



THE UNITED REPUBLIC OF TANZANIA

Third Five-Year Plan

for

Economic

and

Social Development

(VOLUME THREE)

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(PART FOUR)

Manpower Development Plan

(1975—1980)

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THIRD FIVE-YEAR MANPOWER DEVELOPMENT PLAN

INTRODUCTION

The Third Five Year Development Plan is the last medium plan of the long term prospective plan 1964—1980 launched in 1964. One of the goals in this long term plan is to make Tanzania self-sufficient in skilled manpower by 1980. In 1964, it was estimated that Tanzania's manpower requirements for self-sufficiency by 1980 would be 9,070 personnel manning high and middle level posts in the Public Sector.

2. The Public Sector as defined in 1964 include Government, Ministries and independent departments only. Following the proclamation of the Arusha Declaration, in 1967, the Public Sector was expanded as a result of putting ownership and control of the major means of production and distribution in the hands of the country's worker's and peasants. Important means of production and distribution include land, forests, mines, water petrol, and electricity, communication media, transport median, banks, insurance companies, import and export trade, iron and steel enterprises, arms and ammunition, cement fertilizer, etc. In strengthening operations of the expanded sector various parastatals were created and some of the personnel who were already in the public sector (mainly Civil Servants) were transferred to man the newly—created organisations. This created a big need for high level manpower. In the early 1970s, other social and political changes led to the growth of the Public Sector and consequently, the demand for skilled manpower. These other changes included the 1972 decentralization programme and the 1974 Musoma Resolution with respect to Universal Primary Education by November 1977 and the Implementation of the musoma Resolution in respect of higher education. As a result of these, and other changes, the estimated number of high and middle level manpower requirements will be above 65,000 by the year 1980 instead of 9,070 estimated in 1964. This increase is sevenfold the 1964 estimate.

IMPLEMENTATION OF OBJECTIVES, TARGETS AND STRATEGIES IN RESPECT OF MANPOWER PLANNING ENVISAGED IN THE SECOND FIVE YEAR PLAN

3. Before discussing the objectives, targets and strategies for implementing the Third Five Year Development Plan on Manpower, it is appropriate to make an overview of the successes and failure with regard to implementation of the manpower development plan in the second five year plan, whose objectives, targets and strategies were similar to those in the First Five Year Plan.

4. As explained above in, 1964, it was estimated that by 1980 we would need a total of 9,070 high and middle level personnel in order to reach self-sufficiency in manpower. However this target was soon realized to be inadequate in the course of the First and the Second Five Year Plans and it became clear that we would need not less than 29,473 high and middle level personnel.

5. In a bid to achieve manpower self-sufficiency, the government deployed several strategies. They included expansion of institutions of higher learning by adding institutes and departments, for example the faculties of Agriculture and Engineering at the University of Dar es Salaam; expansion of the Institute of Finance Management; expansion of the Institute of Development Management (Mzumbe); Upgrading programmes and utilization of overseas training opportunities.

6. In the Second Five Year Plan period a total of 12,600 students were enrolled in institutions of higher learning within East Africa and 2,240 students were enrolled in overseas institutions. Out of the total 14,900 who joined institutions of higher educations during the plan period, 12,730 students graduated and were available for employment. Table I shows increase in high level manpower (category A), middle level manpower including technicians (Category B) and Category C personnel. The table also shows achievements and failure in our efforts to acquire skilled manpower to man our economy. It can be deduced from the table that during the Second Five Year Plan 3,730 Category A personnel, 10,385 Category B Category B personnel and 66,948 Category C personnel successfully completed training and were employed in various sectors of the economy. There was a marked increase in Arts-based skills. However, there was a marked shortfall of science-based skills. The shortfall was pronounced in engineering, medicine, science teachers and various technical fields.

MANPOWER SURVEY ESTIMATES OF NET INCREASES IN HIGH AND MIDDLE LEVEL MANPOWER CATEGORIES

Table I

Manpower Categories	A	B	C	Total
Total employed —1968	4,076	10,943	29,083	44,102
Estimated increase in manpower requirements (1974)	3,849	12,333	20,101	37,283
Estimated employment by the year 1974	7,925	23,276	49,184	80,385
Actual employment in 1974	7,806	21,328	96,031	125,165
Difference between the estimated employment and actual employment	-119	-1948	46,847	44,780

Source:—Ministry of Manpower Development

7. By the end of the Second Five Year Plan localisation of senior and Middle grade in the Civil Service was almost 94% of the filled posts. However, the total number of citizens in field posts constituted only about 59% of all established posts in the Civil Service. Table No. 2 gives more details of the localization of the Civil service since Independence up to 1974.

8. In spite of these achievements, many problems were encountered. In the first place, the expansion of institutions was not carried out as successfully as has been expected due to the shortage of funds, building materials and teachers. Secondly, training opportunities were not utilised to the maximum as envisaged due to lack of efficient communication between employers and training institutions. Thirdly the requirements for skilled manpower in different sectors of the economy were not properly synchronized with the training programmes in the various training institutions. Fourthly, mis-utilizations of the available manpower hindered implementation of some of the objectives. Last poor programmes for on-job and in-service training and anachronist manpower policies which did not match with the changes that occurred during the two plan periods, contributed to poor performance in the field of manpower development.

THIRD FIVE-YEAR DEVELOPMENT PLAN

9. The first objective of the Manpower Development Plan during the Third Five Year Plan period is to make sure that various training programmes are matched to the requirements for high level manpower personnel that is necessary for the efficient running of the economy to the extent our resources permit. High education in engineering and technical fields will be given emphasis to meet the plan manpower requirements in agriculture industry, mining, water, electricity, health and other sectors. The Second objective is to provide on the job training to personnel already in service so as to increase their efficiency. The third objective will be to improve manpower forecasts of the requirement of various economic institutions so as to ensure achievement of maximum training efficiency both at home and abroad; to ensure that appropriate recruitment of noncitizens is done and maximum utilization of the available manpower in all sectors of the economy is achieved.

MANPOWER ESTIMATES DURING THE THIRD FIVE YEAR PLAN PERIOD

10. By 1980 it is estimated that the nation's personnel requirements will be 95,725 people of Category A, B, and C. Of this it is estimated that 8,276 people will be category A personnel (i.e. those with University education or its equivalent). The personnel in this Category are expected to fill senior professional and administrative posts. It is further estimated that 28,556 personnel in Category B will be required. The personnel in this Category, which is sub-professional and includes technical staff, medical attendants, assistant accountants etc. require a post-secondary school training of between one year and three years.

11. It is also estimated that 58,892 personnel in category C will be required by 1980. Category C occupations normally require a secondary school education as a basis for on the job training. The personnel in this Category are non-professional and they acquire the necessary skill while on the job, after completion of form four. Example in this Category includes clerks of all types, office supervisors, news reporters, mechanics etc.

PROGRESS IN LOCALIZATION AND SELF-SUFFICIENCY ACHIEVED SINCE INDEPENDENCE UP TO 1974

Table 2

Year	Established Posts				Filled Posts				Per-centage of Citizen to Total Establi- shed Posts (8) (Col. 4% of Col. 3)
	Filled (1)	Vacant (2)	Total (3)	Citizens (4)	Per-centage (5) (Col. 4 as of Col. 1)	Non Citizens (6)	Per-centage (7) (6 as % of 1)		
1961	4,878	1,156	6,034	1,596	32.7	3,282	67.3	26.6	
1962	5,006	1,403	6,409	2,104	42.0	2,902	58.0	32.8	
1963	5,300	1,427	6,727	2,720	67.9	2,580	32.1	40.0	
1964	5,671	1,605	7,276	3,365	59.3	2,306	40.7	46.2	
1965	6,229	1,790	8,019	4,218	67.7	2,011	32.3	52.6	
1966	6,573	2,433	9,006	4,675	71.1	1,898	28.9	51.9	
1967	7,085	2,880	9,965	5,214	74.2	1,871	25.8	52.6	
1968	8,093	2,828	10,921	6,474	80.2	1,619	19.8	59.6	
1969	7,738	3,286	11,024	6,387	82.5	1,351	17.5	57.9	
1970	9,719	4,581	14,300	8,342	85.8	1,397	14.2	58.3	
1971	11,005	5,424	16,429	9,954	90.0	1,051	10.0	60.0	
1972	12,864	7,467	20,331	12,119	94.1	745	5.9	59.3	
1973	13,400	6,477	19,877	12,600	94.0	800	6.0	63.4	
1974	16,183	9,605	25,788	15,182	93.8	1,001	6.2	58.9	

SOURCE:—Ministry of Manpower Development.

12. Table 3 summarises manpower requirements in the three important manpower categories. It can be seen from the table that by June, 1974 3,660 people in categories A—Science occupations were employed. Of these 2,487 were citizens and 1,173 were non-citizens. There were 2,188 vacant posts and the increases in employment which took into account the growth projections of the economy, was estimated to be about 1,444 during the 1975—1980 period. Therefore total manpower requirements for category A—Science based occupation during the Third Five Year period is estimated to be 4,929.

MANPOWER REQUIREMENTS IN THE THIRD FIVE YEAR DEVELOPMENT PLAN

Table 3

	Total Employed (1974)	Citizen (1974)	Non- Citizen (1974)	Vacant posts (1974)	Net Increase in Employment 1975-80	Total Require- ments 1975-80
CATEGORY A:						
Science	3,660	2,487	1,173	2,188	1,444	4,929
Arts	4,146	3,401	745	1,362	1,222	3,347
Total Category A ...	7,806	5,888	1,918	3,550	2,666	8,276
<u>Category "B"</u>	<u>23,994</u>	<u>23,149</u>	<u>845</u>	<u>5,281</u>	<u>22,408</u>	<u>28,556</u>
<u>Category "C"</u>	<u>21,365</u>	<u>90,036</u>	<u>3,329</u>	<u>10,806</u>	<u>44,657</u>	<u>58,892</u>
Total Category AB+C ...	127,165	120,073	6,092	19,637	69,731	95,724

SOURCE:—Ministry of Manpower Development.

13. Estimates of requirements for Arts-based skills in Category A: middle level posts or sub-professional occupations Category (C) are shown in a similar manner. Appendix I and Appendix II further elaborate the information contained in table No. 3 and give a thorough layout of the stock of manpower in 1974 and estimates of manpower requirements during 1975-80 by occupation titles.

STRATEGIES IN IMPLEMENTING THE THIRD FIVE YEAR DEVELOPMENT PLAN

14. The estimates for high and middle level manpower requirements during the Third Five-Year Plan are substantially larger than our local training output capacity. Therefore every efforts will be made to strengthen the expansion of the training facilities, that was initiated in the Second Plan Period and to ensure full utilizations of available teachers, equipment and accommodation Table No. 4 shows possible output from present training institutions without taking into account the future expansion programmes of those institutions.

MANPOWER REQUIREMENTS AND EXPECTED OUTPUT FROM THE LOCAL INSTITUTIONS IN THE THIRD FIVE YEAR PLAN—1980/81

Field	Total require- ments in the 3rd Five Year Plan	Total Output from the institu- tions 1975/80/81	Difference (increase or shortfall)	Percentage of the output require- ments 1980/81
Medicine	793	346	-447	43
Administration	2,523	1,170	-1,353	46
Engineering	1,481	438	-1,043	79
Teaching—Arts	591	517	-74	87
Science	1,140	603	-537	52
Agriculture	166	240	+74	144
Law	610	372	-238	60
Others	972	335	-637	34
Total ...	8,276	4,021	-4,113	49

Source:—Ministry of Manpower Development

15. As table 4 shows, the estimated output of Category A personnel from local institutions is nearly half the total Category A manpower requirements by 1980/81. Since our local institutions will not be able to satisfy our manpower requirements during this period, efforts will be intensified to secure and utilize training opportunities and scholarships that will be available from friendly countries and international organizations. Also we will employ expatriate personnel in posts which require Science and technical background, the filling of which cannot wait until we get our own personnel. Our country, like many others in the Third World, cannot completely do away with expatriates.

ESTIMATES OF MANPOWER REQUIREMENTS 1975-1980
 CATEGORY "A"—OCCUPATIONS—SCIENCE
 UNIVERSITY LEVEL

ISCO Code	Occupation Category 'A' Science	Total Employed	Employed Citizen	Employed Non-Citizen	Vacancies	Increase in Employment	TOTAL REQUIREMENTS BY SECTOR											Expected Output 1975-80	Surplus or Shortfall		
							Agriculture	Mining	Manufacturing	Utilities	Construction	Transportation	Commerce	Trade/Commerce	Transportation	Finance	Services			Government	
0-11.10	Chemist	75	51	24	30	37	1		75	3								91	61	-40	
0-11.40	Water Chemist	1	1	1	2	1				4								10	10		
0-12.10	Physicist	17	8	9	4	17				30								30	42	+12	
0-13.20	Hydrologist	25	18	7	35	18				50								60	32	+28	
0-13.30	Geologist	5	5			2												10	10		
0-13.40	Materialogical Scientist	43	17	26	23	7												59	23	-31	
0-21.20	Architect	203	14	8	26	4			11	100								33	19	-19	
0-21.30	Town Planner	166	91	75	63	31			2									43	304	-105	
0-22.10	Civil Engineer (General)	72	22	50	4	24			5	19								78	48	-30	
0-22.55	Hydrologist	2	2						2									10	10		
0-22.60	Soil Mechanics	118	34	64	50	74			23	97								188	60	-128	
0-23.05	Electrical Engineer (General)	6	6			3			9	13								10	14	+4	
0-23.10	Electronics	12	11	1		12				13								13	13		
0-23.20	Power Generation	42	30	12	16	9				1								10	10		
0-23.30	Power Distribution	378	243	135	166	156			167	61								457	23	-234	
0-23.40	Telecommunications	23	14	11	24	5			5									40	40		
0-24.10	Mechanical Engineer (General)	12	10	2	1	3			2									10	10		
0-24.40	Marine	15	14	1	12	3			3									16	16		
0-24.50	Ship Construction	2	2															1	1		
0-24.60	Aeronautical	2	2															1	1		
0-24.80	Refrigeration	8	8	2	2	5			12									10	10		
0-25.10	Chemical Engineer	3	2	6	2	2			3									10	10		
0-26.20	Metallurgist	4	4	1	1	2												10	10		
0-27.10	Mining Engineer	6	5	1	1	1			5									10	10		
0-28.10	Industrial Efficiency Engineer	35	31	4	10	3			3	36								39	11	-28	
0-28.90	Industrial Engineer	24	18	6	19	5			11									20	26	+6	
0-29.20	Agricultural Engineer	11	9	2	6	4			6									8	8		
0-29.40	Food and Drink Technologist	96	53	43	6	40			66	6								42	63	+21	
0-29.90	Other Technologist	99	28	18	11	13												106	106		
0-31.10	Surveyor (General)	63	29	34	54	12												100	27	-73	
0-31.20	Land Surveyor	5	1	1	2	1												21	5	-16	
0-51.10	Biologist	5	3	2	2	1												5	5		
0-51.30	Zoologist	29	20	9	11	42												62	30	-32	
0-51.90	Fishery Office...	2	2		13				4	5								13	13		
0-52.60	Medical Pathologist	197	148	49	139	43			4									204	391	-194	
0-53.20	Agrologist	50	41	9	22	58												89	103	+14	
0-53.40	Silviculturist	2	1	1		2												3	3		
0-53.50	Soil Scientist	24	23	1	23	50												74	36	-38	
0-53.90	Game Officer																				

ISCO Code	Occupation Category "A" Science	TOTAL REQUIREMENTS BY SECTOR											Expected Output	Surplus or Short Fall	
		Total Employed	Employed Citizen	Employed Non-Citizen	Vacancies	Increase in Employment	Agriculture	Mining	Manufacturing	Utilities	Construction	Trade/Commerce			Transport Communications	Finance	Services	Government	Total Requirements 1975-80

SECONDARY TEACHERS

1-32.40	Art	585	537	58	250	12											308	177	-131
1-32.60	Commerce	93	75	18	19	12											49	52	+3
1-39.60	Education Advisors	5	4	1													10		-10
2-02.10	Administrators	342	411	31	132	96											259	188	-71
2-11.10	General Manager	136	135	109	20	212											339	188	-71
2-12.10	Production Manager	95	66	29	7	62											78		
2-19.20	Research and Development Manager	34	27	7	18	11											13	36	
2-19.30	Sales Manager	48	38	10	4	26											2	2	
2-19.40	Administrative Manager	29	28	1	4	14											19	40	
2-19.50	Financial Manager	128	123	5	9	84											14	98	
2-19.60	Transport Operation Manager	24	20	4	3	6											13	13	
2-19.80	Personal Manager	52	50	2	17	18											16	37	
4-00.20	Whole Sale Trade Manager	5	4	1	2	2											5	5	
4-00.80	Retail Trade Manager	12	12			6											6	6	
6-00.20	Farm Manager	161	110	51	3	13											67		
TOTAL ARTS OCCUPATIONS		4,146	3,401	745	1,362	1,222	72	11	413	52	121	175	108	407	636	1,334	3,347	2,347	-1,000
TOTAL SCIENCE OCCUPATIONS		3,660	2,487	1,173	2,188	1,444	47	22	427	420	257	21	184	39	523	2,865	4,929	3,087	-1,842
TOTAL CATEGORY "A" OCCUPATIONS		7,806	5,888	1,918	3,550	2,666	119	33	840	472	378	196	292	446	1,159	4,199	8,276	5,434	-2,842

OCCUPATION CATEGORY "B"

0-14.20	Chemistry Laboratory Technician	2	1	1		1														
0-14.30	Physics Laboratory Technician	103	99	4		20														
0-14.90	Science Laboratory Technician	21	17	4	9	4														
0-54.20	Biological Technician	182	171	11	45	35														
0-32.10	Draughtsman (General)	293	277	16	187	69														
0-32.20	Draughtsman—Mechanical	57	57	11	11	11														
0-32.30	Draughtsman—Electrical	6	6			6														
0-32.40	Draughtsman—Civil	23	23		7	7														
0-32.50	Draughtsman—Architectural	12	10	2	34	4														
0-32.60	Draughtsman—Cartographic	32	32		31	6														
0-33.10	Civil Engineering Technician	372	363	9	273	193														
0-33.10	Senior Water Technician	390	331	59	192	141														
0-33.30	Surveyor Technician	115	115		98	22														
0-33.40	Clerk of Works	19	18	1	15	15														
0-34.05	Electrical Engineering Technician	268	252	16	46	156														
0-34.10	Electronic Engineering Technician	4	1	3	2	1														
0-34.30	Telecommunications Technician	658	638	20	115	137														
0-35.10	Mechanical Engineering Technician	215	184	31	70	74														
0-35.10	Senior Water Technician	110	110		80	128														
0-36.20	Chemical (Petroleum) Technician	31	25	6	3	17														
0-38.10	Mining Technician	56	55	1	8	11														
0-39.20	Production Technician	131	126	5	5	76														
TOTAL CATEGORY "B" OCCUPATIONS		10,000	9,500	500	3,500	2,500	150	10	24	17	17	10	24	17	17	10	24	17	17	10
TOTAL CATEGORY "A" & "B" OCCUPATIONS		17,806	15,388	2,418	7,050	5,166	269	43	1,260	892	635	404	476	846	2,159	8,276	13,752	8,868	-4,884	

0-39.90*	Other Technicians	...	47	43	4	12	22	3	25	...	...	...	...	...	28				
1-62.20	Commercial Artist	...	11	11	...	...	6	...	6	...	...	...	...	10					
1-62.40	Industrial Designer	...	33	31	2	1	18	...	21	...	...	...	...	21					
Sub-Total Engineering Technicians		...	3,191	2,996	195	1,234	1,468	8	261	1,156	54	41	294	10	158	915	2,917	1,880	-1,037
0-54.30	Medical Lab. Technicians	...	137	128	9	175	30	...	5	...	...	...	...	...	19	190	214	90	-124
0-64.20	Dental Technicians	...	22	22	...	19	101	...	...	...	...	...	...	...	120	120	24	96	-24
0-77.10	X-Ray Technician	...	123	118	5	48	105	...	...	...	...	...	...	...	11	145	155	34	-124
0-62.10	Medical Assistant	...	365	361	4	216	1,029	3	12	...	1	2	1	...	33	1,197	1,245	48	-4
0-68.10	Pharmaceutical Assistant	...	134	122	12	115	26	...	...	...	...	...	...	...	36	117	153	60	-93
0-69.20	Nutrition Officer	...	65	65	...	28	13	...	...	...	...	...	...	...	9	32	41	...	-41
0-71.10	Nurse Professional	...	1,400	1,346	54	405	455	26	29	...	32	5	2	3	172	645	914	876	-38
0-76.20	Physiotherapist	...	14	4	10	11	3	...	...	...	...	...	...	...	5	19	24	...	-24
0-79.40	Health Officer	...	93	93	...	10	118	...	...	...	...	...	...	...	...	128	128	60	-68
Sub-Total Health Occupations		...	2,353	2,259	94	1,027	1,880	22	48	...	33	7	3	3	285	2,593	3,001	2,389	-612
0-53.40	Forester/F.O.	...	250	250	...	30	50	...	...	...	...	...	...	...	...	80	80	560	-46
0-53.40	Assistant Forester/A.F.O.	...	499	499	...	204	230	...	...	...	...	...	...	...	...	434	434	...	...
0-53.60	Agricultural F.O.	...	597	595	2	162	718	...	...	...	...	...	...	...	...	888	888	350	-2,733
0-53.60	Agricultural A.F.O.	...	2,084	2,074	10	695	4,490	...	18	13	...	35	15	40	5,074	5,195	...	...
0-65.10	Veterinary F.O.	...	214	214	...	46	266	...	...	...	...	...	...	...	...	312	312	1,650	-738
0-65.10	Veterinary A.F.O.	...	628	628	...	2	994	...	...	...	...	...	...	...	...	2,076	2,076	...	...
6-69.90	Game Warden	...	54	54	...	10	135	...	...	...	...	...	...	...	...	145	145	85	-532
6-69.90	Game Assistant	...	269	269	...	59	413	...	...	...	...	...	...	...	...	472	472	...	...
0-51.90	Fishery F.O.	...	107	102	5	18	60	...	...	...	...	...	...	...	...	83	83	235	-45
0-51.90	Fishery A.F.O.	...	234	234	...	47	150	...	...	...	...	...	...	...	...	197	197	...	...
Sub-Total Agricultural and Related Technicians		...	4,936	4,919	17	135	8,506	...	18	15	...	35	15	40	9,761	9,882	5,880	-4,002	
1-31.55	C.N.E. Teachers, Grade A	...	178	178	...	...	382	...	...	...	...	...	...	...	...	...	...	...	...
1-32.90	Secondary School Teachers, Grade A	...	202	202	...	...	464	...	...	...	...	...	...	...	...	434	464	...	...
1-32.60	Commercial Teachers	...	40	25	15	9	95	3	...	...	...	...	...	...	...	...	...	...	...
1-32.80	Technical Education Teachers	...	44	44	...	...	95	...	...	...	...	...	...	...	...	95	95	6148	-2,188
1-33.20	Primary School Teachers	...	7,795	7,795	...	17	7,283	...	...	...	...	...	...	...	42	7,258	7,300	...	...
1-39.90	Works Education Teachers	...	66	47	19	11	28	...	25	...	31	...	2	...	...	...	...	...	...
Sub-Total Teaching Occupations		...	8,325	8,291	34	37	8,205	3	25	...	31	...	2	72	8,203	8,336	6,148	-2,188	
0-41.30	Pilots	...	49	37	12	8	10	...	...	...	...	...	...	...	...	10	30	...	-30
0-42.15	Captain-Ship	...	18	15	3	9	4	...	...	...	...	...	...	...	...	6	16	...	-16
0-42.30	Navigator	...	30	8	22	1	6	...	...	...	...	...	...	...	...	...	...	...	-29
0-42.50	Deck Superintendent	...	65	30	35	...	16	...	2	...	...	1	48	...	...	...	...	...	-51
0-43.20	Marine Engineering Officer	...	71	23	48	2	15	...	...	...	...	...	65	...	...	...	...	...	-65
*Engineering Technicians in Textiles/Wood/Paper/Leather etc.		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
0-84.90	Statistical Officer	...	44	43	1	41	9	...	...	...	...	...	...	...	...	51	51	...	-50
1-10.10	Accountant-Non Professional	...	1,104	908	196	356	474	8	147	49	118	160	43	161	87	245	26	890	-30
1-10.20	Auditor-Non Professional	...	207	175	32	65	68	2	8	6	28	37	7	6	62	9	165	...	...
1-74.40	Programmes Officer	...	35	34	1	...	7	...	...	...	...	...	...	...	...	...	...	...	...
1-91.20	Librarian Non-Professional	...	253	251	2	83	50	...	...	...	...	...	...	...	...	135	135	...	...
3-21.10	Stenographer	...	1,028	920	108	150	444	10	99	7	15	55	127	176	113	100	703	1,395	-656
3-21.20	Stenographer Secretary	...	1,638	1,593	45	429	875	14	121	23	151	100	24	547	122	241	1,349	...	...
4-41.20	Insurance Salesman	...	43	43	...	42	42	...	...	...	...	...	...	...	...	42	155	...	...
4-41.20	Insurance Sales Assistants	...	195	195	...	190	190	...	...	...	...	...	...	...	...	190	...	...	...
5-32.20	Senior Police Officer	...	326	326	...	355	63	...	...	...	...	...	...	...	...	418	300	...	...
5-89.30	Senior Prison Officer	...	83	83	...	125	16	...	...	...	...	...	...	...	...	141	141	...	...
Sub-Total Other Technician Occupations		...	5,189	4,684	505	1,624	2,289	34	377	85	312	353	373	1122	384	1,364	4,420	2,700	-1,720
TOTAL Category B Occupations		...	23,994	23,149	845	5,281	22,408	34	729	1,254	430	436	672	1,150	939	2,285	28,566	18,997	-9,559

ESTIMATES OF MANPOWER REQUIREMENTS 1975-1980 CATEGORY "C" OCCUPATIONS
CLERICAL, SERVICES AND CRAFTS

ISCO Code	OCCUPATION CATEGORY "A" SCIENCE	TOTAL REQUIREMENTS BY SECTOR											Total Requirements 1975-80			
		Total Employed	Employed Citizen	Employed Non-Citizen	Vacancies	Increase in Employment	Agriculture	Mining	Manufacturing	Utilities	Construction	Trade/Commerce		Transport/Communications	Finance	Services	Government
MANAGERIAL STAFFS																
2-11.10	General Duties	1,016	781	235	62	494	7	3	359	3	64	216	40	91	8	791
2-12.10	Production	222	154	68	16	97	1	2	123	2	24	15	3	4	6	181
2-19.20	Research	78	63	15	41	26			1		10	10	27	12	1	82
2-19.30	Sales	111	89	22	9	61			40		10	27	27	15		92
2-19.40	Administration	68	65	3	10	34	1	1	13	1	2	14	2	9	3	47
2-19.50	Finance	299	287	12	121	197	1	1	8		4	1	177	3	33	230
2-12.60	Transport	56	45	11	7	15						3	27	3		33
2-19.70	Postal Operations	2	2													10
2-19.80	Personnel	121	115	6	38	42	1	2	28		4	6	3	1	1	86
3-10.10	Executive Officer	3,474	3,380	84	811	721	1	2	5	9	57	40	68	22	125	1,626
4-00.30	Manager-Wholesale Trade	11	8	3	4	3			2		6	2	2			10
4-00.30	Retail Trade	27	27			15			15			78		2		15
5-00.20	Hotel and Restaurants	110	88	22	5	55			2						1	82
5-10.30	Working Proprietor	6	6			1										10
6-00.20	Manager--Farm Operations	376	258	118	6	30	125		24			3		1	1	154
SUB-TOTAL MANAGERIAL STAFFS		5,977	5,368	609	1,030	1,791	136	8	620	17	171	415	173	337	143	3,449
CLERICAL, SERVICES AND CRAFTS																
3-00.10	Clerical Supervisor	1,746	1,692	54	124	519	10	1	234	46			295			697
3-00.90	Higher Clerical/Executive	2,177	2,177	422	871	422	12	5	190	125	146	318	101	559	229	1,298
3-21.40	Typist	4,026	3,973	53	1,838	1,591	9		3				5			3,482
3-21.50	Teleprinter	32	32			9										8
3-31.10	Book Keeper	1,245	1,206	39	498	423	16	10	157	87	27		226	40	23	960
3-31.20	Accounts Clerk	2,636	2,460	176	355	1,224	10	10	302	77	160	517	133	295	147	1,755
3-31.30	Cashier	592	575	17	46	282			92		4	162	10	31	35	345
3-31.40	Bank Teller	134	134		3	130							133			133
3-39.90	Revenue Collector	335	335	335		59	65									124
3-41.20	Book-Keeping Machine Operator	85	80	5	5	35	18		5	18		28	1		13	45
3-41.30	Calculating Machine Operator	34	34	34	4	12			5	6						18
3-42.20	Computer Operator	125	114	11	51	41			1	16				4	15	103
3-42.30	Punch-Card Machine Operator	1,094	1,074	20	90	343		2	68	35	11	55	89	29	32	453
3-80.20	Telephone Operator	137	137		1	34		1	3	12		5	23		3	35
3-80.40	Telegrapher	193	193		53	97		1	83	12			230		55	190
3-91.30	Stores Officer	2,270	2,165	111	522	709	11	15	425		304				51	1,342
3-91.40	Store Keeper	80	80		5	53			58							58
3-92.30	Production Planning Clerk	23,230	22,884	346	562	7,658	49	21	1,024	672	390	1,816	1,016	1,814	235	8,566
3-93.10	Clerk General	104	104		74	38			28							84
3-93.30	Personnel Clerk/A.E.O.	682	682		136	132										268
3-93.40	Legal Clerk	489	430	9	16	205			15		9	162			12	230
3-94.10	Receptionist	76	75		21	15										36
3-94.30	Receptionist (Doctors)															

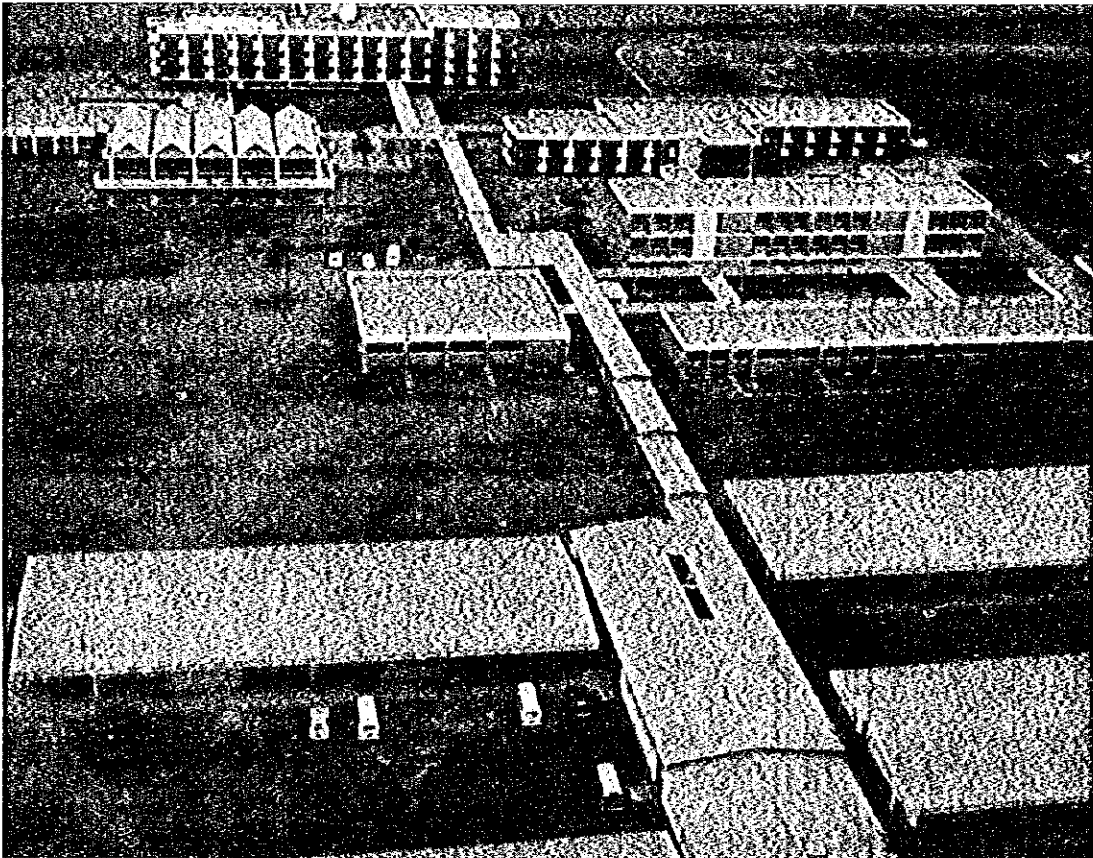
3-95.20	Library Clerk	...	...	...	...	67	15	...	...	...	...	...	...	...	...	...	...	...	76	82
3-99.20	Statistical Clerk	...	...	...	...	81	32	...	...	...	...	...	...	...	...	...	...	...	111	113
3-99.40	Proof Reader	...	...	...	...	3	3	...	...	...	...	...	...	...	...	...	...	...	6	6
3-99.50	Office Machine Operator	...	...	...	...	18	4	...	...	...	...	...	...	...	...	...	...	...	15	15
	Sub-Total—Clerical	41,817	40,976	341	8,072	14,490	108	66	2,711	1,082	1,051	3,063	2,129	2,911	799	9,483	23,403			
	TOTAL—CLERICAL	47,794	46,344	1,450	6,533	15,899	244	74	3,331	1,099	1,222	3,478	2,302	3,248	942	7,942	23,901			
1-59.30	Reporter	...	...	...	...	17	33	...	...	...	...	...	...	...	...	...	...	...	...	54
1-59.60	Press Officer	...	...	...	...	11	2	...	...	...	...	...	...	...	...	...	...	...	13	13
1-63.10	Photographer	...	...	...	...	11	19	...	...	...	...	...	...	...	...	...	...	...	2	42
1-72.30	Dancer	...	...	...	...	31	7	...	...	...	...	...	...	...	...	...	...	...	33	38
1-75.40	Acrobat	...	...	...	...	7	8	...	...	...	...	...	...	...	...	...	...	...	15	15
1-80.40	Sport Official	...	...	...	...	14	2	...	...	...	...	...	...	...	...	...	...	...	16	16
1-93.20	Social Welfare Worker	...	...	...	...	3	81	...	...	...	...	...	...	...	...	...	...	...	8	96
1-93.30	Cultural Officer	...	...	...	...	68	8	...	...	...	...	...	...	...	...	...	...	...	76	76
	Sub-Total	617	589	28	160	162	1	2	80	4	68	...	14	...	21	160	350			
3-51.10	Railway Station Master	...	...	...	...	13	36	...	...	...	...	...	...	...	...	...	...	...	...	49
3-52.10	Post Master	...	...	...	...	2	98	...	...	...	...	...	...	...	...	...	...	...	101	101
3-52.20	Railway Service Supervisor	...	...	...	...	7	6	...	...	...	...	...	...	...	...	...	...	...	26	26
3-59.40	Road Transport Supervisor	...	...	...	...	34	110	...	...	...	...	...	...	...	...	...	...	...	1	260
3-59.50	Air Transport Supervisor	...	...	...	...	4	4	...	...	...	...	...	...	...	...	...	...	...	5	10
3-59.60	Air Traffic Controller	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	2	10
3-59.75	Telecommunication Supervisor	...	...	...	...	7	17	...	...	...	...	...	...	...	...	...	...	...	8	10
3-59.80	Postal Service Supervisor	...	...	...	...	2	21	...	...	...	...	...	...	...	...	...	...	...	19	19
3-60.40	Bus Conductor	...	...	...	...	105	240	...	...	...	...	...	...	...	...	...	...	...	24	273
	Sub-Total	2,368	2,293	75	61	533	1	1	5	...	37	43	554	23	6	670				
4-21.20	Sales Supervisor	...	...	...	...	22	210	...	...	...	...	...	...	...	...	...	...	...	...	232
4-22.30	Purchasing Officer	...	...	...	...	14	38	...	...	...	...	...	...	...	...	...	...	...	8	63
4-31.20	Technical Salesman	...	...	...	...	9	434	...	...	...	...	...	...	...	...	...	...	...	281	443
4-51.20	Salesman	...	...	...	...	3	292	...	...	...	...	...	...	...	...	...	...	...	20	303
	Sub-Total	1,398	1,884	14	53	972	...	23	285	1	22	510	26	159	15	1,041				
5-81.10	Fireman	...	...	...	...	6	132	...	...	...	...	...	...	...	...	...	...	...	234	276
5-81.40	Aircraft Fireman	...	...	...	...	38	8	...	...	...	...	...	...	...	...	...	...	...	46	46
5-82.20	Policeman	...	...	...	...	832	122	...	...	...	...	...	...	...	...	...	...	...	954	954
5-82.40	Police Private Guard	...	...	...	...	2	56	...	...	...	...	...	...	...	...	...	...	...	...	59
5-89.30	Prison Officer	...	...	...	...	326	20	...	...	...	...	...	...	...	...	...	...	...	346	346
6-00.30	Farm Supervisor	...	...	...	...	8	88	...	...	...	...	...	...	...	...	...	...	...	...	112
	Sub-Total	1,970	1,946	24	1,334	426	20	15	151	...	...	...	8	10	...	1,580	1,784			
	TOTAL SERVICE OCCUPATIONS	6,853	6,712	141	1,610	2,093	21	41	521	5	127	553	602	192	42	1,740	3,845			
0-33.10	Water Technician (Civil)	...	...	...	...	...	9,971	...	...	...	...	...	...	...	...	...	...	...	...	9,971
0-35.10	Water Technician (Mechanical)	...	...	...	...	19	3,115	...	...	...	...	...	...	...	...	...	...	...	...	3,134
7-00.10	Foreman—General	...	...	...	...	176	953	...	...	...	...	...	...	...	...	...	...	...	...	1,164
7-00.20	Mining	...	...	...	...	6	14	...	...	...	...	...	...	...	...	...	...	...	...	21
7-00.30	Foreman—Metal	...	...	...	...	7	3	...	...	...	...	...	...	...	...	...	...	...	...	10
7-00.40	Foreman—Chemical	...	...	...	...	24	39	...	...	...	...	...	...	...	...	...	...	...	...	31

TOTAL REQUIREMENTS BY SECTOR

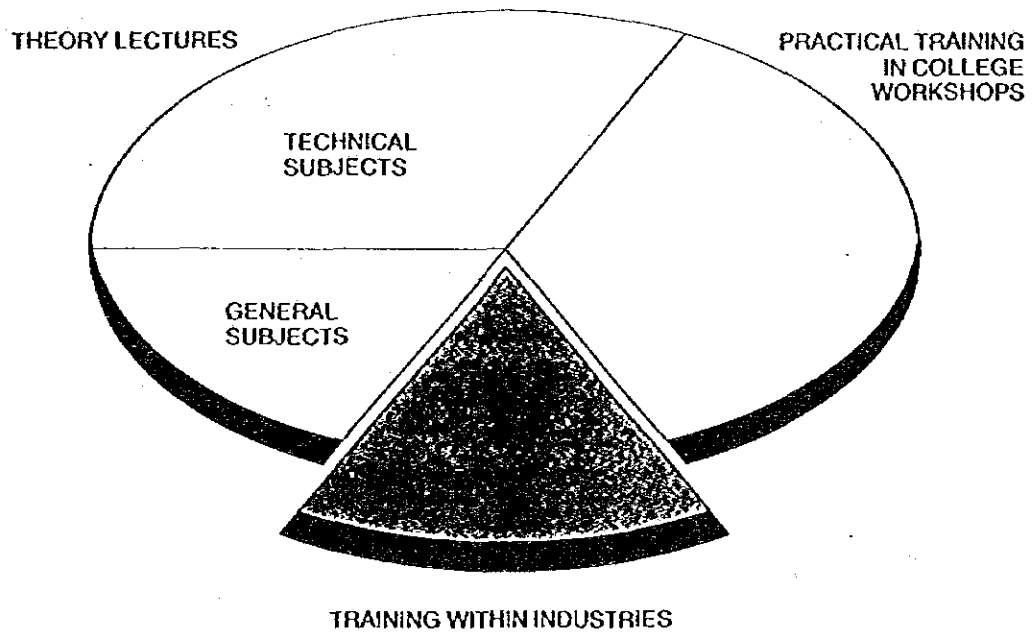
ISCO Code	OCCUPATION CATEGORY "A" SCIENCE	Total Employed	Employed Citizen	Employed Non-Citizen	Vacancies	Increase in Employment	Agriculture	Mining	Manufacturing	Utilities	Construction	Trade/Commerce	Transport & Communications	Finance	Services	Government	Total Requirements 1975-80
7-00.50	Foreman—Metal Products	25	24	1	3	12			14								16
7-00.55	Foreman—Electrical Installation	38	33			24		4	6	14							24
7-00.60	Foreman—Paper	178	173	5	4	97			106								106
7-00.65	Foreman—Food	15	14	1		5			6								10
7-00.70	Foreman—Textiles	103	78	25	8	54			84								80
7-00.75	Foreman—Construction	1,807	1,402	405	455	344			6		703					489	1,204
7-32.10	Sawyer (Sawmill)	886	886	20		215			2							188	215
7-41.30	Grinder Mill—Chemical	8	8		8	4			5								12
7-41.40	Blending Machine Operator	9	9			5			7								11
7-43.30	Filter Press Operator	13	13			7			8								11
7-44.60	Extractor Operator	15	15			8			7								10
7-45.50	Petroleum Refinery Controlman	228	228			124			124								124
7-45.60	Blender (Petroleum Refine)	11	11			6			6								10
7-51.25	Fibre Mixer and Blender	93	93			51			51								51
7-76.10	Baker (General)	38	38			19		2	19								19
7-81.20	Tobacco Grader	91	91			84			6								84
7-91.30	Tailor	653	651	2	11	319		3	290			10				26	332
7-94.50	Garment Cutter	46	45	1		25			24			2					26
7-95.50	Sewing Machine Operator	55	55			30			30								30
7-96.20	Furniture Upholster	29	29			15											15
7-96.30	Vehicle Upholster	18	18		5	3											10
8-03.30	Leather Cutter	5	5			3											10
8-12.30	Wood Working Machine Operator	1,744	1,741	3		948			951								951
8-33.20	Leather Machine Operator	76	71	5	4	31		2	38								40
8-34.10	Machine Tool Operator	2,344	2,141	193	1	1,195			1,226		151	4					1,389
8-34.80	Automatic Transfer Machine Operator	368	368			200			200								200
8-41.05	Machinery Fitter	477	477		13	256		22	119	62		60				6	269
8-41.10	Machinery Fitter Assembler	36	24	12	7	24			29	11							40
8-41.80	Refrigeration Mechanic	375	373	2	4	204			45			164					213
8-43.20	Mechanic—Motor Vehicle	4,854	4,595	259	358	1,357		15	503	6	236	135	496	12	1	559	1,974
8-43.40	Mechanic—Motorcycle	29	29			16			16								16
8-44.10	Mechanic—Aircraft Engine	4	4			1			1								10
8-49.10	Mechanic—Machinery	2,283	2,254	29	63	990		8	916	1	4		18	6		105	1,082
8-49.40	Mechanic—Printing Machinery	14	14		19	3										22	22
8-49.45	Mechanic—Textile Machinery	79	75	4	3	43			50							50	50
8-49.50	Mechanic—Wood Working	18	18			10			10								10
8-49.60	Mechanic—Construction Equipment	250	204	46	52	49			5		99				43		147
8-49.85	Inspector/Tester Mechanical Products	204	200	4	102	40										146	146
8-51.10	Electrical Fitter	391	322	9	11	124			109	134		5	16		2	9	144
8-52.10	Electrician	947	822	125	80	109			210		92	26	65		18	83	136
8-55.10	Electrician	158	157	1		58				37	22						59
8-55.20	Building Electrician	9	9			2											10
8-57.20	Electric Power Lineman	30	300	1		287		9		279						288	288
8-59.20	Electrical Inspector	210	206	4	63	52			15							86	119
8-62.40	Cinema Projectionist	3	3			2			2		133	4					10
8-71.05	Plumber	1,389	1,351	38	312	286		5	35	1						455	636
8-71.10	Pipe Fitter	52	25	27		28		55	128		33	8					238
8-72.10	Welder	528	516	12	46	180		8	219	3						53	219
8-80.30	Grass Cutter and Polisher	403	403			219			109								219
8-95.50	Ceramics Painter	177	176	1	11	97											109



Technical College Arusha Training of Technicians in Tanzania

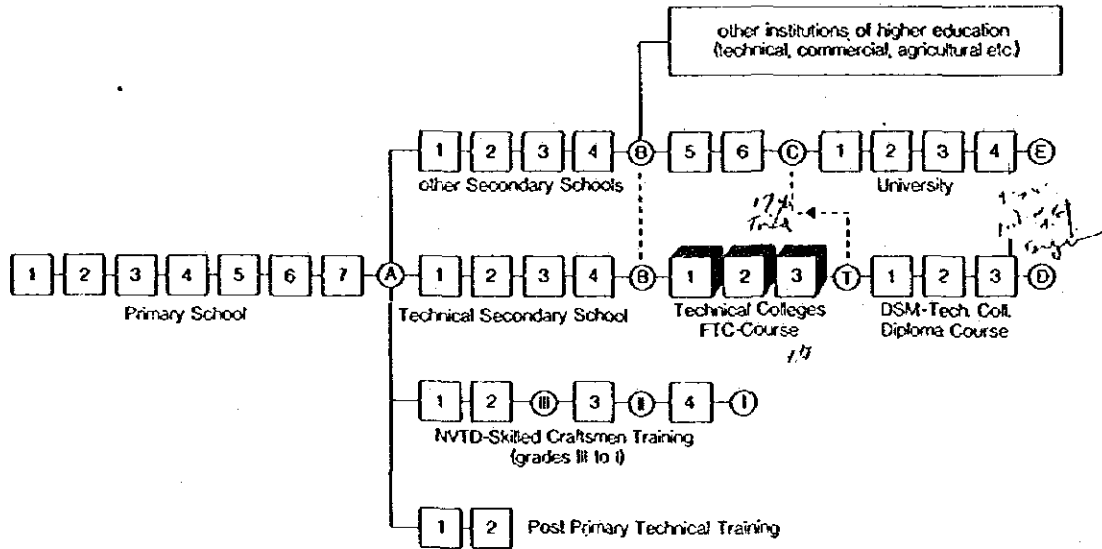


The diagram is based on the College average. Actual time allocation varies slightly from department to department.



10

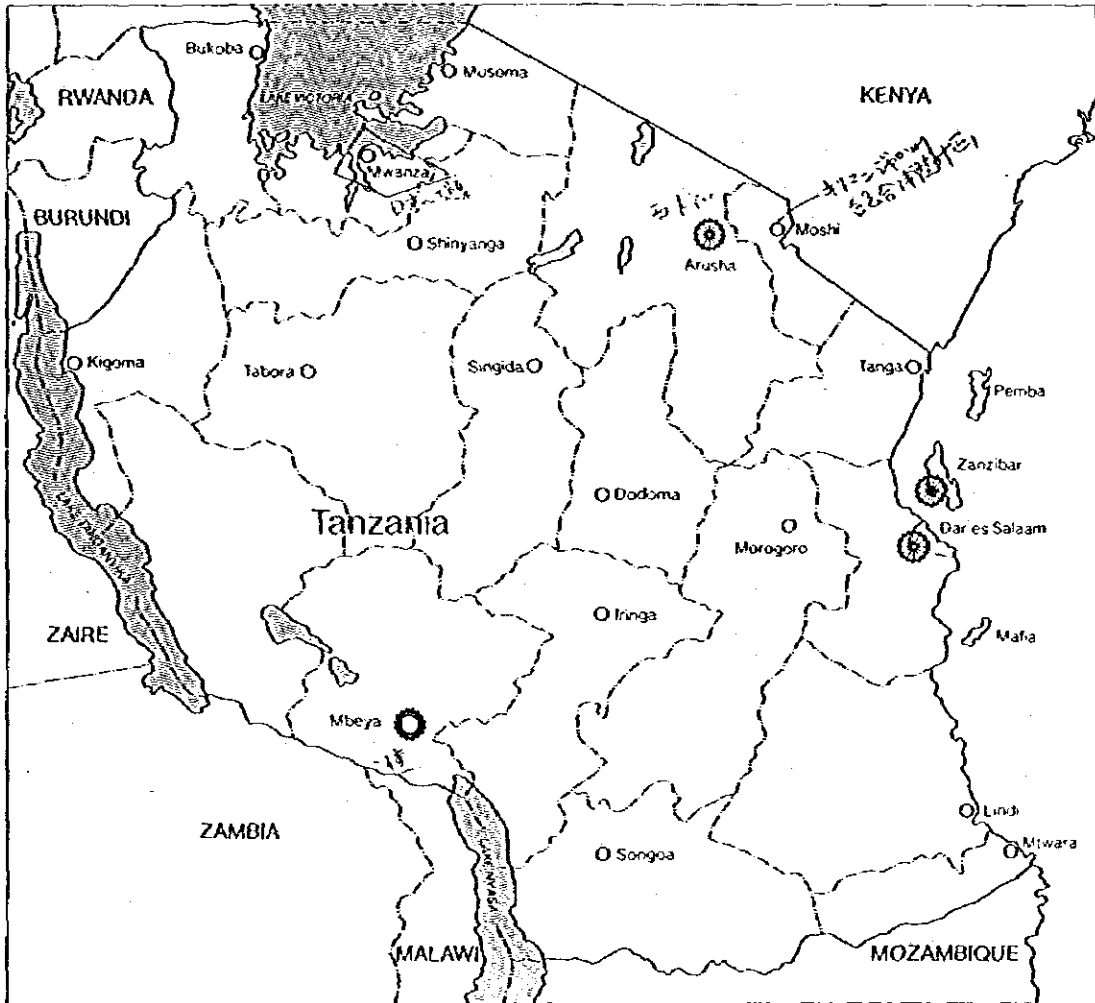
**THE STRUCTURE OF THE
TANZANIAN EDUCATION SYSTEM**





- A = Standard Seven (Primary School Leaving Certificate)
- B = National Form IV Examination
- C = National Form VI Examination
- D = Diploma in Engineering
- E = B.Sc. level (e. g. B.Sc. (Eng.) from Faculty of Engineering)

Periods of work experience which are normally a prerequisite for entering university or joining diploma courses are omitted in the diagram.

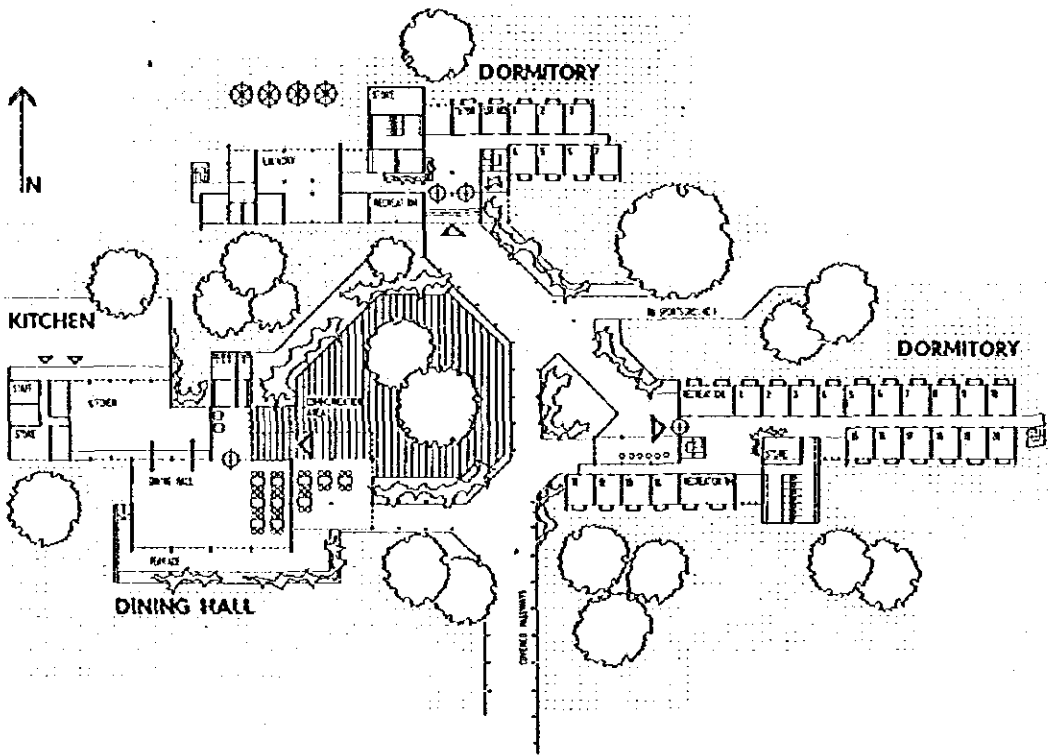
The focus of this representation is on technical education. Other streams of the Tanzanian education system are not shown in detail.



Technical Colleges in Tanzania

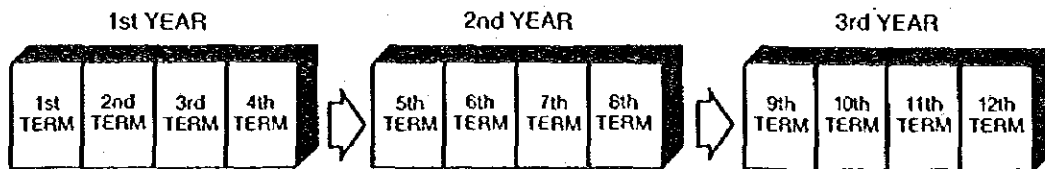
- 8  Technical College (existing)  Technical College (planned)





Course break-up

The "Full Technician Course" offered by the College is of three years duration with each year split into four terms.



One term in each year is set aside for training within industry.

Departments and capacities

The College features 4 departments with training capacities as shown below:

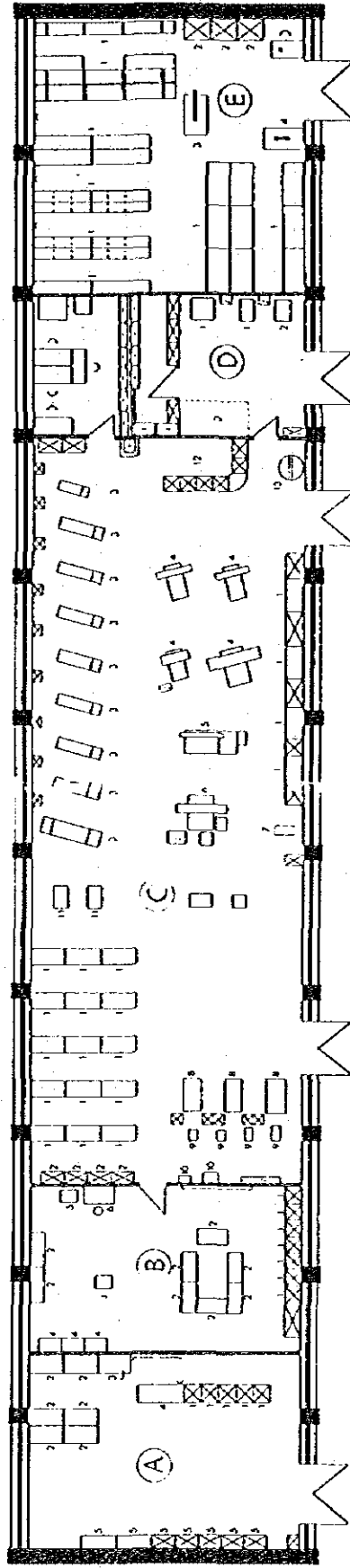
DEPARTMENT	STUDENT INTAKE PER YEAR	SEATING CAPACITY
CIVIL ENGINEERING	60	180
MECHANICAL ENGINEERING	30	90
AUTOMOBILE ENGINEERING	30	90
ELECTRICAL ENGINEERING	30	90
	150	450

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The Workshops

Commensurate with the great importance attributed to practical training in the programmes, extensive workshops form a major part of the College complex.

This layout shows Mechanical Workshop 2, one of five workshop buildings.



A HYDRAULICS LABORATORY

- 1 Tool cabinet
- 2 Work bench
- 3 Hydraulic unit
- 4 Testing table
- 5 Steel cabinet

B MATERIAL TESTING AND METROLOGY LABORATORY

- 1 Tool cabinet
- 2 Work bench
- 3 Surface plate
- 4 Steel cabinet
- 5 Universal hardness tester
- 6 Hydraulic laboratory press

C MACHINE TOOLS AND ASSEMBLY SECTION

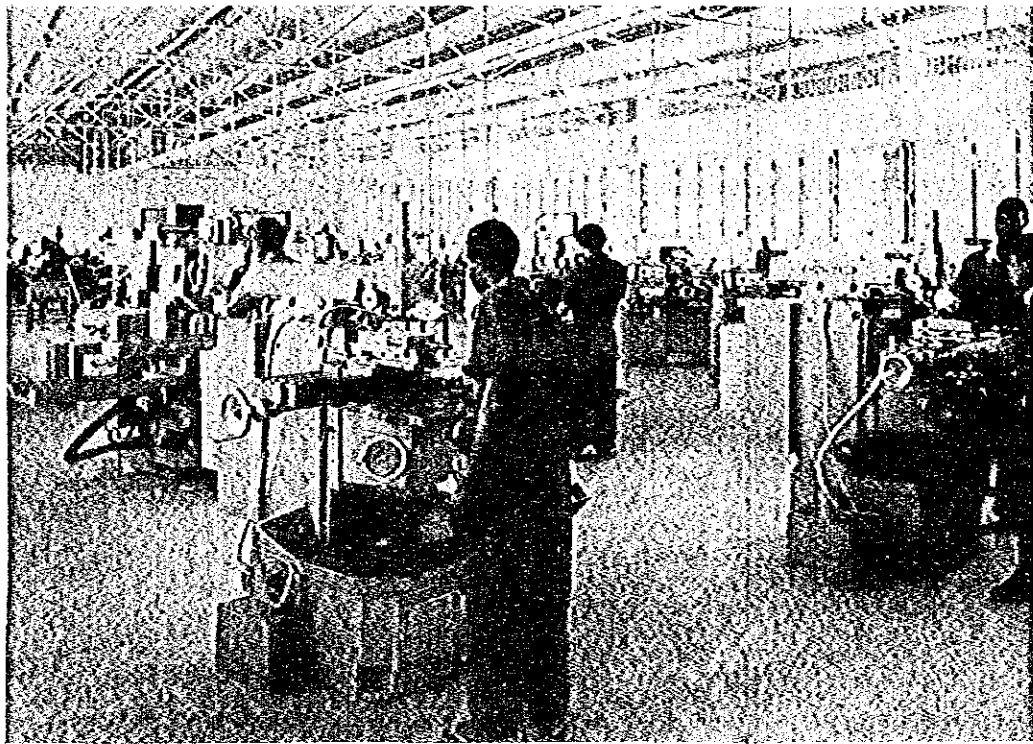
- 1 Work bench
- 2 Steel cabinet
- 3 Lathe machine
- 4 Milling machine
- 5 Circular grinding machine
- 6 Surface grinding machine
- 7 Tool and cutter grinding mach
- 8 Shaping machine
- 9 Drilling machine
- 10 Pedestal grinder
- 11 Tool grinding machine
- 12 Tool crib with six cabinets
- 13 Spindle press

D HEAT TREATMENT ROOM WITH SUB-STORE

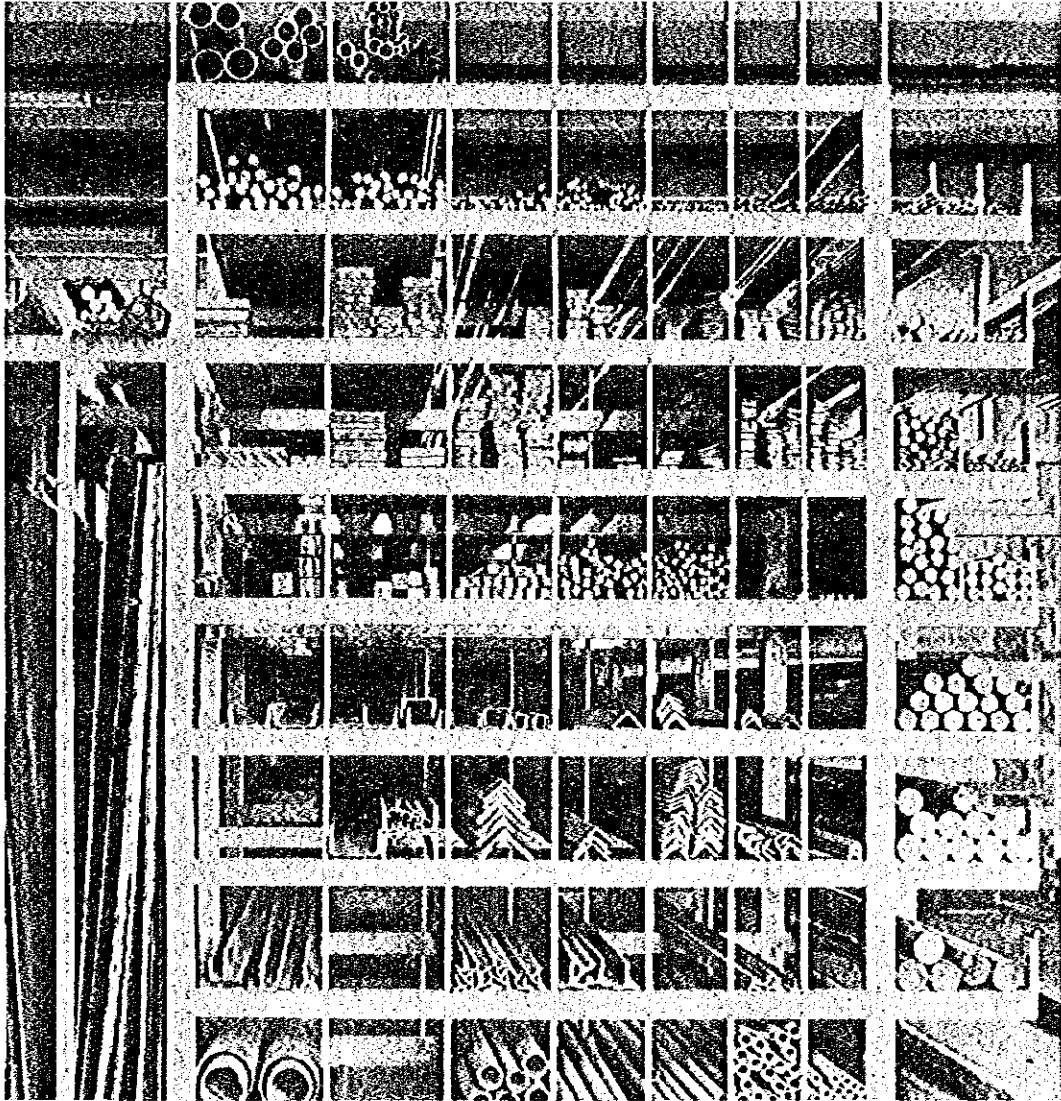
- 1 Electric hardening furnace
- 2 Electric tempering furnace
- 3 Growing plant

E MAIN STORE

- 1 Material racks
- 2 Steel cupboards
- 3 Plate and section shears
- 4 Power hacksaw

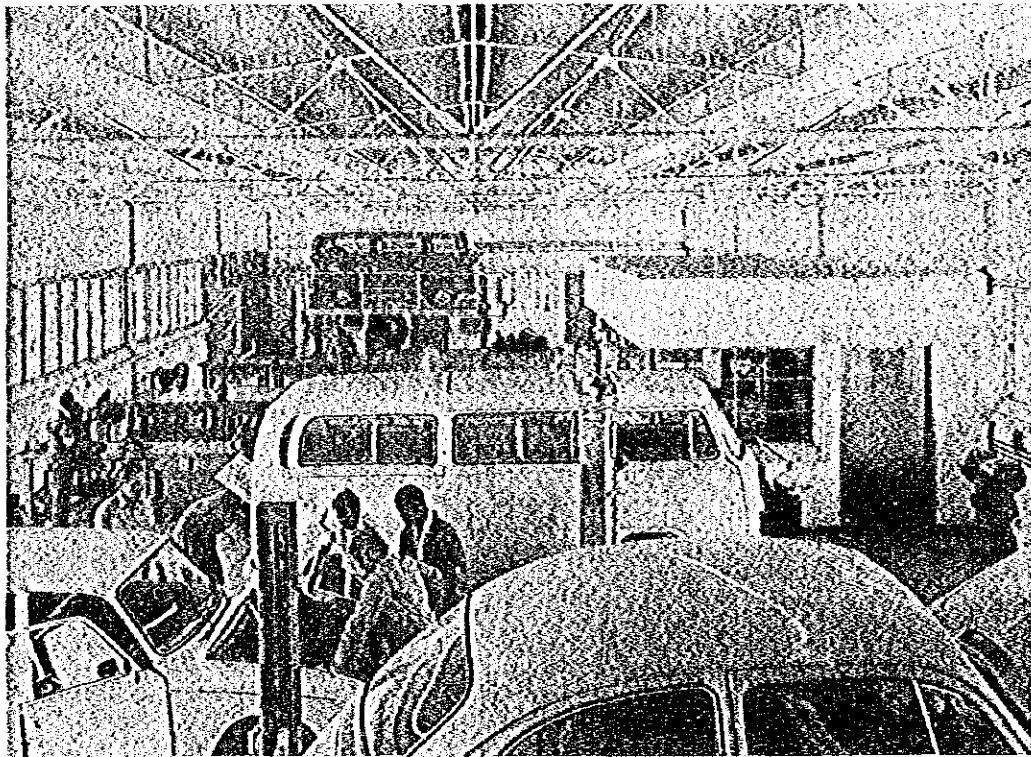


▲ Mechanical Workshop No. 2 – Milling Section



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▲ Main Store – Well-stocked material racks. An essential prerequisite for all training and production activities.



▲ Automobile Workshop – Training-cum-production forms a major part of practical work in this department, too. Vehicles both from fleetholders and individual owners are systematically checked, maintained and repaired by advanced students under the close supervision of the instructional staff.

JICA