received no formal schooling, and only about 8.4 per cent had received eight or more years of formal education. Vocational education was rudimentary, with only four substandard intermediate and post-intermediate trade schools operating in the entire country.

Plans for Educational Development

The Ministry of Education's Plan. The Ministry of Education formulated an Educational Development Plan, originally intended to cover the seven years, 1961-67. As compared to the Addis Ababa targets for school enrollments, the plan is fairly modest: by 1970-71, the plan would result in a 25 to 30 per cent enrollment of the primary school-age children, only a moderate advancement toward the Addis Ababa target of universal primary education by 1980; at the junior secondary level there would be 4.5 per cent of the 13- to 15-year-old group in school, as against the Addis Ababa goal of 23 per cent; and at the senior secondary level the plan provides for a 3 per cent enrollment of the 16- to 18-year-old age group by 1970, compared to the Addis Ababa target of 10 per cent.

The total cost of the Ministry of Education's plan for the first seven years was estimated at some £S60 million. Approximately 58 per cent of the total was allotted to capital expenses and the remaining 42 per cent to recurrent expenses. Nearly half the total of both capital and recurrent expenses was allocated to primary education, one-third to secondary, fifteen per cent to technical education (at all levels), and four per cent to teacher training. The cost of the plan up to 1970-71 would amount

to £150 million, of which £70 million would be capital expenditure.

Allocations for the Education Ministry's Plan. The Ministry of Finance and Economics has included in its economic development plan for 1961-70 a figure of £36 million for education, of which £33 million is allocated to the Ministry of Education and £3 million to the University of Khartoum. There is also provision amounting to approximately £1.2 million for educational and training facilities provided by other departments. These allocations are investment expenses only and do not cover recurrent costs. Thus, the plan of the Finance Ministry provides for the full ten-year period almost all of the capital requested by the Ministry of Education for the first seven years of the plan period (£33 million provided; £34.6 million requested). As has been noted, the Sudan has deliberately projected a lower rate of educational development during the initial phases of the plan in order to build up the productive sectors of its economy.

The Finance Ministry's Plan for Educational Developments.

The educational section of the Finance Ministry's development plan aims to improve primary education both in quality and quantity, with corresponding improvements at subsequent levels as it proceeds. The new educational ladder will consist of three stages: a primary school of six years, followed by a general secondary stage of four years, and then by a senior secondary stage of three years, at the end of which students sit for the School Certificate Ordinary Level. Qualified candidates who attain certain standards proceed to a further year in the senior high school. There is another final examination at the end of this year for the School Certificate Advanced Level, which will be equivalent to the present preliminary examination of the University of Khartoum.

The plan proposes to make existing sub-grade schools operate on a full primary level and to build an additional 420 primary schools. It is proposed that 16 additional general secondary schools will open every year. Teacher training at all levels will be improved through the establishment of six primary school teacher training institutes, one general secondary teachers institute, and one senior secondary teacher training institute. The plan stresses the need to expand and improve technical education by building 36 general technical schools, ten trade schools, one senior technical school, one technical institute for higher technical education, and one institute for foreign languages. Plans for the University of Khartoum are discussed below.

The Sudanese Educational System

The Sudanese educational system established by the government quite naturally follows the traditional British system as shown on the educational ladder on the next page.

There is also a private ("national") school system with a small enrollment concentrated mainly in the intermediate and secondary levels. These private schools follow the curriculum of the government schools and add substantially to the educational output above the elementary level. The following comparison of government and private school enrollments is taken from the figures of the Bureau of Educational Statistics, Ministry of Education, for 1961-62.

TABLE 5
SCHOOL ENROLLMENTS, 1961-62

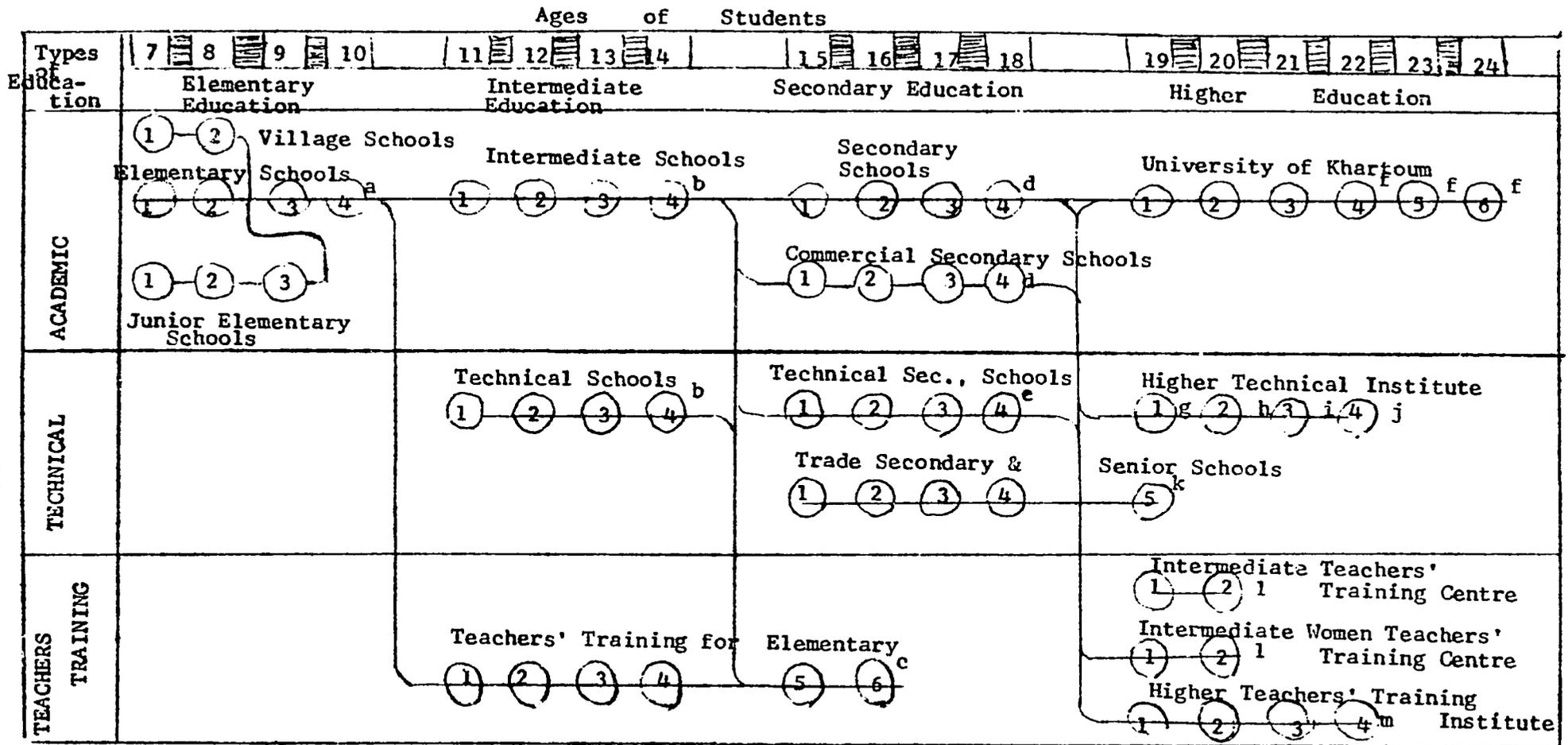
Category	Elementary	Intermediate	Secondary	Higher	All
Government	324,878	30,767	9,797	3,031	368,473
Percentage	97%	54%	54%	64%	89%
Private	10,211	25,947	8,266	1,679	46,103
Percentage	3%	46%	46%	36%	11%
Total	335,089	56,714	18,063	4,710	414,576
Percentage	100%	100%	100%	100%	100%

In addition to these schools, there are other schools which cater to the needs of special groups in the population. Of these, the most prominent are the Arab schools, which follow the Egyptian system. There are no available statistics to indicate whether any of these schools feed students to the government schools of the next level. Apparently, they emphasize subjects which are not considered adequate to qualify for higher-level government school examinations.

School Enrollments

In 1961-62 the number of students enrolled at all levels per 1,000 population was 34.3. Of these, 27.2 were in elementary schools (ages 7-10), 4.7 were in intermediate schools (ages 11-14),

GOVERNMENT EDUCATIONAL LADDER



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- ^aIntermediate Schools Entrance Examination
- ^bSecondary Schools Entrance Examination
- ^cReports on Students Work
- ^dSudan School Certificates
- ^ePromotion Examinations
- ^fUniversity Degrees
- ^gOrdinary National Certificate - Technical Secondary Diploma

- ^hSecretaries and Commerce Certificate
- ⁱDiploma of Fine Arts
- ^jHigher National Certificate
- ^kCity & Guilds (Final)
- ^lDiploma of Intermediate Teachers Training
- ^mDiploma of Higher Teachers Training

Taken from Bureau of Educational Statistics, Ministry of Education, Educational Statistics, Academic Year 1961-62 (Khartoum, Sudan: Bureau of Educational Statistics, Ministry of Education, 1962).

1.5 were in secondary education, and 0.4 were in the higher schools. Only a small minority of students enrolled at all levels are southerners, because of the relative lack of educational facilities in the southern Sudan. Most southern education has been conducted through missionary schools, but the government has discriminated against these by ousting priests and other clerics.

Dropout and repeater rates are indicated by the Ministry of Education statistics. For the Sudan as a whole the combined male and female enrollment rate in 1961-62 at the first year of elementary school (age 7) was 31 per cent. By the fourth grade (age 10) the rate dropped to 15.2 per cent. Roughly this indicates a wastage of 50 per cent and probably more, as these statistics are based on school-age population and not on an age group method. In the southern province of Equatoria, however, the figures (only for boys) showed a 94.7 per cent enrollment at first grade, a substantial drop to 14.4 per cent by third grade, and 12.1 per cent in the fourth grade. For both boys and girls, the three southern provinces have the lowest percentage of enrollment, less than half the country average.

Secondary Education

During 1961-62, the Sudan had 54 secondary schools for boys, 388 teachers, and 6,034 students. There were only 10 secondary schools for girls, 56 teachers, and 831 students. The four largest secondary schools are in Khartoum, Blue Nile, Korodofan, and Kassala provinces. All academic secondary schools are free boarding schools with a four-year program, but most have facilities for day students. Apparently the Ministry of Education plans to revise the system for reasons of economy. Students applying for entrance must pass the national examinations. The aim of these boarding schools is to enable their students, after four years of preparation, to pass the Sudan School Certificate examination, which leads to university studies. Apparently, however, only one-fourth of the students actually reach the standard required for university entrance. One of the main causes of failure is the fact that studies are conducted in a foreign language, English.

Pre-University Technical and Vocational Education

The Crosby report indicated that 90 per cent of the skilled tradesmen in the Sudan were expatriates and that when new projects required more expert workmen, they were usually recruited from abroad. The Sudanese government, hoping to replace this large

number of expatriates with nationals, has embarked upon an intensive program in technical and vocational training.

The Khartoum Technical Institute

The Khartoum Technical Institute (KTI), a post-secondary institution, is the most important of the Sudanese technical and vocational schools. USAID has given extensive assistance to the institute during the past five years for capital improvements and faculty upgrading. The latter has been through participant training in the United States and at the American University in Beirut. At present approximately half the faculty are expatriates. The school offers training in engineering, art, commercial subjects, and building construction. Some other post-secondary courses are also offered but not at a level that would enable students to qualify for the higher certificate. Entry requirements specify a secondary academic or technical school certificate. KTI operates its own secondary school from which it draws students, but generally only 30 per cent of KTI entrants have had technical training prior to enrollment.

There are about 500 students enrolled for 1964-65 at the institute's higher level of study. The institute expects to graduate 100 to 120 engineering students in 1964-65. Since the school is operating at capacity, the number of 1970-71 graduates is expected to be the same. The total number of graduates for the plan period would be approximately 1,000. For the most part, graduates are employed by government ministries as engineering aides, assistants to construction superintendents, bookkeepers, and accountants. The department of fine and applied arts trains art teachers and commercial artists.

The Khartoum Senior Trade School

The Khartoum Senior Trade School (KSTS) is a fairly new undertaking. It is receiving substantial USAID assistance in the form of grants for construction (through use of counterpart funds) and a contract with the Dunwoody Institute of Minneapolis, Minnesota. Large modern facilities are still under construction. The present enrollment is 260 and should increase to 500 next year. There is a teaching staff of 30, of whom about 8 are U.S. personnel. Many of the teachers have been dropouts from KTI.

The Khartoum Senior Trade School has been operating at the secondary level but is in the process of being upgraded. It now provides two years of intermediate technical training after the

eleventh grade. The upper level of the school's program might now be classified as post-secondary, but it is not yet at diploma level. The school will be involved in some extension work and teacher training, including the upgrading of trade teachers. Graduates of KSTS will go into industry or teaching as assistant masters for one or two years, then return for one year of teacher training or advanced skill training.

Agricultural Training

It is remarkable that in the ten-year economic development plan, no provision was made for agricultural education. What provision there was appears to have been abandoned for lack of funds in the final stages of the plan's preparation. Post-elementary and post-intermediate agricultural education is provided in only two training centers in the Sudan: one in Yambio conducted by the Ministry of Agriculture and one in Barakat.

To meet the need for semi-professional staff, the Shambat Institute of Agriculture was established in 1956 in north Khartoum under the jurisdiction of the Ministry of Agriculture. This institute can be compared with the higher section of the Khartoum Technical Institute. It gives a two-year course to 18- to 22-year-old students who have attained the final school certificate of a secondary school. It trains students in farming methods, machinery, vegetation, botany, and similar subjects. Most of those who pass the school's final examination go into government service as agricultural advisers. The maximum capacity of the institute is 120 students, though in 1963 there were only 73 students enrolled. The school has a teaching staff of 14.

Medical Training

Training of medical assistants in the Sudan has been concentrated since 1946 in the Medical Assistants Training School in Omdurman. The school has access to the Omdurman Civil Hospital, the Khartoum Graphic Museum, and the Public Health Services of Khartoum and Omdurman. The course of training extends over a period of 24 months, which are spent in the study of medicine, surgery, pharmacology, and public health, together with practical clinical teaching and laboratory work. Graduates go directly into the health service. The number of students now in training is 65. During the fiscal year 1960-61 there were 536 medical assistants listed as serving in the Ministry of Health. There are no later reliable figures.

Teacher Training

Preparation of Teachers for Elementary and Intermediate Schools. The training of teachers in elementary and intermediate education is planned and directed by the Institute of Education at Bakht-er-Ruda in the Blue Nile Province and its branches at Dilling in Korodofan Province and Shendi in the Northern Province. There are two-year courses at Bakht-er-Ruda for elementary teachers (whose entrance requirement is only the intermediate-level examination) and for intermediate teachers (whose entrance requirement is completion of secondary education). Women elementary school teachers are trained at Wad Medani, Omdurman, Maridi, and at five small teacher training centers in the south. In these centers considerable emphasis is placed on instruction in the Arabic language in order to accelerate its use as the medium of instruction in southern schools.

Teachers for the technical schools are mostly drawn from the Khartoum Technical Institute. They may not be graduates of the institute, but they have completed advanced levels of technical education. Increasing numbers of teachers are being sent abroad for advanced training at the American University of Beirut in Lebanon and at schools in England and the United States. It is planned that the Khartoum Senior Trade School will eventually supply a majority of technical teachers for the lower technical schools.

The Advanced Teacher Training College. The Advanced Teacher Training College, begun in 1961, has the same entrance standards as the University of Khartoum, with the important difference that the university insists on qualifications in English or Arabic and consequently loses many good science students whose language training is inadequate. The quality of the advanced teacher training students is quite high as a result of this language requirement and the fact that there are five applicants for every place. Student enrollment is now 380, more than six times the initial enrollment in 1961. The annual number of entering students is now 120, and it is estimated that peak enrollment will be about 500. Most of the students are boarded in hostels, and all are on government salary from the time of entrance. Consequently, there are very few dropouts. Most students have come straight from academic secondary schools, but about ten per cent have taught for one or two years. Enrollment is three in science to every two in arts; this distribution is due to the administration's insistence on matching courses of study with the country's manpower requirements.

The total faculty, including several younger staff being sent abroad, now numbers 42. Staff support has been provided by UNESCO, which has supplied seven members of the present staff, including the chief technical adviser and the vice principal. UNESCO assistance is expected to terminate in December 1966, when the entire staff should be Sudanized, except for teachers of English. However, at present there are still several staff vacancies in mathematics and the sciences.

The University of Khartoum

The University of Khartoum had its genesis in 1902, when the Gordon Memorial College was opened as a primary school. By 1913 it ranked as a secondary school. After 1938 several schools giving post-secondary training in science, arts, engineering, agriculture, and veterinary science were started; in 1945 these schools merged with Gordon Memorial College. Two years later the school's academic standards were recognized by the University of London. In 1951 it became a university college, incorporating with the Kitchener School of Medicine; and in 1956 it took its present name, the University of Khartoum. The university now grants its own degrees and diplomas in the arts (Arabic, English, history, and geography), medicine, economic and social studies, science (pure and applied mathematics, physics, chemistry, botany, and zoology), agriculture, engineering, and architecture, veterinary science and law. The agricultural school is separately located outside of Khartoum; the school of medicine is situated in Khartoum but apart from the main campus.

The ten-year development plan of the Ministry of Finance and Economics did not deal extensively with the University of Khartoum. However, the plan did underscore the need for more emphasis on the faculties of science and technology at the university. It also projected a doubling of the enrollment over the plan period -- from 1,500 in 1961 to 3,000 in 1970. Most of this increase is to be in students of technical subjects and is not to come at the expense of other faculties and institutions. The greatest increase of students will be in the faculty of science, from 235 in 1960 to 480 maximum. In the faculty of engineering and architecture, the ultimate goal is to step up the number of entering students to 200 per year by 1970. Two new departments, horticulture and forestry, will be established in the faculty of agriculture. A new section in town planning and building projects is provided for in the faculty of engineering; and a department of pharmacy will be started in the faculty of medicine.

The University of Khartoum has been separate from the Ministry of Education. It is a public institution and receives financial support from the government, but it is allowed to control expenditure of its own funds. Full autonomy is preserved under an independent council of 29 members, with academic affairs resting in the hands of a senate comprised entirely of faculty members. The President of the country is the university's chancellor, but the vice chancellor actually runs the institution. The language of instruction is English, except in the departments of Arabic and Sharia law. Income is principally from government grants-in-aid. There is also some income from independent trusts, but these do not contribute a significant amount to the university's budget. Student fees are £S84 for Sudanese and £S250 for non-Sudanese. These fees include the cost of full board.

The academic faculty and staff in 1963-64 comprised 238 members, of whom 93 were Sudanese, 76 British, 18 Egyptian, and 51 other nationalities. According to the university's records, there were also 141 Sudanese demonstrators, tutors, research assistants, and other staff (including those in courses abroad), and one Egyptian. There were also 20 technicians, of whom 3 were Sudanese and 12 were British.

Medical Training at the University. The faculty of medicine prepares physicians in a five-year program for students who have completed one year in the faculty of science. Up to 1961, 246 Sudanese doctors had qualified by this faculty. It would appear that the Sudan's supply of nurses and doctors and other personnel for public health and hospital work is much more adequate than the corresponding manpower supply of its neighbors. A recent survey conducted at the University of Khartoum by the Association of American Medical Colleges gave the medical faculty and facilities a high rating.

Faculty Enrollments and Graduating Classes. Enrollments in all of the university's faculties have climbed steadily over the years, as indicated by Table 6. But only three per cent of the total enrollment in 1961-62 came from the southern provinces.

TABLE 6
UNIVERSITY ENROLLMENT

Faculties ^a	1955- 1956	1956- 1957	1958- 1959	1959- 1960	1960- 1961	1961- 1962	1962- 1963	1963- 1964
Agriculture	33	41	62	67	53	32	44	81
Arts	187	228	240	295	300	337	383	422
Economic & Social Studies	0	..	56 ^b	124	179	239	291	352
Engineering & Architecture	46	48	55	84	95	162	183	182
Law ^c	99	92	120	112	125	134	134	142
Medicine	128	109	128	141	152	164	174	192
Science	213	262	261	352	420	465	586	628
Veterinary Science	16	22	30	42	51	50	54	68
TOTALS	722	802	952	1,216	1,375	1,583	1,849	2,077

^aEducation statistics as amended by 1962-63 and 1963-64 data provided by the education division, USAID/Sudan.

^bFirst Year for the department.

^cIncludes Sharia and public administration students.

The number of university graduates has grown very slowly in comparison to the number of students enrolled. The following table, covering the same period as that above, indicates the high wastage rate at the university levels.

TABLE 7

UNIVERSITY OF KHARTOUM, NUMBER OF GRADUATES

from 1956 to 1963^a

Faculties	1956	1959	1960	1961	1962	1963	1964
Agriculture	10	15	15	27	15	15	(not available at this writing)
Arts	35	15	29	64	42	50	
Economic & Social Studies	10	4	37	44	
Engineering	8	10	11	13	18	35	
Law	..	9	19	15	25	13	
Medicine	14	18	22	26	22	32	
Science	14	10	9	11	17	29	
Veterinary Science	<u>1</u>	<u>3</u>	<u>9</u>	<u>8</u>	<u>6</u>	<u>10</u>	
Totals	82	80	124	168	182	228	

^aEducation statistics for 1961-62, as amended by the education division, USAID/Sudan for 1962 and 1963 results.

It will be noted that enrollments in the science field have tripled in eight years, but the number of graduates has barely doubled in the same period. The fall-off appears greater than it actually is, however, because all students in agriculture, medicine veterinary science, engineering, and pharmacy enroll initially in

science for one year. Because the faculty of economic and social studies is only five years old, the number of its graduates would not be expected to reach normal levels for at least another two years. Yet in 1963, when this faculty had the third highest enrollment, it was second in the number of graduates.

The low number of students enrolled and graduates in the faculty of agriculture is of particular concern to university authorities. The Sudanese student, like students everywhere, opts for the courses that he hopes will best prepare him for satisfactory employment in the urban areas.

The ten-year development plan included the following figures for expected number of graduates from the various faculties of the university by 1965-66 and 1970-71:

TABLE 8
EXPECTED GRADUATES, UNIVERSITY OF KHARTOUM

Field of Study	1965-66	1970-71
Arts	115	130
Economic & Social Studies	100	120
Law	30	35
Science	86	126
Agriculture	16	30
Engineering & Agriculture	60	95
Medicine	44	50
Veterinary Medicine	10	20
Total	461	606

Postgraduate Instruction at the University. In its post-graduate efforts the University of Khartoum has emphasized studies

in arts and sciences. Over the three-year period from 1961-1963, there have been a total of 110 Master's degrees awarded, of which 44 were in the arts (to students who will teach at the university level) and 28 were in the sciences. There is no easy way to test the quality of these students, but it may be questioned because of the understaffed faculties in mathematics and the sciences. However, a system of teaching that is based on lecture courses requires fewer teachers. Almost all the students enrolled in the arts faculty are destined for the teaching profession, and yet rumors persist that graduates have difficulty finding satisfactory positions in the secondary school system.

The problem of the quality of post-secondary graduates is critical. The university can accommodate 800 students a year, and yet its present enrollment is about 100 less than capacity as a result of the shortage of qualified students. The wastage rate was not more than 25 per cent. However, even matriculated students are ill-prepared to carry on university-level work. One and often two years of preparatory work must be given before such students can qualify for the bachelor's degree courses. Although the university honors-degree course lasts five instead of four years, it seems evident that university students are generally enrolled for five to six years just to graduate.

Mathematics, science, languages, and economic and social studies are apparently the areas that most need boosting, both at the secondary and university levels. Whether the secondary government schools under the Education Ministry's jurisdiction can be improved enough to overcome this deficiency is problematical. It seems more likely that the university will have to overcome its shortage of qualified students by reliance on its own resources. For this reason alone, strengthening the various faculties of the university seems imperative.

U.S. Assistance to the University's Development. In the past the university has been reluctant to accept U.S. assistance because of fears that foreign aid would diminish its autonomy and might extend the control of the Sudanese government over university affairs. The Bureau of Educational and Cultural Affairs (CU) of the U.S. State Department has had contracts with Northwestern University and the University of California at Los Angeles to provide staff in engineering, economics, geography, and business at the University of Khartoum. The university's program of selecting individuals for advanced degree training overseas is in part financed by the Rockefeller Foundation, which also has supplied one staff member in the economic and social sciences and may supply

others. It now appears that the university recognizes its very considerable needs for assistance from the outside, especially because the government is having severe budgetary and recruiting problems. Foreign assistance to the university has been regarded more favorably since the political changes of October 1964, when the university was drawn closer to the Ministry of Education without being subject to unreasonable government control. AID has recently agreed to provide substantial assistance to the university through contractual arrangements with Northwestern University.

In-Service Training and Upgrading of Employed Manpower

The development of employed manpower could make an important contribution to high-level personnel in the Sudan. To date there is no field organization in the country to manage the labor market by assuring the effective employment of essential skills that are in short supply and by providing information on employment opportunities upon which training policies and programs might be based. There is an employment exchange system, but it consists of only a small headquarters office buried in the Ministry of Labor and Information and two information centers; none of these offices is effective. But even in the absence of a coordinating organization, there are several centers now existing in the Sudan, which serve to train employed personnel.

The Institute of Public Administration. The United Nations-sponsored Institute of Public Administration, established in 1960, offers medium-length courses for middle management personnel without academic background, in-service training programs, management seminars, and research programs in government administration. Two members of the Ohio State University faculty are giving three short courses in supply management during February and March 1965 under an AID contract. The institute has been criticized for operating on too low a level, and it has little prestige.

The Khartoum Branch of the University of Cairo. The Khartoum Branch of the University of Cairo, which was started in October 1955, is composed of three faculties: arts (Arabic, geography, history, and sociology), law, and commerce. The Khartoum Branch faculties are now virtually independent from their counterparts in the University of Cairo; but apparently they still are subsidized by the United Arab Republic and are a source of UAR influence in the Sudan. Almost all of the Khartoum Branch's students hold full-time jobs, many of them in the civil service, and they are studying in order to move up the occupational ladder. For this

reason, all classes are given at night. It is generally agreed that the Khartoum Branch of the University of Cairo does not prepare students much above the junior college level, although its graduates have been considered equal to those of the University of Khartoum in the job market. The school is not insignificant as a means of upgrading employed manpower.

The school's first class of 42 graduates completed their studies in 1959. The number of graduates rose to 92 in 1961, the last year for which figures are available. The 1961-62 enrollments totaled 1,138, of which 550 were in commerce, 400 in law, and the remaining 368 in the arts. Eighty-seven per cent of the student body were Sudanese; the remainder were all Egyptian, except for one Iranian.

The faculty is composed almost entirely of UAR citizens, except for six Sudanese who teach Sudanese topics. The language of instruction is Arabic. Entrance requirements are either a Sudanese or Egyptian School Certificate. Wastage ran about 75 per cent for the entering class of 1957-58.

The Vocational Training Center. In addition to the formal school system, the Sudanese government with the assistance of the International Labor Organization, has established a Vocational Training Center in Khartoum, which is designed to provide skilled training for adult workers. UNESCO also provides assistance through a vocational adviser.

Government Scholarship Support for Local and Overseas Training

There is no single central administration of scholarships at home and abroad or registry of students, though a good proportion of post-secondary students do receive financial help. Scholarships are handled by three different agencies according to classification as follows:

1. Scholarships for government civil servants.
2. Sudanese-sponsored study outside the Sudan, including recent graduates of the university who are selected for the second degree or special study abroad; this is handled by an advisory board.
3. External scholarships, which are coordinated through the Ministry of Education.

Coordination among the various agencies responsible for these three types of scholarships is informal. Although these agencies make some effort to exchange information, there is no central registry identifying trained individuals. The closest thing to such a system seems to be voting registration, in which educational qualifications must be given.

OVERSEAS STUDY

Statistics on Overseas Study

Estimates of the number of Sudanese students studying outside the Sudan during recent years range from 1,375 to over 3,000. This wide disparity is due to different estimates of the number of students in the United Arab Republic, many of whom are probably at the secondary school level.

Two estimates were obtained from AID/Sudan in February 1965. The lower estimate, which is for the year 1962-63, is broken down in the table below:

TABLE 9
STUDENTS OVERSEAS -- LOWER ESTIMATE

Source of Support for Study Outside the Sudan	Total No. of Students
Sudanese Government Scholarships ^a	272
Foreign Government Scholarships	187
U.S.S.R. and Eastern Europe	50
Western Europe	20
United States	15
Afro-Asian Countries	60
Other Associations & Institutions . .	42
University of Khartoum Support	144
United Arab Republic (Mostly Self-Sponsored)	489
United Nations-Sponsored	70
Self-Sponsored, Not Studying in the UAR ^b	30
USAID-Sponsored at American University in Beirut	68
USAID Participant Trainees in United States	115
Total	1,375

^aMost of these scholarship holders are in the United Kingdom.

^bThe majority of these are also in the United Kingdom.

The higher estimate indicated the following distribution:

TABLE 10

STUDENTS OVERSEAS -- HIGHER ESTIMATE

Place of Study	Total
Western Europe (including United Kingdom)	550
Middle East	2,050
United Arab Republic	1,950
U.S.S.R. and Eastern Europe	785
Sudanese-Sponsored	400
(with perhaps non-Sudanese financing)	
Self-Sponsored	385
Total	3,385

The figures available from non-Sudanese printed sources indicate that there were at least 720 Sudanese students studying in the United States, the United Kingdom, France, and West Germany during 1963-64, almost all of whom were at the post-secondary level.

Students in the United States. According to Open Doors, in 1962-63 there were 127 Sudanese students at U.S. colleges and universities, among whom were 55 graduates. The number had grown to 170 students, of whom 95 were graduates in 1963-64, and 180 students, of whom 119 were graduates in 1964-65. Most students were enrolled in the social sciences and engineering.

The Sudanese Embassy in Washington, however, listed a total of 260 students, who were registered with the Cultural Office as of November 1964. Of these, 24 were undergraduates, 184 were graduates, and 52 were in technical training. AID and other U.S.

agencies sponsored 195, 40 were sponsored by the Sudanese government, 14 were unsponsored, 10 were financed by the UN and WHO, and 1 was sponsored by the World Bank.

There has been no ASPAU program for the Sudan because the Sudanese government apparently has not felt able to accept all the conditions of the program. Although there were no Sudanese AFGRAD fellows in 1963-64, the first year of the program, three students were selected for 1964-65, in civil engineering, veterinary medicine and agronomy (sugar cane). According to recent AID participant training reports, there were 107 Sudanese trained under this program each year during fiscal year 1963 and fiscal year 1964. During FY 1963, 87 Sudanese were trained exclusively in the United States, 26 in Beirut, and 4 partly in the United States and partly in third countries. During FY 1964, 79 Sudanese were trained exclusively in the United States, 19 in Beirut, and 9 both in the United States and third countries.

Students in the United Kingdom. According to the Commonwealth Universities Year Book and the British Council, there were 415 Sudanese students at British universities and post-secondary institutions during 1963-64. Of these, 239 were enrolled for full-time study or research at universities. More than half -- 162 -- of the 239 were at the graduate level. Most students were enrolled in the arts, social studies, agriculture and forestry, pure science, medicine, technology, and veterinary science, in that order. The remaining 176 students were at post-secondary institutions; 84 at technical colleges, 71 in professional and practical training, 13 in teacher training, and 8 at private colleges and other institutions.

Students in West Germany. There were 126 Sudanese students in West Germany during the summer semester of 1963 and 120 during the winter semester of 1964. Most students were enrolled in medicine -- 33 each semester.

Students in France. According to the Sudanese cultural attaché for Western Europe, as of July 1964 there were 18 Sudanese students in France, all but two of whom were at universities. Fourteen at the university level held French government scholarships. The two secondary school students and one university student were privately sponsored (one student's financial support was unknown). The distribution of university students by field of study was as follows: five in engineering, four in medicine, two in pharmacology, two in dentistry, one in geology, one in science, and one unknown.

Graduate Study and Research Overseas. The Sudanese Ministry of Education indicated that during the academic year 1963-64, there were 117 University of Khartoum students doing graduate study and 23 students doing research work abroad on University of Khartoum Scholarships. Most of these students will teach at the University of Khartoum on their return. Over the six-year period from 1958 to 1964, there were 396 University of Khartoum students abroad for graduate study and 71 abroad for research work. The highest numbers were in agriculture, arts, science, engineering, and veterinary science, in that order.

MANPOWER BALANCE SHEET

The Manpower Supply-Demand Equation

On the basis of the available information, it is possible to make certain assumptions about the manpower supply-demand equation and the capacity of the Sudanese post-secondary institutions to contribute to the supply of higher-level manpower. The manpower needs for the plan period are shown in this table:

TABLE 11

MANPOWER NEEDS OVER PLAN PERIOD

Category	University Graduates	Secondary Graduates
1960-61 Supply	6,720	150,528
Growth Over the Plan Period	11,424	105,369
Replacement Needs	<u>1,354</u>	<u>30,115</u>
Total 1970-71 Needs	19,498	286,102
Additional Personnel to be Supplied	12,778	138,484

The Supply of High-Level Manpower

The high-level supply over the plan period would consist of graduates of the University of Khartoum, returnees from overseas, and possibly graduates of the Khartoum Branch of Cairo University and the higher technical schools. The development plan calculated that the total output of the University of Khartoum over the ten-year period ending in 1970-71 would be 4,404. If it is assumed that approximately 150 students will return annually from overseas study, high-level personnel among these returnees would total 1,500 by 1970-71. Consequently, the total number of Sudanese university graduates over the plan period would be about 5,900 -- only about 45 per cent of the additional needs. If the approximately 1,000 persons to be upgraded over the plan period through training at the University of Cairo's Khartoum Branch, and the 2,545 graduates anticipated by the plan itself from the Khartoum Technical Institute and similar institutions are included in the output estimate, the need for additional trained manpower is reduced to 3,330 and almost 74 per cent of the additional personnel required will have been supplied.

The Supply of Middle-Level Manpower

There is insufficient data to assess the demand-supply equation for middle-level personnel, but it is evident that the greatest need is in this area. The plan itself estimated that at the second level of technical training, the supply over the ten-year period would cover only about 12 per cent of the requirements. Even if part of the remainder could be made up by special post-employment courses and on-the-job training, the shortfall would be much greater than at the higher level.

Specific Needs for Technically Trained Personnel

According to the Sudanese Ministry of Finance, the UNESCO mission of 1963 predicted further needs in specialized areas. It was estimated that during the planning period some 9,000 technically trained persons with education at the post-secondary level will be required. Of these, some 2,000 will be needed for the agricultural sector to meet additional needs and replacement requirements for mechanical engineers, architects, agriculturalists, and other specialists. Existing institutions are expected to produce approximately one-third of the personnel needed in this sector. In industry, transport, and communications, the additional requirements and replacement demands during the planning period are estimated to amount to some 7,000 engineers. Here

again, just over one-third (2,742) of the needed manpower is expected to graduate from Sudanese institutions.

The total demand during the planning period for technically trained personnel at the highest level is therefore estimated at some 9,000 persons, of whom 3,350 are expected to be supplied by existing national institutions. In both cases cited above, the deficits will have to be supplied by students from other institutes that are less qualified for higher training, by personnel trained abroad, and by expatriates. It is understood, moreover, that the government's estimates have been made on the basis of needs for specific development projects and do not take account of the additional demands which these projects may generate in other fields.

Some Causes of the Manpower Supply Problem

Even so, part of the Sudanese manpower problem is related to inadequate use of high-level personnel and lack of coordination between the sources of supply and the sources of employment. The Director of Establishments in the Ministry of Finance firmly stated that the government had a very difficult time trying to place even 100 of the 228 graduates (especially those in the arts) from the university. In some ministries in Khartoum, the number of top-level personnel was adequate; since these personnel were 40 years old or younger, promotions at the top were precluded for several years to come, and university graduates were naturally hesitant to accept lower positions.

Even though these ministries are adequately staffed at the highest level, the government still needs trained administrators at other levels, particularly in the provinces. This need has not been met even by the Institute of Public Administration. This failure of two institutions to place their graduates where they are most needed demonstrates the poor coordination that exists between the government and the suppliers of trained manpower and that is related to the country's present political problems.

CONCLUSIONS

The Need to Establish Priorities

The committee's recommendations, listed on the following pages, are based on recognition of the need to establish development priorities within an integrated framework. The committee believes that such a framework is necessary to provide an overall strategy of human resource development and to insure an effective AID assistance program in Sudan. The present AID program does not clearly reflect such a framework. Instead of a piecemeal approach to national development and assistance in response to individual requests, AID should plan its own development strategy for Sudan so that its supplementary assistance will be based on the appropriate selection of important sectors, programs, and institutions. The Agency must work out its own priorities as an external donor and be firm in its commitment to these priorities.

Assumptions

The development priorities established by the Education and World Affairs study committee are based upon the following assumptions:

1. That continuous consultation with appropriate agencies of the Sudanese government will be necessary to insure that USAID's strategy is adapted to the Sudan's changing needs.

2. That the organizational elements fundamental to effective manpower planning and which already exist in the Sudan are not utilized because of a lack of expertise, leadership, and coordination. Although planning machinery has been established, responsibility for its coordination and functioning rests in one person, an Undersecretary for Economic Development. The machinery itself is rather cumbersome, involving representatives from all the ministries and from the public sector. No representatives from the private sector, however, are included.

Ideally, manpower planning machinery should include:

- (a) an organizational unit highly placed within the government to coordinate research, policy formulation, and planning and operational activities in the manpower fields;
- (b) a research

unit to perform necessary analysis; and (c) a field organization for managing the labor market by supplying the employment information upon which manpower, educational, and training policies and programs should be based.

3. That USAID's effectiveness in the Sudan has been seriously curtailed due to political instability and the government's lack of planning procedures.

4. That existing studies on manpower needs and supply are insufficient to serve as the basis for establishing detailed priorities. The only manpower analysis of note undertaken in the Sudan was done in 1960 by ICA in collaboration with various Sudanese ministries. This study aimed to assist technical training below the university level. In the absence of pertinent data, the committee cannot with confidence establish priorities in all areas. However, it is possible to identify critical shortages and make recommendations to alleviate these shortages.

Manpower Priorities

The greatest need is for middle-level personnel. The Sudanese government's Ten-Year Plan for Economic and Social Development itself estimated that the actual supply of middle-level technical personnel over the plan period would cover only about 12 per cent of the requirements. The quality of middle-level training, both for regular students and employed personnel who are being upgraded, must be improved and the high wastage rate reduced.

A high priority should be assigned to meeting the need for high-level manpower. Estimates by planners point to a shortage of at least 3,000 to 4,000 personnel in this category over the ten-year plan period.

High priority at both the high and middle-levels should be given to the development of technically trained manpower. It is estimated that during the planning period some 9,000 technically trained persons with education at the post-secondary level will be required. Of these, some 2,000 will be needed for the agricultural sector to meet additional needs and replacement requirements for mechanical engineers, architects, agriculturalists, and other specialists. Existing institutions are expected to produce approximately only one-third of the technically trained personnel required.

Educational Capabilities

The least adequate aspect of the Sudanese educational system is the secondary level. The poor preparation students receive in secondary schools has caused the University of Khartoum to give one and even two years of preparatory work to some of its students before they can qualify for courses leading to a bachelor's degree; as a result, a number of the university's students take five or six years to graduate. Training for secondary school teachers is an important part of this problem.

The existing foundations of university education are adequate. However, the University of Khartoum does not have a capacity enrollment, primarily because the secondary schools give inadequate preparation to their students. Even this university, however, needs boosting, particularly in the fields of mathematics, science, languages, and economic and social studies.

Recommendations:

1. Encouragement of More Effective Planning Machinery

The committee recommends that USAID continues its efforts to promote the development of effective planning machinery; at the same time it should consult with the Ford Foundation, which has also offered its assistance in such an undertaking. Although some members of the Sudanese government appear to see the need for such machinery, USAID and the Ford Foundation have not yet been taken up on their offers to help. In such sensitive political questions, Ford Foundation assistance might be more appropriate. It would be overoptimistic, however, to expect immediate or far-reaching results from efforts by either USAID or the Ford Foundation. Instead, assistance might be given to establish a research and planning unit within the University of Khartoum, as discussed below in Recommendation #4c.

2. Assistance in the Development of Middle-Level Manpower

USAID should continue to assist the Khartoum Senior Trade School both through direct grants and the Dunwoody Institute contract.

USAID should also consider support for the Advanced Teacher Training College, especially when UNESCO staff support terminates in December 1966. Improvement in the quality of the country's teachers should be effective in strengthening secondary education.

3. Support for the Training of Employed Manpower

The committee recommends that USAID provide more staffing support to the Institute of Public Administration. The IPA has little prestige because it operates at too low a level. Yet, because it would be inappropriate to support the Khartoum Branch of the University of Cairo, the IPA is a logical place to focus assistance in the important effort to upgrade employed manpower. Assistance should aim to raise the level of training at the institute, improving both short- and longer-term courses to increase the institute's effectiveness and prestige. To date, AID support for this institute has been small; its contract with Ohio State University was for faculty to teach three short courses in supply management.

4. Effort to Develop an Effective Relationship with the University of Khartoum

The committee recommends that USAID continue its present support for the University of Khartoum and be prepared to increase its assistance. Because the university enjoys a large degree of autonomy and is at present more favorably inclined toward external support, an effective relationship might well be developed with the University of Khartoum, which is an appropriate focal point for institutional development where American contributions can be significant in spite of changes in the government and the general instability. Given the present political situation in the country, assistance to government agencies will be difficult at best. Assistance to the University of Khartoum, however, might take the following forms:

a. Staff Support. USAID should support faculty recruitment and the topping up of salaries of American personnel. The University is under able leadership, but suffers from lack of staff. In particular, as the University's enrollment increases according to the development plan, more faculty in the sciences and technical subjects will be needed.

b. Policy Guidance. USAID should encourage the systematic study of the functions of the University with regard to the formulation of educational policy, expression of governmental ambitions, indication of long-term requirements for university graduates, and improvement of coordination between the government and the university.

c. Research Capabilities. USAID should make every effort to improve and institutionalize the research capabilities of the University. The manpower research and data collection so needed in the Sudan might well be performed by an institute set up within the University with AID support. Every effort should be made to insure that the government utilizes the abilities and facilities of the University's research staff.

5. Coordination of Scholarship Administration

The committee recommends that USAID provide an adviser to assist in the administration of scholarships. In particular, the effort to keep track of students and to coordinate graduating students with available job openings deserves attention, since there is no central registry.

6. Improvement of Employment Services

The committee recommends that USAID provide an adviser to assist in the improvement of the Sudanese employment service. A great deal of potentially important manpower is misplaced in the Sudan because of the lack of communication between potential employers and graduates from the University of Khartoum, overseas universities, and secondary and other post-secondary Sudanese institutions.

7. Overseas Study

The USAID participant training program should be maintained as it is presently operated. There is no ASPAU program with the Sudan. USAID should encourage the continuation of other undergraduate opportunities in the United States at a reduced level and should hold open the ASPAU offer in order to provide an alternative to Sudan's heavy dependence on study in the United Arab Republic.

The major emphasis on overseas study, however, should be placed on graduate fellowships. These fellowships should be tied in with direct assignment to identified positions, particularly on the university staff. Until there is a reliable manpower survey, it is impossible to determine in detail the specific fields in which scholarship assistance should be directed. USAID should be prepared to support the University of Khartoum's overseas graduate study program insofar as it is not supported by other sources.

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