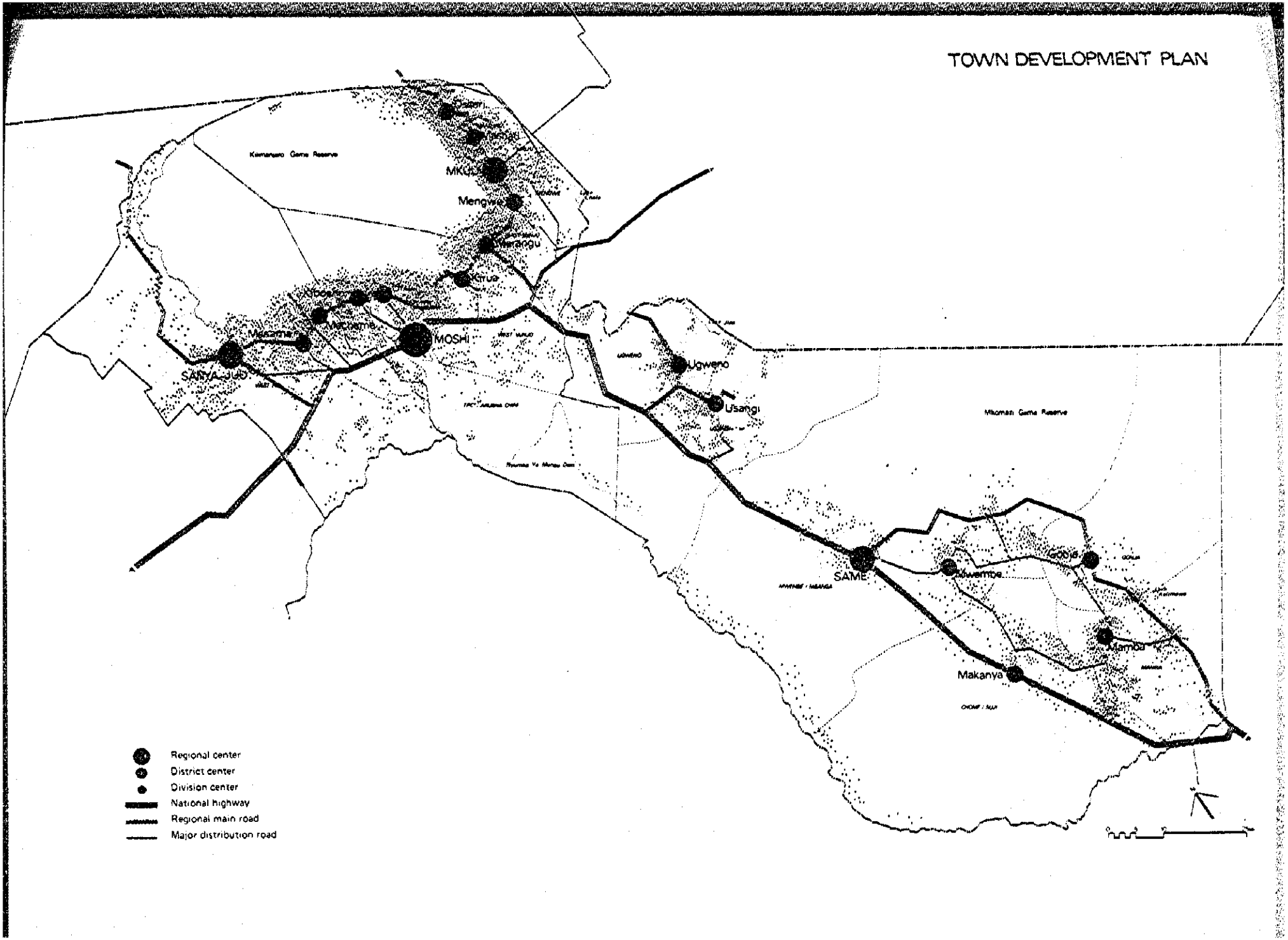
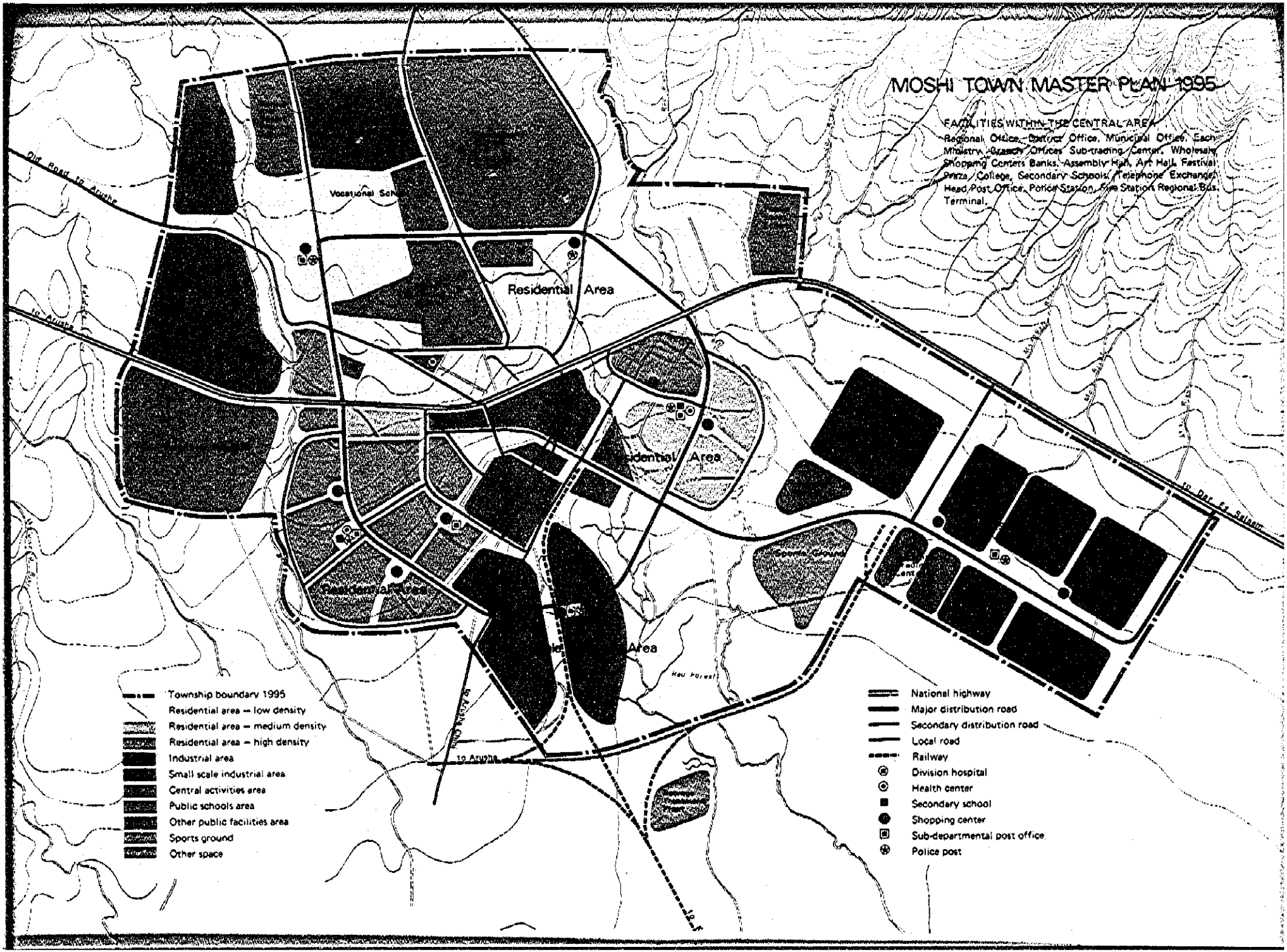
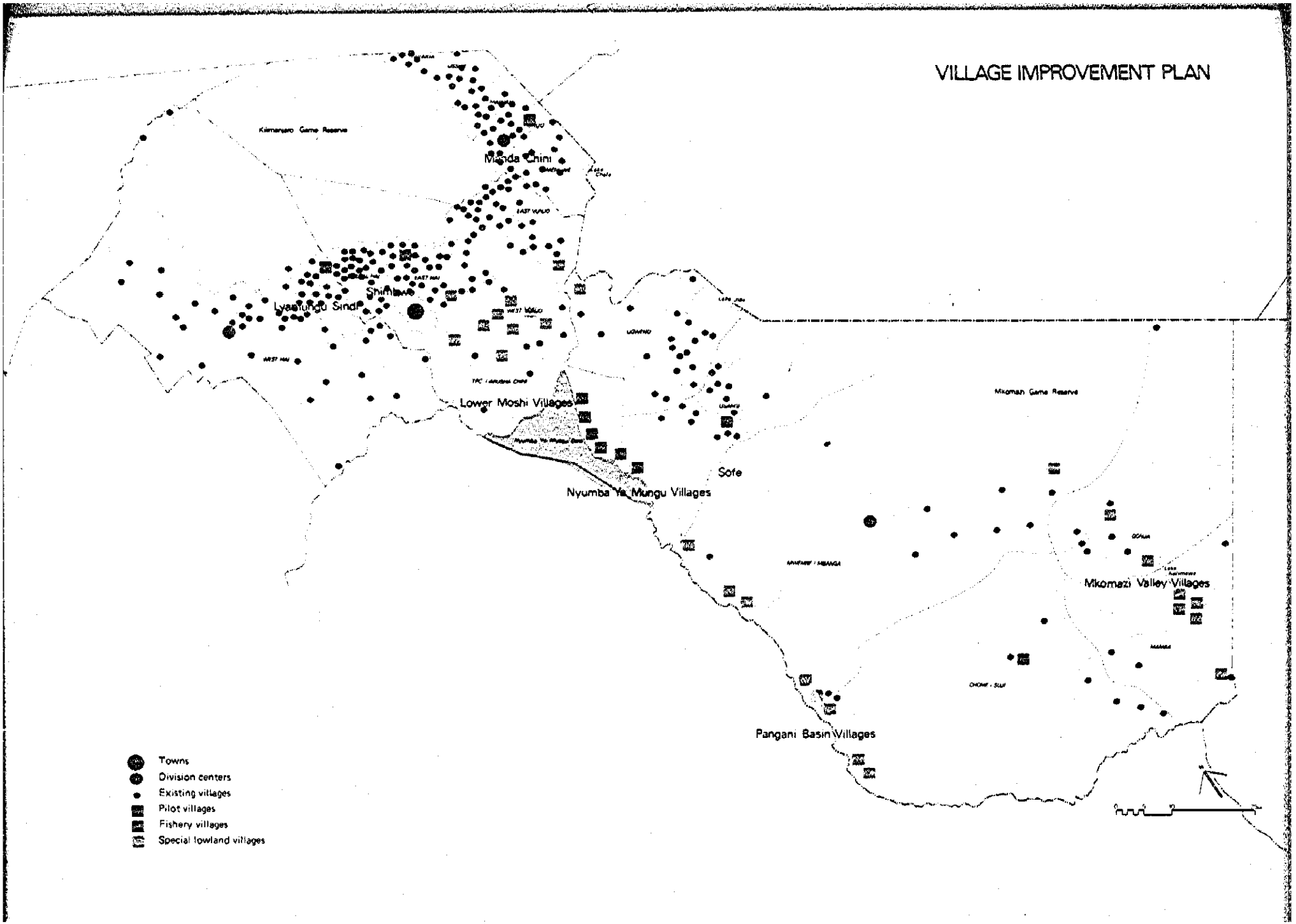
KILIMANJARO IDP

TOWN AND VILLAGE

14


TOWN DEVELOPMENT PLAN
Kilimanjaro Game Reserve
MKUU
Mengwe
Kirua
MOSHI
SANYA JUU
Ugweno
Usangi
Mkomazi Game Reserve
SAME
Gonja
Kisiwa
Kamba
Makanya
Regional center
District center
Division center
National highway
Regional main road
Major distribution road


MOSHI TOWN MASTER PLAN 1995
FACILITIES WITHIN THE CENTRAL AREA
Regional Office, District Office, Municipal Office, Each Ministry, Branch Offices Sub-trading Center, Wholesale, Shopping Centers Banks, Assembly Hall, Art Hall, Festival Plaza, College, Secondary Schools, Telephone Exchange, Head Post Office, Police Station, Fire Station Regional Bus. Terminal.
Old Road to Arusha
To Arusha
Vocational Sch
Residential Area
Residential Area
Residential Area
Area
Area
Sports Ground
Rau Forest
To Arusha
To Dar Es Salaam
Township boundary 1995
Residential area — low density
Residential area — medium density
Residential area — high density
Industrial area
Small scale industrial area
Central activities area
Public schools area
Other public facilities area
Sports ground
Other space
National highway
Major distribution road
Secondary distribution road
Local road
Railway
Division hospital
Health center
Secondary school
Shopping center
Sub-departmental post office
Police post


VILLAGE IMPROVEMENT PLAN
Kilimanjaro Game Reserve
Mawenzi
Shimbwe
Lyasungu Sinde
Lower Moshi Villages
Nyumba Ya Mungu Villages
Sofe
Mkomazi Game Reserve
Mkomazi Valley Villages
Pangani Basin Villages
Towns
Division centers
Existing villages
Pilot villages
Fishery villages
Special lowland villages

TOWN AND VILLAGE

Contents

1. URBAN AREAS

1.1 General

For the purposes of this integrated regional development plan, urban areas are core areas such as Moshi Town, the regional center; Same, Sanya Juu, and Mkuu, which, together with Moshi Town, serve as district centers; and the fifteen division centers. The fifteen division centers also serve as the centers of the words in which they are located.

Of the estimated 865,000 persons in the region in 1975, approximately 80,000, or 9.25%, resided in there 19 urban areas--50,000, or 5.8% of the regional total, in Moshi Town, which is a good indication of its importance as the regional center.

This development plan foresees a regional population of 1,456,000 by 1995, a total population of there urban areas of 280,000, or about 19% of the regional population, and a population of 150,000 persons for Moshi Town, or 10.3% of the regional population.

Thus, between now and 1995 there is expected to be a three-fold increase in the urban population of the region and an approximately two-fold increase in the percentage of the total population of the region represented by urban population.

These population figures reflect the importance that has been attached in the plan to the role of agricultural in development of the region and to the role of urban areas in supporting agricultural development.

Estimated Population, 1975, 1985, and 1995 (Table-1)

	1975	1985	1995
Regional Total	865,000	1,193,000	1,456,000
Rural Areas (Rural/Region)	785,000 (90.75%)	1,013,000 (84.9%)	1,176,000 (80.8%)
Urban and Quasi-Urban Areas (Urban/Region)	80,000 (9.25%)	180,000 (15.1%)	280,000 (19.2%)
Moshi Town	50,000	100,000	150,000
(Moshi/Urban)	(62.5%)	(55.6%)	(53.6%)
(Moshi/Region)	(5.8%)	(8.4%)	(10.3%)

Along with development of the region, the towns will also develop and increase in importance. The future picture of the towns, however, should not be one of gaudy wealth and overflowing consumer good services, and facilities, of sharp contrast with rural areas.

Rather, each should be developed according to its own situation and the complementary role that it is to play with respect to the development of rural areas.

The different urban areas will be characterized as follows from the standpoint of their roles in the development of the region as a whole.

(i) Regional Center

As the regional center, Moshi Town should be developed as an administrative, educational, cultural, and commercial center with government and administrative offices, higher technical education and practical training facilities, and facilities for distribution of the region's produce.

(ii) District Centers

The district centers will be characterized as administrative centers on the level below the regional center, as areas where most of the production infrastructure is to be provided, as the locations of warehouses and other commercial facilities and facilities for processing agricultural produce, and as centers for provision of medical and health and other social services.

(iii) Division Centers

The division centers will be characterized as centers for the facilities important to the everyday lives of the people, including administrative services, commercial facilities, medical and health facilities, and facilities for the collection of farm produce for marketing.

1.2 Classifications of Urban Areas

"Urban areas" includes both urban areas proper and "quasi-urban areas." the latter being the division centers.

Urban areas proper are defined as urban areas which will have a future population of at least 20,000 and that will be developed in such a way as to enhance their urban nature in terms of both form and function.

Quasi-urban areas, on the other hand, will have populations ranging from 1,000 to 3,000 and averaging 2,000 and will be not so much urban in form as basically rural with intensive location of various facilities for socia; and production services.

Moshi is the only town in the region that has been designated as an administrative township. The other three town areas have only general administrative boundaries instead of township boundaries. Moreover, from the standpoint of degree of provision of urban facilities, the other three town areas are only slightly above the standard of rural areas of the region.

Since the region's industry and commerce and distribution, administrative and other facilities are for the most part concentrated in Moshi Town, the other three towns have a less important urban role, particularly Sanya Juu and Mkuu, the districts of which have only recently come into existence with the breaking up of the old Kilimanjaro District and therefore do not yet have adquate urban facilities.

As for the fifteen drivision centers, since they presently average only about 330 persons and are more like villages than urban areas, their development into quasi-urban areas has not really started yet.

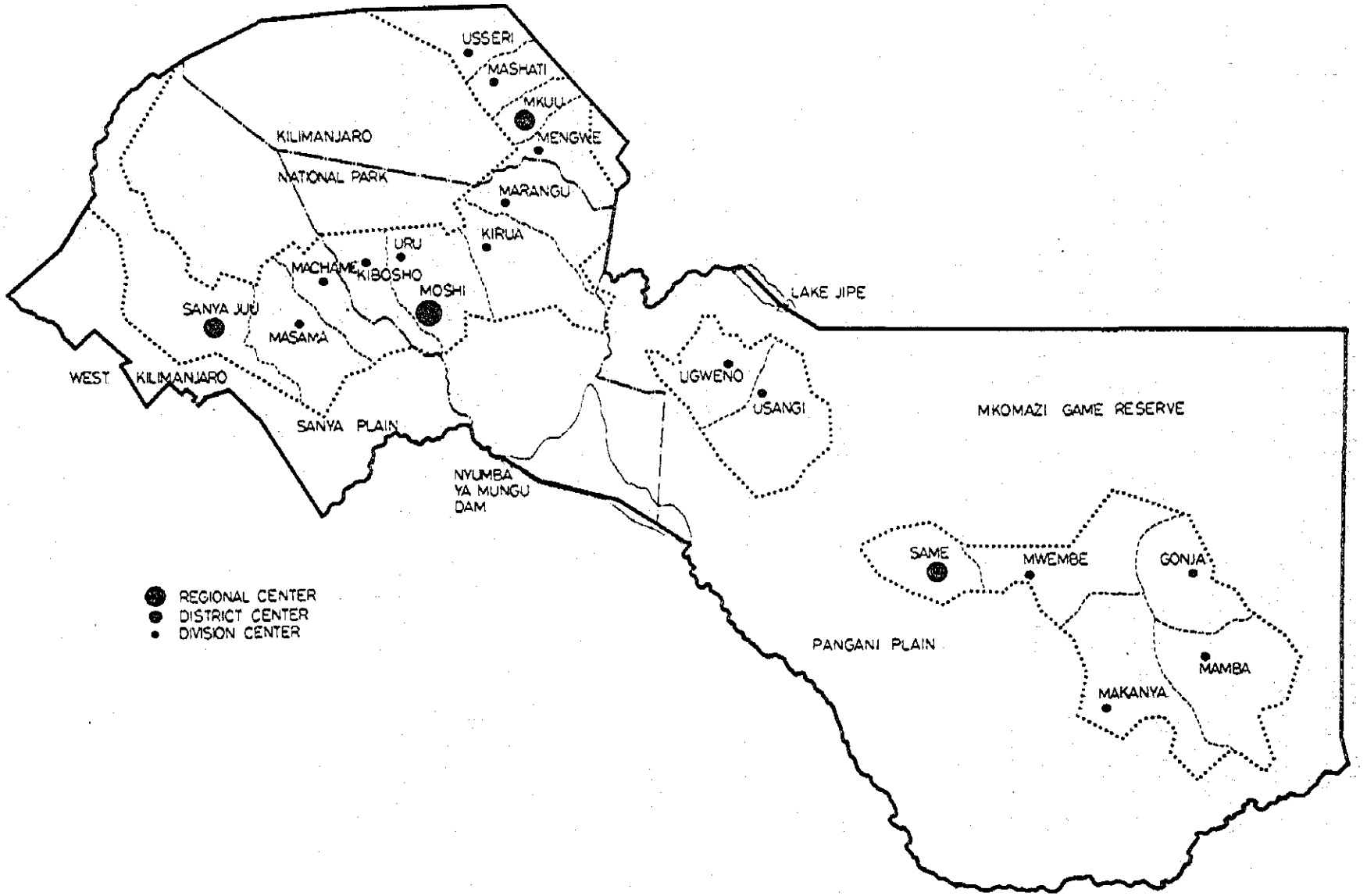
Designated Urban areas (Table-2)

Town	District	Town Population, 1975	Service Population, 1975
1. Moshi	Moshi	50,000	54,818
2. Same	Pere	15,000	29,519
3. Sanya Juu	Hai	5,000	49,866
4. Mkuu	Rombo	5,000	32,961

Designated Quasi-Urban areas (Table-3)

Division Center	District	Division	Service Population, 1975
1. Masama	Hai	West Hai	47,626
2. Machame	"	Central Hai	63,052
3. Kibosho	Moshi	Central Hai	74,902
4. Uru	"	East Hai	89,754
5. Kirua	"	West Vonjo	58,267
6. Marang	"	East Vonjo	88,154
7. Mengwe	Rombo	Mengwe	34,970
8. Mashati	"	Mashati	34,039
9. Usseri	"	Usseri	44,302
10. Masageni	Pare	Ugweno	29,266
11. Usseri	"	Usangi	36,214
12. Mwenbe	"	Mwenbe/Mbaga	15,932
13. Makanya	"	Chome/Suji	18,036
14. Manba	"	Manba/Vunta	36,588
15. Gonja	"	Gonja	26,734

Town Location Map (Fig.-1)



1.3 Setting of Future Urban Population

The urban population (nonagricultural population) of the Kilimanjaro Region in 1975 is estimated at 80,000 persons, 75,000 of whom lived in the four major towns; Moshi Town; 50,000; Same Town; 15,000; Sanya Juu Town; 5,000; and Mkuu Town; 5,000:

Remaining 5,000 urban population was distributed in the small urban areas other than those four towns.

The population plan macroframe sets the urban population of the region in 1995 at 280,000 persons, or 19% of the total population of the region in that year, the planned populations of the four towns by that year being as follows: Moshi, 150,000; Same, 50,000 Sanya Juu, 25,000; and Mkuu, 25,000. The remaining 30,000 persons have been allocated the fifteen division centers in proportion to the total populations of the divisions.

Projection of Urban Population (Table-4)

	1975	1980	1985	1990	1995
Moshi Town	50,000	68,750	100,000	131,250	150,000
Same	15,000	21,500	32,500	43,500	50,000
Sanya Juu	5,000	9,500	15,000	20,500	25,000
Mkuu	5,000	9,500	15,000	20,500	25,000
Division Centers	5,000	9,750	17,500	25,250	30,000
Totals	80,000	119,000	180,000	241,000	280,000

Since about 36% of the total population of the region is now accounted for by children under age nine, in the period 1980-1985, when they will have left school, one can expect a sharp inflow of population from rural areas into urban areas as they come in having of job training and jobs, which the towns will be able to better provide as a result of their development up until then.

1.4 Study on Town Size and Population Flow

(1) Purpose of Study

The purpose of this study is to estimate the population absorption capacities of towns and rural areas on the basis of natural population growth trends in the region and to use these capacities to formulate a ti time schedule for population flow between development blocks.

This population allocation plan will serve as a macroframe for land-use planning and human settlement planning and as a basic condition for determination of regional development strategy and the structure of regional industry.

The following have been used as the basic data input in the population allocation study:

- The population and population distribution figures of the 1967 census.
- The information obtained in the village population survey carried out by DDD Offices in 1967.
- Population projections up to the year 2000 made by the social system planner, Dr. Y. Kumata.

(2) Procedure of Study

Study on Optimum Town Population and Population Influx

Step-1 Setting the optimum population scales for hub towns in the Kilimanjaro Region in 1995.

Step-2 Estimation of the population absorption capacity of each of the four hub towns in the 20-year period 1976-1995.

Step-3 Setting of potential sources of the in-migration to each town and estimation of the amount of in-migration from each of the other development blocks in the region.

Step-4 Estimation of amount of land in different categories of cultivable land.

Step-5 Estimation of the amount of new agricultural population that can be absorbed by each development block.

Study on Population Outflow From Rural Areas in the Period 1976-1995

Step-6 Estimation of that part of the natural increase in population in each rural development block remaining after in-migration to the towns is taken into account.

Step-7 Comparison of this remaining portion of the natural increase in population of each rural development block with the amount of new agricultural population that can be absorbed by each so as to determine which development blocks will have a population overflow and which will be able to absorb a social increase in population in the form of in-migration.

Step-8 Determination of the total amount of population flow between development blocks up to 1995.

Step-9 Formulation of a time schedule for population migration in the region during the period 1976-1995.

Step-10 Determination of industrial compostiion requirements for making a population reallocation program possible.

(3) Setting of Alternatives

Consideration will be given to the following three cases regarding the distribution between urban areas and rural areas of the population increase of 600,000 persons that is foreseen for the region by 1995.

Case-1 *Emphasis on agricultural development -- an urban/rural ratio of 1:2*

Case-2 Equal emphasis on both agricultural and urban industrial development -- an urban/rural ratio of 5:7

Case-3 Emphasis on urban industrial development -- an urban/rural ratio of 1:1

Urban and Rural Population in 1995

	Urban and Rural Population in 1995		
	Case-1	Case-2	Case-3
Urban	280,000	330,000	380,000
Rural	1,185,000	1,135,000	1,085,000
Urban/rural ratio	19:81	23:77	26:74

(4) Setting of Town Size

	Population, 1975	Population, 1995		
		Case-1	Case-2	Case-3
Moshi Town	50,000	150,000	180,000	210,000
Same	15,000	50,000	60,000	70,000
Sanya Juu	5,000	25,000	30,000	35,000
Mkuu	5,000	25,000	30,000	35,000
Other urban areas	5,000	30,000	30,000	30,000
Totals	80,000	280,000	330,000	380,000

Remarks: (i) The future population of Moshi town has been assumed to be 10-15% of the total population of the Kilimanjaro region.

(ii) The future population of Same town has been assumed to be 15-20% of the total population of Pare District.

(iii) The future populations of the other towns have been assumed to be 10-15% of the total population of their respective districts.

(iv) The figures for "other urban areas" represent the urban population of the division centers.

(5) Estimation of the Natural and Social Population Increases of the Four Towns.

Case-1	Population 1975	Natural Increase 1976-95	Social Increase 1976-95	Population 1995
Moshi Town	50,000	34,162	65,838	150,000
Same	15,000	10,249	24,751	50,000
Sanya Juu	5,000	3,416	16,584	25,000
Mkuu	5,000	3,416	16,584	25,000

Case-2	Population 1975	Natural Increase 1976-95	Social Increase 1976-95	Population 1995
Moshi Town			95,838	180,000
Same		Same as Case-1	34,751	60,000
Sanya Juu			21,584	30,000
Mkuu			21,584	30,000

Case-3	Population 1975	Natural Increase 1976-95	Social Increase 1976-95	Population 1995
Moshi Town			125,838	210,000
Same		Same as Case-1	44,751	70,000
Sanya Juu			26,584	35,000
Mkuu			26,584	35,000

(6) Breakdown of the Population Inflow Into the Four Towns by Source

(i) Moshi Town

	Case-1	Case-2	Case-3
Moshi District	46,086	67,086	88,086
Hai District	6,584	9,584	12,584
Rombo District	6,584	9,584	12,584
Pare District	6,584	9,584	12,584
Totals	65,838	95,838	125,838

Remarks: It has been assumed that 70% of the inflow into Moshi town will originate in the Moshi District, and 10% in each of the other three districts in the region.

(ii) The population inflow into each of the other three towns has been assumed to originate in the rural areas of the same district that the town is located in, the figures being as follows:

	Case-1	Case-2	Case-3
Same	24,751	34,751	44,751
Sanya Juu	16,584	21,584	26,584
Mkuu	16,584	21,584	26,584

1.5 Employment Schedule for Urban Areas

The following table gives figures for anticipated levels of employment in different industrial categories in urban areas of the Kilimanjaro Region in 1985 and 1995 as based on anticipated employment for the whole region.

Assumption of Employment by Sectors (Table-5)

	1985		1995	
	Rural	Urban	Rural	Urban
Primary sector	308,030	-	411,960	-
Secondary sector	14,250	16,900	24,630	29,010
Tertiary sector	10,050	34,590	21,210	47,110
Totals	332,330	51,490	457,800	76,120
Population	1,013,000	180,000	1,176,000	280,000
Employment/ population rate	32.8%	28.6%	38.9%	27.2%

These figures are based on the following assumptions:

(i) Employment in primary industries (agriculture and minig) is entirely in rural areas.

(ii) Employment in manufacturing is split 50-50 between urban and rural areas.

(iii) Employment in service industries is divided between urban and rural areas in a ration of 60:40.

(iv) 80% of the remaining employment is in urban areas, and 20% in rural areas.

(v) Employment is divided between the towns in the same proportions as population.

This being the case, the rates of employment in rural and urban areas in 1985 come to 32.8% and 31.7%, respectively.

The ratio of employment in secondary industry to that in tertiary industry will be approximately 40:60.

The following table gives the anticipated employment figures for these two categories for each town.

Breakdown of Employment in Urban Area (Table-6)

	1985	1995
Moshi Town	28,300	40,810
Secondary	9,400	15,550
Tertiary	18,900	25,260
Same	9,290	13,620
Secondary	3,060	5,190
Tertiary	6,230	8,430
Sanya Juu	4,370	6,770
Secondary	1,400	2,580
Tertiary	2,970	4,190
Mkuu	4,370	6,770
Secondary	1,400	2,580
Tertiary	2,970	4,190
Division Centers	5,160	8,150
Secondary	1,640	3,110
Tertiary	3,520	5,040
Totals	51,490	76,120

2. MOSHI TOWN DEVELOPMENT PLAN

2.1 Present Conditions

(1) Land Use

The total population within the Moshi township boundaries in 1975 was about 50,000 persons. Since the land area within those boundaries is 3,010 ha, the population density comes to 16.6 per hectare. Since there are a good number of yet unused plot of land and a full third of the land is still being used for agriculture, there is plenty of capacity for further land development within those boundaries and for accommodation of extra population.

The following is a breakdown of that area by land-use type.

Land-use Composition (Table-7)

	Area (ha)	Percentage
Central area	38	1.2
Public facilities area	416	13.8
Industrial area	50	1.7
Residential area	336	11.2
Open space area	640	21.2
Agricultural area	1,050	34.9
Other-use area	480	16.0
Total	3,010	100

(2) Residential Areas

The total number of households is about 14,700, distributed as below in the different land-use areas, and the average number of persons per household is 3.4.

	No. of households	Percentage
Central area	4,410	30
Residential area	6,470	44
Agricultural area	3,820	26
Total	14,700	100

On the basis of these figures, the average gross lot area within residential areas comes to about 520 m^2, and the population density comes to 19.3 households and 65.6 persons per hectare.

Of the town's present population of 50,000, only 9,200 persons, or 18.4% of the total population, live north of the trunk road, which divides the town in two even parts the remaining 40,000 persons or 81.6% of the total population, living in the southern half.

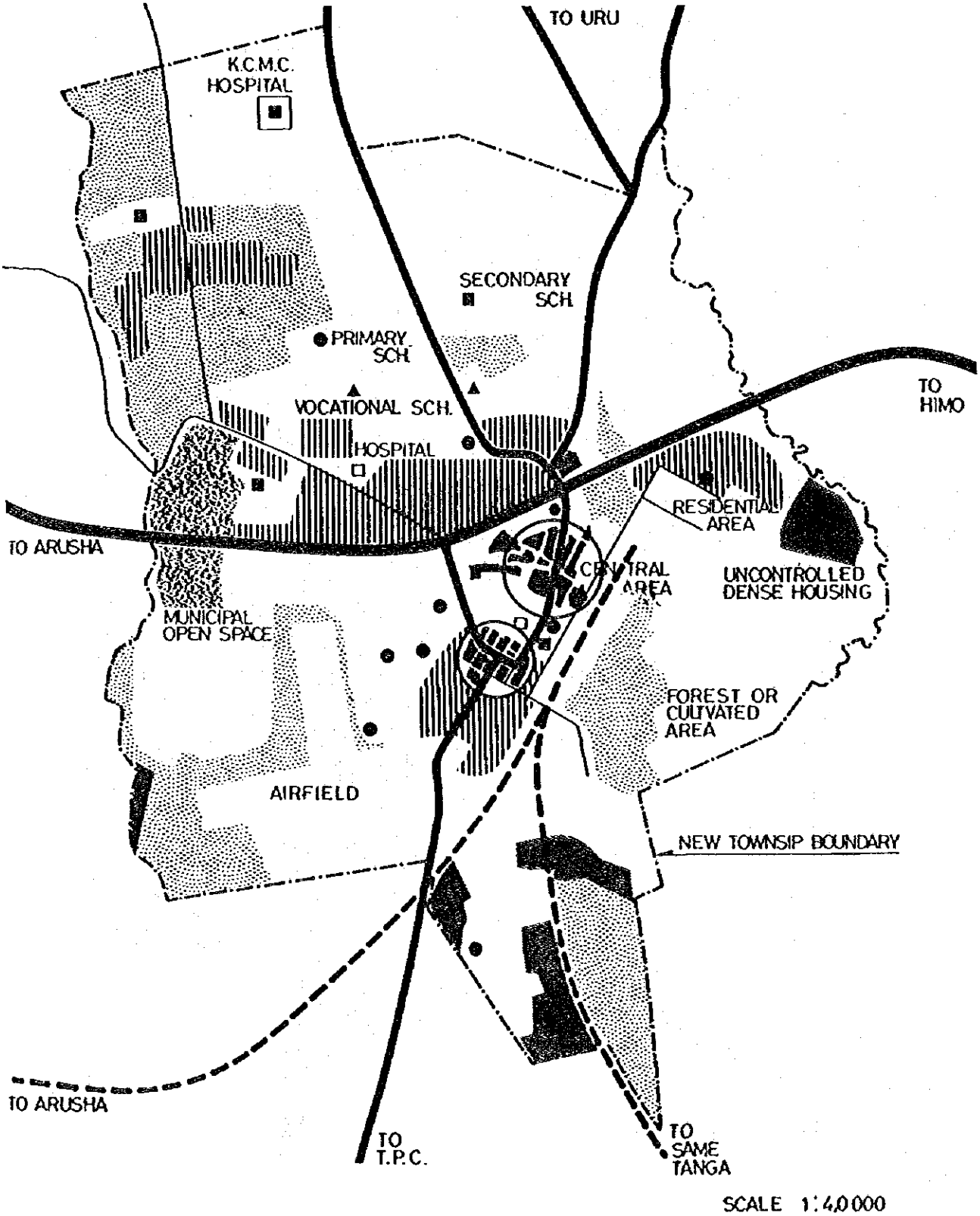
Presently, there are five undeveloped town plan agreas in the township--two in the north area, and three in the south area. In the north area there is approximately twice the amount of area that can be newly developed for residential purposes, the five undeveloped town plan areas excluded, than in the areas south of the trunk road.

According to 1967 statistics, approximately 66% and 16% of the residential units have one, two and three or more rooms, respectively, their respective shares of the population being 50%, 23% and 24%.

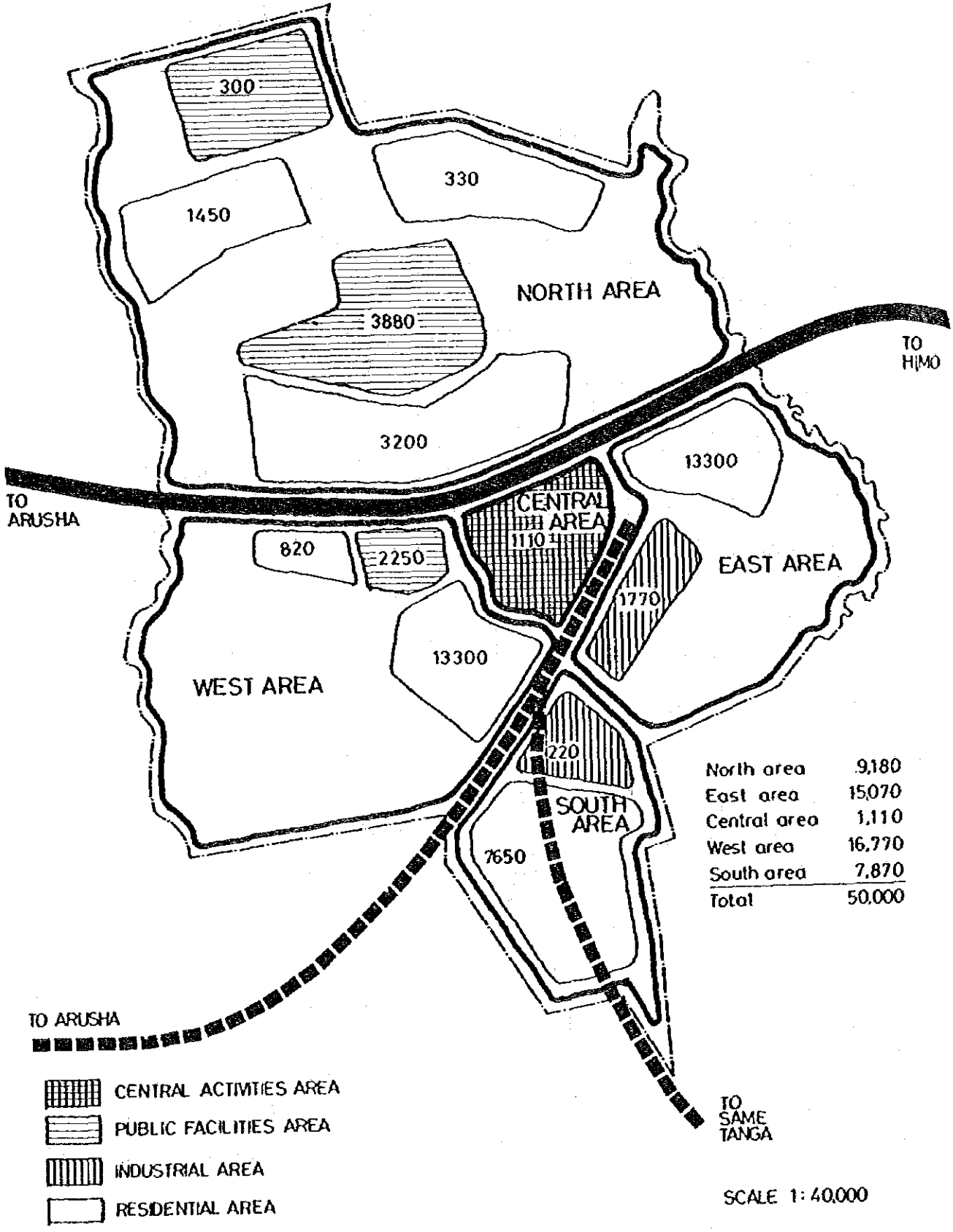
The same source of information places the permanent housing at about 70% and the semi-permanent housing at about 26% of the total.

Only a low percentage of the housing has water and electricity service.

Moshi Town : Existing Landuse (Fig.2)



Gross Population Distribution : Existing (Fig.-3)



2.2 Development Framework

(1) Population Projection

The following is the population plan for Moshi Town. (Table-8)

	Population		Natural Increase		Social Increase	
	Total Population	Average Annual Growth Rate	Additional Population	Average Annual Growth Rate	Additional Population	Average Annual Growth Rate
1975	50,000					
		(6.5%)	9,226	(3.2%)	9,524	(3.4%)
1980	68,750					
		(7.8%)	9,910	(2.5%)	21,340	(5.3%)
1985	100,000					
		(5.6%)	8,634	(1.5%)	22,616	(4.1%)
1990	131,250					
		(2.7%)	6,607	(1.0%)	12,143	(1.7%)
1995	150,000					

According to this plan, the natural population increase will be gradually lowered, and the social increase, or influx of population, will settle to a lower rate after a rairly high rate in the period 1980-90.

(2) Township Boundaries

Presently the area of the township consists of the approximately 3,010 ha of land hemmed in by the Rau and Karanga rivers and the Baru Estate on the north side and the Karanga Estate on the south side.

This area will be sufficient to accommodate the approximately 50,000 increase in population that is foreseen by 1985 since it includes about 1,000 ha of land the development of which has not even been planned yet and another 700 ha the development of which has been planned but not yet implemented. In fact, this undeveloped land is enough to accommodate another 70,000 persons. Accordingly, it will not be necessary to alter the township boundaries before 1985. Thereafter, however, it will be necessary to consider developing the land east of the Rau River and incorporating it into the township because of further population increase and the additional land that will be required for large factories, schools, and other facilities.

In this plan, the master plan area, which includes the existing prision, the technical secondary school, the recreation zone, etc., will comprise 4,300 ha in 1985 and 6,000 ha in 1995.

2.3 Development Plan

(1) Development Policy

The policy for the development of Moshi Town is as follows:

(i) Prevention of overcrowding and development as an educational, cultural, and administrative town with an abundance of a greenery.

(ii) Alteration of the present radial pattern of development from the heart of the town to a ring pattern around it with the construction of a peripheral loop road.

(iii) Giving the part of the town lying between the Rau and Karanga rivers, i.e, the present township boundaries, a quite atmosphere with plenty of greenery, allowing only educational, administrative, recreational, commercial, and small industrial facilities and housing to be located there, and locating factories, distribution facilities, new housing developments, including housing for workers, and other facilities east of the Rau River as a second urban core.

(iv) Development of this second urban core as a production community, i.e., as a mixed-use area with both factories and other production facilities and social services for some independence from the first core, the basic unit being approximately 4,000 persons.

(v) Emphasis on development of the first core up to 1985 and then construction of the second core in the period 1985-1995, with relocation of the railroad and improvement of infrastructure.

(2) Educational and Training Facilities Zone

It is suggested that Moshi Town be developed as the educational and training center of the region considering particularly the great need for training of technicians and guidance personnel for the agricultural development of the region, which will be the basis for the region's overall development. Also necessary in this respect will be development of local techniques based on local needs and training of personnel to work for wider application of such techniques. Specifically, the following kinds of educational and training facilities and related services will be required:

- Kilimanjaro Agricultural College
- A testing and experimental farm
- A facility for the training of agricultural guidance personnel
- Agricultural secondary schools
- Industrial secondary schools
- Arts and crafts secondary schools
- Facilities for the training of teachers and school administrative personnel
- Facilities for the -raining of medical and health service personnel

- Transportation facilities and mail, telephone, and telegraph service
- Facilities for the training of technical service personnel in connection with electricity supply, water supply, fire fighting, etc.
- Various kinds of vocational schools
- Facilities for other kinds of training and for conferences

In addition to these, there are the already existing technical secondary school, the police training center, and the cooperative college. Since most of the students and trainees will come from rural areas without their families if they are already married, they will have to be provided with suitable accommodations for long or short periods as the case may be. Accordingly, the facilities will have to have rather large sites so as to be able to locate the training facilities proper, such accommodation facilities and perhaps some related production facilities together in clearly defined units. Furthermore, these various sites ought to be grouped together in a distinctive zone on the fringe of the town.

Such a zone, including the K.C.M.C. Hospital, is planned for the north part of the town to function as an educational zone with good provision of greenery.

(3) Central Areas

Presently the center of the town consists of the central business district, which has a radial pattern of roads along which government offices and various service facilities are located, and a mixed residential and commercial area with a grid pattern of roads.

It will be possible to create a very good C.B.D. by keeping the ratio of the building area to the total area as it is now and building upward and building together instead of separately to make more effective use of open space.

At present the density of the mixed-use residential and commercial area is 110 persons/ha, which is not all that high for an area of that type. It is possible, however, that building dilapidation, crowding, traffic congestion, and other aspects of deterioration of the environment will get to be pretty bad about the time that demand for small-scale hand manufacturing in the area begins to rise.

The present plan calls for the relocation of industrial facilities in this area to its southern portion in order to making the remaining area a more purely commercial and residential area.

Another problem regarding the central area is the barrier to eastward expansion that the railway and freight yard constitute. In this respect, the plan calls for the building of a large new freight station east of the Rau River together with which a distribution center consisting of related facilities will also be located and relocation of Moshi Station as a purely passenger station farther to the south to allow for such eastward expansion.

(4) Neighborhoods

In the present plan approximately 4,000 persons will constitute a neighborhood, each of which will be provided a primary school. There will be three different density standards for residential areas: a low density of 33 persons/ha, a medium density of 85 persons/ha, and a high density of 140 persons/ha. Neighborhoods with these densities will cover 120 ha (equivalent to a square measuring 1,100 m on each side), 47 ha (700 m on each side), and 29 ha (540 m on each side), respectively. Considering the need to keep the distance that children have to walk to school within approximately 500 m, the communitites with medium and high densities are of most appropriate size. In the case of low-density communities, therefore, it will be necessary to consider buses or other means of getting some of the children to and from shcool.

In the present plan medium- or high-density, compact neighborhoods are proposed for the areas to be newly developed. It that should be noted what is meant here by "high density" is what in most town would be considered at most a medium density or even a fairly low density and that therefore "high density" will not result in an inferior living environment.

(5) Industry and Local Service Manufacturing

Two kinds of manufacturing are envisioned for the industrial development of Moshi Town. The first is secondary and tertiary processing of agricultural produce and so-called factory industry, including manufacturing, and the second is small-scale industry, centering on handicraft manufacturing.

The first will require development of an industrial zone with comparatively large sites involving large public investment at a time. Instead of relating it to the existing industries in Moshi Town, it will be given a relatively independent standing as a new type of industry.

The second kind, on the other hand, will involve development and expansion of existing manufacturing facilities, with particular emphasis being placed on manufacturing categories which will have a role of supporting the construction, transport, processing, storage, and other industries important to the agricultural development and modernization of the region.

In this sense, the plan provides for promotion of development of small-scale industry, i.e., industry to meet local needs, and in this context it is advisable to located local manufacturing in Moshi Town to supplement and reinforce cottage industry.

In this connection, a publically operated industrial development center should also be established at Kibokoloni just outside Moshi Town.

This kind of local manufacturing cannot be of the factory type, but rather should be intermixed with everyday service industries such as in the case of professional artisans.

Up to now, this kind of manufacturing has been located in the mixed-use zones of Moshi Town, but it would seem to be difficult to revitalize it and prompt its further development there.

Nevertheless, since such manufacturing has met the needs of both the town itself and the wider area beyong the town, it will not be able to function properly if it is driven out of town to a purely industrial zone.

Accordingly, the plan calls for relocation of this mixed-use, local manufacturing zone to the southernmost part of the town as its boundaries new stand in order to make it possible to gradually convert the downtown area into a purely commercial zone.

Needless to say, the local manufacturing in this zone which can be expanded and put on a factory basis and that which might have a had effect on the environment in terms of effluents and noise should be relocated in a designated purely industrial zone.

It has been decided to locate the manufacturing of the factory type east of the Rau River as newly developed industry. This area will represent a "new town" with a population of about 30,000, and in it will be located also a new freight railway station through extension of the existing line as well as distribution facilities and a slauthterhouse. The plan calls for development of several units each comprising a population of about 4,000 and containing production facilities, housing, and social service facilities.

(6) Open Spaces

(i) Recreation Zone

Promotion of sports will be one of the most important aspects of national education as the number of young people increases. Accordingly, facilities for this purpose will have to be widely provided. In this connection, the plan calls for the construction of a sports center in Moshi Town that will have all of the facilities necessary for the holding of various kinds of sporting events.

The site for this sports center will be an area of approximately 133 ha around and including the Rau forest. Besides sporting facilities, this recreation zone will have various kinds of training facilities and parks and will represent a stretch of greenery running along the Rau River in a north-south direction as a buffer zone between the present area of the town and the production community the construction of which is proposed, its facilities being used in common by both.

(ii) Structure of Greenery

The appropriate image of Moshi Town is that of a "forest capital" with a continuum of large trees in between which facilities and housing are located. The plan calls for a linked network of greenery throughout the town, the functions of which will be diverse. First of all, it will improve the living environment and more than compensate for a somewhat high

residential density and slightly small housing units. It will also include major community facilities, particularly at intersections with major roads, which, with secondary schools, a community center, and other facilities, will serve as nodal points for community adhesiveness. It is proposed that a network of streams be made to lead from the Rau and Karanga rivers for provision of the water needed by this green belt. At the same time these streams can serves as rainwater drainage channels.

(7) Road Network

At the present time the road network consists of radial roads focused on the center of the town. This pattern will have to be supplemented in the near future by a ring road around the present town periphery, along which housing, local manufacturing, recreational space, educational and training facilities, and other facilities can be located, thereby making it possible to reach any of them without having to traverse the crowded center of town. Also necessary in the near future will be improvement of intersections, provision of sidewalks, etc., with respect to the national highway that runs through the middle of town in an east-west direction considering that the volume of traffic on it is soon expected to increase substantially. Eventually it will probably be wise to build a by-pass for through traffic, but the present plan does not include this item since its emphasis is on development of sites for industry.

The plan calls for concentration of distribution facilities, including warehouses, freight yards, and a freight railway station, in a new industrial zone, which will involve the laying of a branch line off the existing tracks. In this way it will be possible to keep heavy transportation out of the center of town, which will make for better economic efficiency.

Moshi Town will become increasingly important as an interregional and intraregional node of bus transportation. The Moshi Bus Station already has about 200 arrivals and departures a day on interregional routes, involving some 10,000 passengers, and another 130 or so arrivals and departures on interregional routes, involving some 6,300 passengers. Since the number of arrivals and departures is eventually expected to reach the 1,000 mark, the present capacity of this station will obviously be greatly exceeded. Accordingly, it will be necessary for the time being to improve it and the road connecting it with the national highway and later when the railroad station has been relocated and the area east of it developed, to relocate the interregional bus terminal function in that area.

2.4 Land-use and Population Distribution Plan

The table below is the land-use plan for the aforementioned pilot plan. The development area for up to 1985 has been limited to the west side of the Rau River since development of a large-scale industrial zone has been assumed to begin later. If it should begin earlier, it will have to be somewhat independent of the town and not exert any basic influence on it.

The population distribution plan, also given below, is based on this land-use plan. The industrial areas and central areas are considered to include some housing as mixed-use areas, and the central areas encompass the existing downtown area. (Table-9)

	1985		1995	
	Area (ha)	%	Area (ha)	%
Residential areas	782	18.0	1,021	16.9
Low-density	390	9.0	524	8.7
Medium-density	104	2.4	151	2.5
High-density	288	6.6	346	5.7
Industrial areas	248	5.7	724	12.0
Industrial area	-	-	476	7.9
Small-scale industrial area	248	5.7	248	4.1
Central areas	206	4.8	206	3.4
Public facilities areas	982	22.7	1,107	18.4
Education	617	14.2	663	11.0
Medical care	155	3.6	155	2.6
Trade	-	-	44	0.7
Commerce	10	0.3	15	0.3
Slauterhouse	-	-	30	0.5
Stockyard	200	4.6	200	3.3
Public open spaces	122	2.8	205	3.4
Sports grounds and parks	50	1.1	133	2.2
Cemetery	72	1.7	72	1.2
Roads and other open spaces	1,996	46.0	2,761	45.9
Roads and railroads	142	3.3	172	2.9
Other open spaces	1,854	42.7	2,589	43.0
Total plan area	4,336	100.0	6,024	100.0

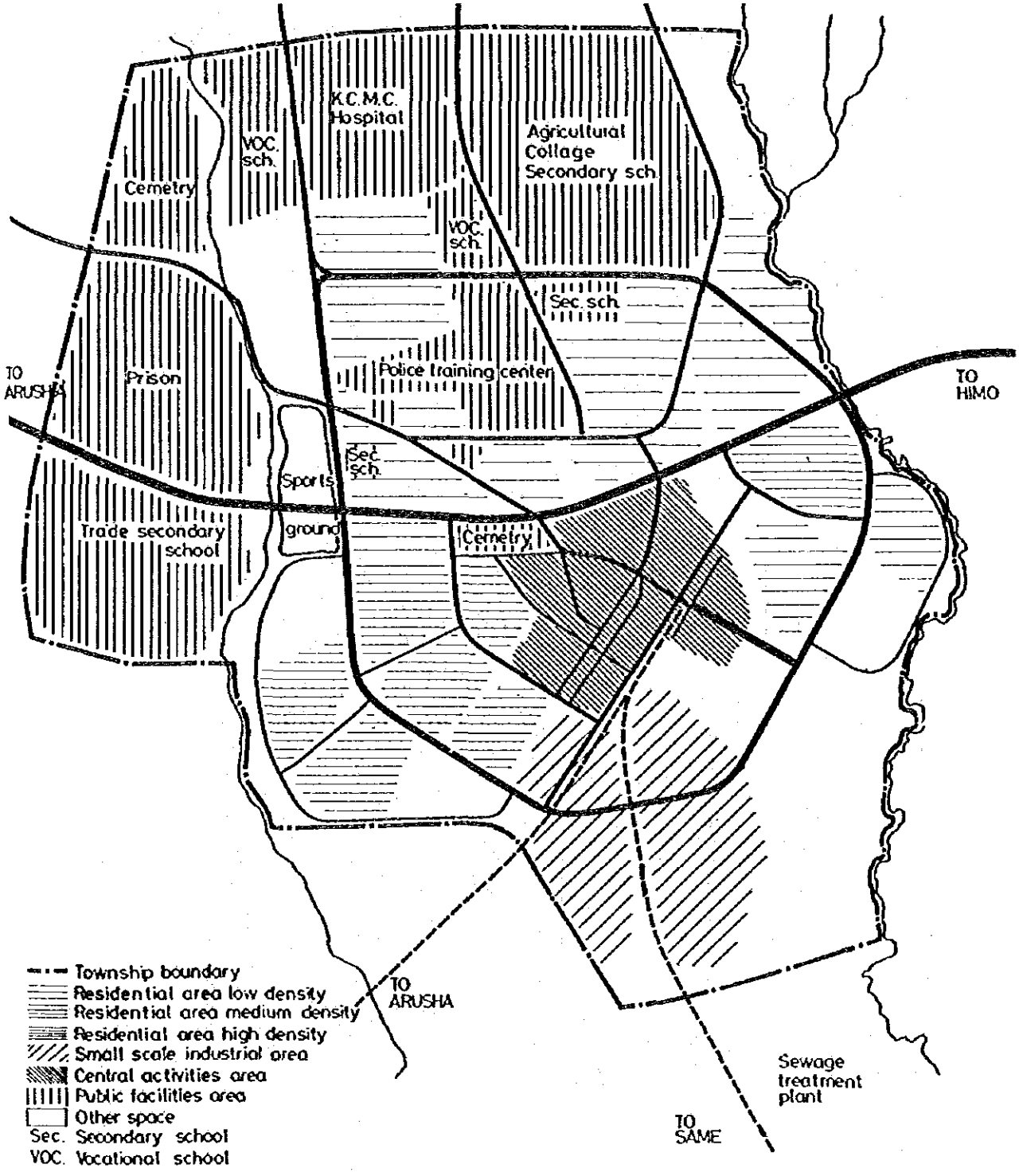
Popolation Distribution Plan, 1985 (Table-10)

	Area (ha)	Population	(%)	Gross average density (persons/ha)
Residential areas	782	62,300	62.3	80.0
Low-density	390	12,900	(12.9)	33.1
Medium-density	104	9,100	(9.1)	87.5
High-density	288	40,300	(40.3)	140.0
Industrial areas (small-scale industry)	248	17,200	17.2	69.4
Central areas	206	10,800	10.8	52.4
Public facility areas	987	9,700	9.7	9.8
Total or average	2,223	100,000	100.0	45.0

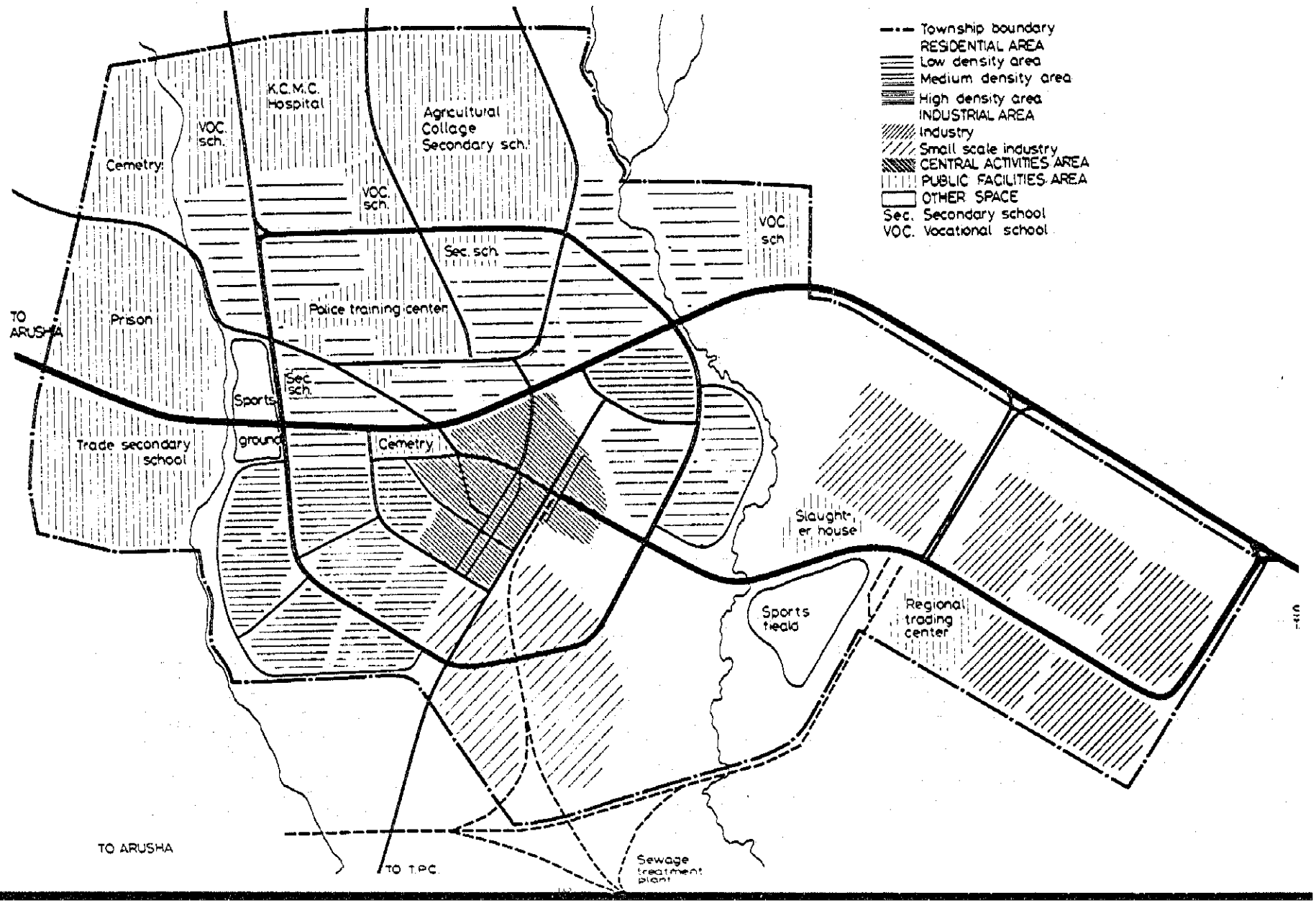
Population Distribution Plan, 1995 (Table-11)

	Area (ha)	Population	(%)	Gross avarage density (persons/ha)
Residential areas	1,021	78,400	52.3	76.8
Low-density	524	17,200	(11.5)	32.8
Medium-density	151	12,800	(8.5)	84.8
High-density	346	48,400	(32.3)	140.0
Industrial areas	724	46,600	31.1	64.4
Industrial areas	476	29,000	(19.4)	61.0
Small-scale industrial areas	248	17,600	(11.7)	71.0
Central areas	206	10,500	7.0	51.0
Public facility areas	1,107	14,500	9.6	13.1
Total or average	3,058	150,000	100.0	49.1

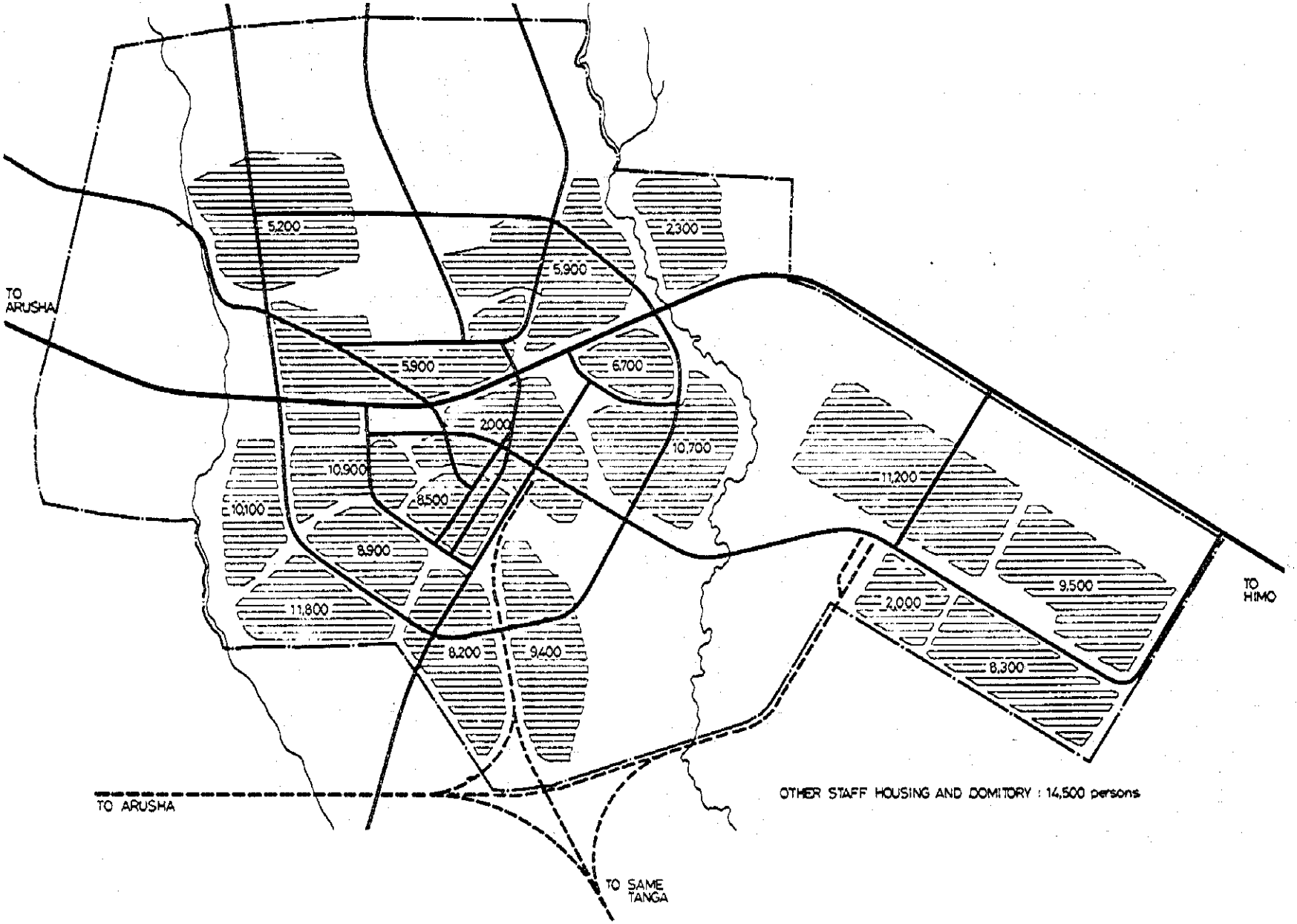
Land-use Plan, 1985 (Fig.-4)



Land-use Plan, 1995 (Fig.-5)



Population Distribution Plan 1995 (Fig.-6)



2.5 Housing and Public Facilities

The breakdown of the present population of Moshi Town of approximately 50,000 persons is roughly 30% in central areas, 44% in residential areas, and 26% in agricultural areas. Of the approximately 22,000 persons in residential areas, about 5,000 are in low-density areas, and most of the remaining 17,000 in high-density areas.

A considerable portion of the approximately 13,000 persons in agriculatural areas are probably accounted for by uncontrolled dense housing areas.

Considering the fact that half of the population lives in one-room residences and the average number of persons per residential lot is eight, one can surmise that the housing shortage is very acute. Assuming that the people living in such crowded conditions represent approximately 25% of the total population of the town, one can also conclude that the there is a need for 2,500-3,000 additional housing units.

Since there is expected to be an increase of 100,000 in population by 1995 and assuming that each additional family will require a housing unit, another 25,000 units will be necessary, for a total of approximately 27,500-28,000 additional housing units.

In more realistic terms, however, this figure should be about 19,000 units considering, among other things, the fact in some cases more than one family will live in a single unit and the fact that some families will be very large, the persons living in each unit in this case averaging six.

The percentage breakdown in this case is expected to be about 55% for housing in purely residential areas, 25% for worker housing in industrial areas, 10% for houses also used as places of work, and 10% for dormitories and staff housing of shools, training facilities, etc.

Assuming, moreover, that housing for employees of new public facilities and large-scale factories that are to be developed will be built as part and parcel of such development, it will only be necessary to supply about 65% of the total of 19,000 housing units, or 12,000 units in purely residential areas and mixed-use areas, at an average annual rate of about 700 units.

The following table gives the allocation of population to the different areas in the town as based on the densitites in the pilot plan.

Housing Requirements, 1976-1995 (Table-12)

	1975 - 85		1986 - 1995		TOTAL	
	No. of House-hold	Pop.	No. of House-hold	Pop.	No. of House-hold	Pop.
Residential areas	10,950	43,550	4,000	16,100	15,050	59,650
Low-density	2,100	8,250	1,100	4,300	3,200	12,550
Medium-density	2,100	8,300	900	3,700	3,000	12,000
High-density	6,750	27,000	2,000	8,100	8,850	35,100
Industrial areas	2,500	10,100	7,400	29,400	9,900	39,500
Small-scale industry	2,500	10,100	100	400	2,600	10,500
Industrial area	-	-	7,300	29,000	7,300	29,000
Staff housing	-	-	-	-	1,400	5,500
Totals	13,450	53,650	11,400	45,500	26,350	104,650

Remark: Domitory and staff housing are excluded.

(2) Public Facilities

The following is a list of the public facilities that will be required in Moshi Town.

Public Facililities Schedule, Moshi Town (Table-13)

	Present	By 1985	By 1995
Administrative facilities			
RDD office	1	1	1
DDD office	1	1	1
Municipal office	1	1	1
Medical care facilities			
Regional hospital	1	1	1
Division hospitals	2	2	2
Health centers	1	2	2
Dispensaries	*	24	36
Educational & cultural facilities			
Colleges	2	3	3
Secondary schools	2	4	4
Technical secondary schools	1	3	4
Vocational shools	1	2	3
Primary schools	10	24	36
Regional library	1	1	1
Art hall	-	1	1
Communication facilities			
Head post office	1	1	1
Subdepartmental post office	-	3	6
Regional telephone exchange	1	1	1
Commercial & trade facilities			
Wholesale facility	1	1	1
Shopping center	3	6	10
Shops	*	96	144
Regional trading center	1	1	1 **
Trading subcenter	-	-	1 **

	Present	By 1985	By 1995
Public open space			
Parks	1	1	1
Sports grounds	1	1	2
Cemetry	2	3	3
Other facilities			
Police station	1	1	1
Police posts	*	5	6
Fire station	1	1	1
Regional bus terminal	1	1	1 ***
Assembly hall	1	1	1
Extension office	1	1	1
Slaughterhouse	*	1	1 ***

* For lack of data, this figure is unknown.

** A new regional trading center will be built at another location, the existing premises thereafter being used as a trading subcenter.

*** To be relocated and expanded

3. DEVELOPMENT PLAN FOR THE DISTRICT CENTERS

3.1 Present Conditions

(1) Same: About 80 km south of Moshi Town by road and located in the footland area next to the South Pare mountain block. Slope gentle. Altitude about 2,500 ft. Railway running in north-south direction about 1-2 km to the south approximately parallel to the trunk road.

(2) Mkuu: About 40 km northeast of Moshi Town by road and located halfway up Mt. Kilimanjar. Altitude about 4,500-5,000 ft. Trunk road running in north-south direction through the middle of the town and connecting with numerous local roads running parallely and approximately in an east-west direction.

Kifinuka, Kium, and Karari rivers flowing eastward either between or along the local roads.

(3) Sanya Juu: About 30 km northwest of Moshi Town by road and located halfway up Mt. Kilimanjaro. Altitude about 3,500 ft. Terrain flat. Trunk road running in east-west direction through the middle of town. Sanya R. flowing southward on the east side.

3.2 Development Framework

(1) Population Plans

The following population plans for the towns are based on the population plan for the entire Kilimanjaro Region. (Table-14)

Same

	Population	Natural increase	Social increase	Total pop. increase
1975	15,000			
1980	21,500	2,721	3,779	6,500
1985	32,500	2,965	8,035	11,000
1990	43,500	2,584	8,416	11,000
1995	50,000	1,976	4,524	6,500

Sanya Juu

	Population	Natural increase	Social increase	Total pop. increase
1975	5,000			
1980	9,500	800	3,620	4,500
1985	15,000	984	4,516	5,500
1990	20,500	857	4,643	5,500
1995	25,000	656	3,844	4,500

Mkuu

	Population	Natural increase	Social increase	Total pop. increase
1975	5,000			
1980	9,500	876	3,624	4,500
1985	15,000	983	4,517	5,500
1990	20,500	857	4,643	5,500
1995	25,000	655	3,845	4,500

Remark: The social increase in population between 1975 and 1980 has been set rather low so as to win time in which to prepare the towns for the large population increases that they will undergo in the period 1980-1990. After 1990 the population will again increase only at a low, stable rate commensurate with town size.

(2) Population Density

The Present population density would appear to be in the vicinity of 21 persons per hectare, which is not very much higher than that of nearby villages and certainly does not suggest a very high degree of urbanization. Accordingly the target population densities for 1995 have been set as follows: Same, 35 persons/ha; Sanya Juu, 35 persons/ha; Mkuu, 40 persons/ha. In setting these densities, the differences between the towns in terms of settlement pattern, mode of livelihood, and so on as well as the need to give each town an identity distinct from the surrounding area have been taken into account.

(3) Proposed Township Boundaries

The town areas have been calculated on the basis of population densities.

Same can be exected to grow evenly in all directions outward from its core. Its land-use plan will have to be such as to fully activate urban functions in connection with the railway.

Mkuu can be expected to grow linearly along the trunk road, which can be considered its backbone. This means that it will not be possible for urban development in depth. This, however, is no problem since the land-use pattern and life styles of the Rombo District favor relatively compact urban development along the trunk road instead of development of one highly compact town for the whole district. Specifically, the division centers will be suitable for this purpose.

The road network pattern for Sanya Juu is approximately the same as that for Moshi Town, and Sanya Juu's growth can be expected to be along the same lines as that of Same.

To summarize, while the other two of the three towns will be very compact, Mkuu will be planned less compactly.

The initial boundaries of the three new townships should encompass the amount of area that will be required by 1985, and those set thereafter should encompass the amount of area that will be required by 1995, although furhte study will be necessary prior to any such later change.

3,3 Residential Area Requirements

(1) Allocation of Population Increase Between Different Town Areas
The population ratio between residential areas and nonresidential areas (central activity area, public facilities areas, and industrial areas) will be 7:3.

Population Increases (Table-15)

Same	1976-80	1981-85	1986-95
Nonresidential areas	1,950	3,300	5,250
Residential areas	4,550	7,700	12,250
Totals	6,500	11,000	17,500

Sanya Juu/Mkuu	1976-80	1981-85	1986-95
Nonresidential areas	1,350	1,650	3,000
Residential areas	3,150	3,850	7,000
Totals	4,500	5,500	10,000

(2) Allocation of Population Increase by Type of New Development (Table-16)

Same

Development type	1976-80	1981-85	1986-95
Type-1	4,550	5,950	0
Type-2	0	1,750	12,250

Sanya Juu/Mkuu

Development type	1976-80	1981-85	1986-95
Type-1	3,150	350	0
Type-2	0	3,500	7,000

Definition of types:

Type-1 Infill of vacant lots in existing residential areas.

Type-2 Subdivision of existing areas of scattered development

Remark: It has been assumed that areas in which new development Type-1 is possible can absorb approximately double their present population and areas in which new development Type-2 is possible can absorb approximately five times their present population.

3.4 Land-use and Public Facilities

Same Town Population Projection and Land-use Development Schedule (Table-17)

	1975	1980	1985	1990	1995
Population	15,000	21,500	32,500	43,500	50,000
Population increase	-	6,500	11,000	11,000	6,500
Natural increase	-	2,721	2,965	2,584	1,976
Social increase	-	3,770	8,035	8,416	4,524
Persons/ha	21.4	25.7	30.5	33.6	35.0
Area required (ha)	700	837	1065	1293	1430
Breakdown by land-use type					
C.B.D.	8	13	19	25	27
	(1.2)	(1.5)	(1.8)	(1.9)	(1.9)
Residential	204	202	211	228	245
	(29.1)	(24.2)	(19.8)	(17.6)	(17.1)
Public facilities	96	140	209	270	303
	(13.7)	(16.7)	(19.6)	(20.9)	(21.2)
Industrial	10	17	24	32	36
	(1.5)	(2.0)	(2.3)	(2.5)	(2.5)
Open space	197	251	337	420	469
	(28.1)	(30.0)	(31.6)	(32.5)	(32.8)
Other uses	185	214	265	318	350
	(26.4)	(25.6)	(24.9)	(24.6)	(24.5)

Remarks: (i) The figures in parentheses give the percentage breakdown by land-use type of the area required.

(ii) Not all categories of land use will see the same rate of increase vis-a-vis a given population increase curve. Here it has been assumed that (1) the C.B.D. and residential areas will increase at about the same rate, which will be higher than that of the other categories. (2) public facilities and open space area will increase at a slightly lower rate, (3) industrial area will increase at a still lower rate, and (4) the rate of increase of the agricultural and other-use area will be the lowest of all.

Sanya Juu Town Population Projection and Landuse Development Schedule (Table-18)

	1975	1980	1985	1990	1995
Population	5,000	9,500	15,000	20,500	25,000
Population increase	-	4,500	5,500	5,500	4,500
Natural increase	-	880	984	857	656
Social increase	-	3,620	4,516	4,643	3,844
Persons/ha	20.8	29.0	31.4	32.7	35.0
Area required (ha)	240	329	478	626	715
Breakdown by land-use type					
C.B.D.	2	3	5	8	9
	(0.8)	(1.0)	(1.1)	(1.2)	(1.2)
Residential	60	81	115	150	172
	(25.0)	(24.5)	(24.1)	(23.9)	(24.0)
Public facilities	25	68	134	196	229
	(10.4)	(20.6)	(28.0)	(31.3)	(32.0)
Industrial	3	5	9	11	14
	(1.3)	(1.5)	(1.8)	(1.8)	(1.9)
Open space	70	89	122	155	176
	(29.2)	(27.0)	(25.5)	(24.7)	(24.6)
Other uses	80	84	93	105	260
	(33.3)	(25.4)	(19.5)	(16.8)	(36.3)

Remarks: (i) The figures in parenthteses give the percentage breakdown by land-use type of the area required.

(ii) Not all categories of land use will see the same rate of increase vis-a-vis a given population increase curve. Here it has been assumed that (1) the C.B.D. and residential areas will increase at about the same rate, which will be higher than that of the other categories, (2) public facilities and open space area will increase at a slightly lower rate, (3) industrial area will increase at a still lower rate, and (4) the rates of increase of the agricultural and other-use area will bethe lowest of all.

Mkuu Town Population Projection and Land-use Development Schedule (Table-19)

	1975	1980	1985	1990	1995
Population	5,000	9,500	15,000	20,500	25,000
Population increase	-	4,500	5,500	5,500	4,500
Natural increase	-	876	983	857	655
Social increase	-	3,624	4,517	4,643	3,845
Persons/ha	20.8	30.4	34.6	37.1	40.0
Area required (ha)	240	312	433	553	625
Breakdown by land-use type					
C.B.D.	2	3	5	7	7
	(0.8)	(1.0)	(1.1)	(1.3)	(1.2)
Residential	60	77	104	133	150
	(25.0)	(24.5)	(24.1)	(24.0)	(24.0)
Public facilities	25	64	121	173	200
	(10.4)	(20.6)	(28.0)	(31.3)	(32.0)
Industrial	3	5	8	10	12
	(1.3)	(1.5)	(1.8)	(1.8)	(1.9)
Open space	70	84	110	137	154
	(29.2)	(27.0)	(25.5)	(24.8)	(24.6)
Other uses	80	79	85	93	102
	(33.3)	(25.4)	(19.5)	(16.8)	(16.3)

Remarks: (i) The figures in parentheses give the percentage breakdown by land-use type of the area required.

(ii) Not all categories of land use will see the same rate of increase vis-a-vis a given population increase curve. Here it has been assumed that (1) the C.B.D. and residential areas will increase at about the same rate, which will be higher than that of the other categories, (2) public facilities and open space area will increase at a slightly lower rate, (3) industrial area will increase at a slightly lower rate, and (4) the rates of increase of the agricultural and other-use area will be the lowest of all.

Public Facilities Schedule: Mkuu (Table-20)

	Present	By 1985	By 1995
Administrative facilities			
DDD office	1	1	1
Municipal office	*	1	1
Medical care facilities			
District hospital	1	1	1
Division hospitals	-	-	1
Health centers	-	-	1
Dispensaries	*	4	6
Educational & cultural facilities			
Secondary schools	1	1	1
Primary schools	2	4	6
Library	-	-	1
Art hall			
Communication facilities			
Departmental post office	1	1	1
District telephone exchange office	1	1	1
Commercial & trade facilities			
wholesale	-	-	1
Shopping center	1	1	2
Shops	*	15	25
District trading center	1	1	1
Public open space			
Park	-	1	1
Sports grounds	-	1	1
Cemetry	*	1	1
Other facilities			
Police station	1	1	1
Police post	-	-	-
Fire station	*	-	1
District bus terminal			
Extension office	1	1	1
Slaughterhouse	-	1	1

* For lack of data, this figure is unknown.

Public Facilities Schedule: Sanya Juu (Table-21)

	Present	By 1985	By 1995
Administrative facilities			
DDD office	1	1	1
Municipal office	*	1	1
Medical care facilities			
District hospital	1	1	1
Health center	-	-	1
Dispensaries	*	8	12
Educational & cultural facilities			
Secondary schools	-	1	1
Primary shcools	2	4	6
Library	-	-	1
Communication facilities			
District post office	1	1	1
District telephone exchange office	1	1	1
Commercial & trade facilities			
Wholesale	-	-	1
Shopping center	1	1	1
shops	*	15	25
District trading center	1	1	1
Public open space			
Park	-	1	1
Sport grounds	-	1	1
Cemetry	*	1	1
Other facilities			
Police station	1	1	1
Police post	-	-	-
Fire station	*	-	1
District bus terminal	1	1	1
Extension office	1	1	1
Slaughterhouse	-	1	1

* For lack of data, this figure is unknown.

Public Facilities Schedule: Same (Table-22)

	Present	By 1985	By 1995
Administrative Facilities			
DDD office	1	1	1
Municipal office	*	1	1
Medical Care Facilities			
District hospital	1	1	1
Division hospitals	-	-	1
Health centers	-	1	1
Dispensaries	*	8	12
Educational & Cultual Facilities			
Secondary schools	-	1	2
Primary schools	2	4	6
Library	-	1	1
Communication Facilities			
departmental post office	1	1	1
District telephone exchange office	1	1	1
Commercial & Trade Facilities			
Wsholesale	-	1	1
Shopping center	2	2	3
Shops	*	32	50
District trading center	1	1	1
Public Open Space			
Park	-	1	1
Sport Grounds	-	1	1
Cemetry	*	1	1
Other Facilities			
Police station	1	1	1
Police post	*	2	2
Fire station	1	1	1
District bus terminal	*	1	1
Extension office	1	1	1
Slaughterhouse	*	1	1

* For lack of data, this figure is unknown.

4. DEVELOPMENT PLAN FOR DIVISION CENTERS

4.1 Present Conditions

(1) Masama: About 23 km east of Sanya Juu by road, 2 km north of the trunk road. Altitude about 4,600 ft. Namwi R. and Uwau R. flowing parallelly southward on the east and west sides.

(2) Machame: About 36 km northeast of Sanya Juu by road and located on the regional road. Altitude about 5,000 ft. Mwanga R. and kikafu R. flowing parallelly southward on the east and west sides.

(3) Kibosho: About 13 km northwest of Moshi Town by road and located on the regional road. Altitude about 4,400 ft. Karanga R., Kiumbura R., Isiye R. No. 1 and Isiye R. No.2 flowing approximately parallelly southward to the east, through the middle, and to the west, respectively.

(4) Uru: About 10 km north of Moshi Town by road at the terminal point of the district road. Altitude about 4,500 ft. Rau R. flowing southward about 1 km to the east. Uru Estate (approx. 1.2 km^2) to the southwest.

(5) Kirua: About 24 km east of Moshi Town by road, 13 km north of regional road by trunk road. Altitude about 4,800 ft. Uchira R. and Cholo R. flowing parallelly southward on the east and west sides.

(6) Marangu: About 33 km northeast of Moshi Town by road at the junction of trunk roads, regional roads and a district road. Altitude about 4,800 ft. Sengia R. and Una R., Kirui R. flowing southward to the west and through the middle and converging to the south to form the Himo R.

(7) Mengwe: About 6 km south of Mkuu Town by road and located on the trunk road. Altitude about 5,000 ft. No rivers.

(8) Mashati: About 9 km north of Mkuu Town by road and located on the trunk road. Altitude about 4,800 ft. Marue R. flowing eastward on the south side.

(9) Usseri: About 19 km north of Mkuu Town by road. Altitude about 5,300 ft. Ngololwe R. flowing eastward about 1 km to the north and Kilelwa R. flowing eastward about 1.8 km to the south.

(10) Ugweno: About 50 km north of Same Town by road near the north end of the North Pare mountain block. Can be reached by driving about 13 km east along a regional road that branches off the trunk road to the west and then another two km along a lesser road. Altitude about 4,500 ft. Nearby there are three rivers: the Mbakwe, the Mala and Kidororo.

(11) Usangi: About 70 km north of Same Town by road. Altitude about 4,500 ft. Gentle slope. On a regional road near the southern end of the North Pare mountain block. There are rivers within a distance of 1 km to the north, east and south, all of which flow into the Mala R.

(12) Mwembe: About 15 km southeast of Same Town by road and located on the regional road near the northwest end of the Wouth Pare mountain block. Altitude about 3,200 ft. Slope gentle. Sisal estate (approx. 1 km2) to the east.

(13) Makanya: About 35 km south of Same in the footland area right next to the southwest end of the South Pare mountain block at the intersection of a railroad and a regional road leading into the mountains. Vudce R. flowing northward about 1 km to the east. Makanya Sisal Estate (approx. 22 km2) along north and east sides. Swampland on the southwest side. Altitude about 2,000 ft.

(14) Mamba: About 65 km southeast of Same by road in the footland area right next to the east tip of the South Pare mountain block. Goma R. flowing eastward through the middle into Lake Kalimawe, from which the Mkomazi R. flows southward. Regional road running in a north-south direction through Mamba. Altitude about 1,700 ft. Slope gentle.

(15) Gonja: About 55 km southeast of Same and about 10 km north of Mamba in a footland area right next to the east edge of the central part of the South Pare mountain block. Kambaga R. flowing south about 3 km to the east. Swampland to the north, east and south. Forest (about 1.5 km2) to the west. Regional road running through roughly in an east-west direction.

4.2 Development Framework

(1) Population Plan

The allocation between the 15 division centers of their planned population has been based on the present relative sizes of their respective service populations. Roughly, they can be classified into three groups by population size:

(a) Those with about 1,000 persons -- Masangeni, Mbanga, Makanya, Gonja
(b) Those with about 1,800 persons -- Masama, Mengwe, Mashati, Usseri, Usangi, Manba
(c) Those with about 3,000 persons -- Machame, Kibosho, Uru, Kirua, Marangu

The following table gives the figures for the population of the division centers themselves and their service populations (the populations of the divisions in which they are located.

Population Projection (Table-23)

	Division center pop.	Service pop. 1975	Service pop. 1995
Hai District			
1. Masama	1,800	47,626	68,819
2. Machame	3,000	63,052	87,991
Moshi District			
3. Kibosho	3,000	74,902	95,495
4. Uru	3,000	89,754	123,084
5. Kirua	3,000	58,267	90,856
6. Marang	3,000	88,154	131,970
Rombo District			
7. Mengwe	1,800	34,970	47,265
8. Mashati	1,800	34,039	49,015
9. Usseri	1,800	44,302	71,517
Pare District			
10. Ugweno	1,000	29,266	49,441
11. Usangi	1,800	36,214	60,287
12. Mwembe	1,000	15,932	19,539
13. Makanya	1,000	18,036	29,746
14. Manba	1,800	36,588	61,221
15. Gonja	1,000	26,734	44,716

Since the average population density of the division centers has been set at 30 persons/ha, the total area of the fifteen division centers will come to 100 ha.

4.3 Residential Area Requirements

(1) Allocation of Population Between Different Town Areas

The population ratio between residential areas and nonresidential areas (central activity area, public facilities areas, and industrial areas) will be 7:3 in 1995.

	Population	Nonresidential areas (ha)	Residential areas (ha)
(a)	1,000	300	700
(b)	1,800	540	1,260
(c)	3,000	900	2,100

(2) Number of Residential Lots and Area Requirements of New Development

	Population	Number of lots	Area (ha)
(a)	1,000	175	10
(b)	1,800	315	20
(c)	3,000	525	32

Remarks:
(i) Each household will have its own residential lot, and the average number of persons per household will be 4.0 in 1995.

(ii) The average lot size will be 380 m2 in 1995.

(iii) The figures for area include an additional 60% for road area and other public use areas.

5. IMPLEMENTATION OF TOWN DEVELOPMENT

5.1 Housing Supply

(1) Demand for Housing in the Tour Towns

The table below gives the estimated demand for housing in the four towns up to 1995. A total increase in population of 175,000 persons in the four towns will make it necessary to build 28,900 new units of housing.

This figure comes to 32,650 units if one takes into account as well the poor or dilapidated housing that will have to be replaced, which means that new housing will have to be supplied at an average annual rate of 1,800 units.

(Table-24)

	Moshi Town	Same	Sanya Juu	Mkuu	Total
New demand	16,500	5,800	3,300	3,300	28,900
Replacement	2,500	750	250	250	3,750
Totals	19,000	6,650	3,550	3,550	32,650

Remarks: (i) It has been assumed that the new demand for housing will be at the rate of one unit for every six persons of population increase.

(ii) It has been assumed that 15% of existing housing falls under the category "poor or dilapidated."

A breakdown of this demand by phase is given below. It will be necessary to build 6,480 units by 1980 and 10,220 units by 1985.

(Table-25)

	Moshi Town	Same	Sanya Juu	Mkuu	Total
1977-80					
New demand	3,100	1,090	620	620	5,430
Replacement	700	210	70	70	1,050
Totals	3,800	1,300	690	690	6,480
1981-85					
New demand	5,150	1,810	1,030	1,030	9,020
Replacement	800	240	80	80	1,200
Totals	5,950	2,050	1,110	1,110	10,220
1986-95					
New demand	8,250	2,900	1,650	1,650	14,450
Replacement	1,000	300	100	100	1,500
Totals	9,250	3,200	1,750	1,750	15,950

Remarks: (i) New demand has been set in proportion to the rate of increase in population in each town.

(ii) Emphasis has been placed on the first several years in the replacement of poor or dilapidated housing.

(2) Public Housing Construction Program

The provision to date of public housing by the National Housing Corporation (NHC) in the four towns is as follows:

Moshi	324 units
Same	42
Rombo	25
Total	391

NHC also plans to build 80 more units of low-cost housing and 70 more units of medium-cost housing.

In view of the fact, however, that at the present time NHC is capable of developing only about 800-1,000 housing units a year nationwide, it is obvious that not all of the average of 1,800 units that have to be provided annually in the Kilimanjaro Region on the basis of the above projection of demand for housing can be built by the public sector.

While it is very difficult to say what the ratio will be between the amount of housing provided by the public sector and the amount provided by the private sector, it should be possible to build 2,500-3,000 units by 1985, assuming that housing construction will account for one-third of the total investment in urban development.

Accordingly, the annual targets for housing construction that have been settled upon are 280 units a year up till 1980 and 380 units a year in the period 1981-85, the breakdown by town being as follows.

	Moshi Town	Same	Sanya Juu	Mkuu	Total or average
1977-80					
Demand (nits)	3,800	1,300	690	690	7,320
Public housing (units)	570	130	70	70	840
%	15%	10%	10%	10%	13%
1981-85					
Demand (units)	5,950	2,050	1,110	1,110	10,220
Public housing (units)	1,210	330	180	180	1,900
%	20%	16¥	16%	16%	18.6%
1977-85					
Demand (units)	10,100	4,400	2,200	2,200	18,900
Public housing (units)	1,780	460	250	250	2,740
%	17.6%	10.5%	11.4%	11.4%	14.5%

(3) Cost Estimates

(i) Development Costs (1,000 sh.)

	77/78	78/79	79/80	80/81	77/78 80/81	81/82 85/86
No. of units	0	280	280	280	840	1,900
Construction cost	0	16,800	16,800	16,800	50,400	114,000

Remark: Such housing will be of concrete block structure, each unit consisting of two bedrooms, a living/dining room, a kitchen, a bathroom, and a toilet, for a total floor space of 50m^2 and a unit cost of 60,000 sh.

(ii) Recurrent Costs (1,000 sh.)

	77/78	78/79	79/80	80/81	77/78 80/81	81/82 85/86
No. of housing units subject to maintenance	390	390	390	670	1,840	8,150
Maintenance cost	1,170	1,170	1,170	2,010	5,520	24,450

Remark: The maintenance cost per unit is estimated at 3,000 sh. a year, beginning in the third year after construction in the case of new units.

(iii) Income From Rents (1,000 sh.)

	77/78	78/79	79/80	80/81	77/78 80/81	81/82 85/86
No. of housing units	390	670	950	1,230	3,240	11,850
Rent income	936	1,608	2,280	2,952	7,776	28,440

Remark: A monthly rent of 200 sh. per unit has been supposed.

5.2 Residential Land Supply

(1) Demand and Supply With Respect to Residential Land

The following table gives figures on the number of additional residential lots that will be required in each of the four towns up to 1995, the grand total being 24,300 lots.

(Table-27)

	Moshi Town	Same	Sanya Juu	Mkuu	Total
1977-80	3,100	1,090	620	620	5,430
1981-85	5,150	1,810	1,030	1,030	9,020
1986-95	3,650	2,900	1,650	1,650	9,850
Totals	11,900	5,800	3,300	3,300	24,300

Of this demand, 22% will be met up until 1985 with large-scale housing projects within the context of public investment, the following table indicating the number of lots that will be needed in each town for such projects.

(Table-28)

	Moshi Town	Same	Sanya Juu	Mkuu	Total
1977-80	680	240	140	140	1,200
1981-85	1,140	400	230	230	2,000
Totals	1,820	640	370	370	3,200

(2) Cost Estimates

(i) Development Costs (1,000 sh.)

	77/78	78/79	79/80	80/81	77/78 80/81	81/82 85/86
No. of lots	0	400	400	400	1,200	2,000
Preparation costs	600	600	600	600	2,400	2,400
Construction costs	0	12,000	12 000	12,000	36,000	60,000

Remarks: (i) The average residential lot size will be 480 m^2, with an additional 100 m^2 of 6 m-wide access street per lot.

(ii) For cost estimate purposes, land preparation and access street construction unit costs have been set at 30,000 sh. each.

(iii) Preparation costs such as those for land compensation, surveying, and design have been assumed to amount to 5% of construction cost.

(ii) Recurrent Costs (1,000 sh.)

	77/78	78/79	79/80	80/81	77/78 80/81	81/82 85/86
Lots subject to maintenance	0	0	0	400	400	8,000
Maintenance costs	0	0	0	1,200	1,200	2,400

Remark: The maintenance cost per lot is estimated at 3,000 sh. a year, beginning in the third year after construction.

(iii) Estimated Income From Sales of Residential Lots (1,000 sh.)

	77/78	78/79	79/80	80/81	77/78 80/81	81/82 85/86
No. of lots	0	400	400	400	1,200	2,000
Income	0	4,000	4,000	4,000	12,000	20,000

Remark: The price per lot is assumed to be 10,000 sh., with one-third of the construction cost to be applied to the cost of provision of access streets storm drainage, and other facilities of a strongly public nature as a reasonable share of the cost to be borne by those directly benefiting from such public investment.

5.3 Public Facilities

(1) The following public facilities will have to be either newly provided or improved by 1985:

	Moshi Town	Same	Sanya Juu	Mkuu
1977-80				
- Community centers (A)	1	1	0	0
- Wholesale facility (A)	1	0	0	0
- Shopping centers (A)	1	1	0	0
- Open-air markets (B)	1	1	0	0
1981-85				
- Community centers (A)	3	1	1	1
- Wholesale facilities (A)	1	1	1	1
- Shopping centers (A)	3	1	1	1
- Open-air markets (A)	1	1	0	0
- Open-air markets (B)	0	0	1	1

Remarks: (i) (A) indicates new provision, and (B) improvement.

(ii) In addition, public gardens will be provided ( ), and town offices will be extended.

(2) Development Schedule and Cost Estimates (Table-30)

(unit: 1,000 sh.)

	77/78	78/79	79/80	80/81	77/78 80/81	81/82 85/86
Community centers	100	300	300 (100)	300 (100)	1,000 (200)	3,000 (900)
Public gardens	150 (200)	500 (200)	500 (200)	500 (200)	1,650 (800)	3,000 (1,000)
Wholesale facilities	0	0	250	250 (100)	500 (100)	2,000 (1,000)
Shopping centers	0	0	400	400 (100)	800 (100)	2,400 (900)
Open-air markets	0 (50)	0 (50)	150 (50)	150 (50)	300 (200)	600 (500)
Town offices	0 (100)	500 (100)	500 (100)	500 (100)	1,500 (400)	2,500 (500)
Totals	250 (350)	1,300 (350)	2,100 (450)	2,100 (650)	5,750 (1,800)	13,500 (4,800)

Remarks: (i) Unit costs will be as follows:

	Construction	Improvement	Recurrent (annual)
Community centers	500	-	50
Public gardens	37.5/ha	-	-
Wholesale facilities	500	-	100
Shopping centers	400	-	50
Open-air markets	300	150	25

(ii) The figures without parentheses are for development for recurrent costs.

5.4 Roads and Streets

(1) Planning Standards

There will be two classes of roads in urban areas: 16m-wide primary distributors and 9m-wide secondary distributors. Road mileage per unit of area (km^2) will conform to the following standards:

(Table-31)

	Primary distributors	Secondary distributors
High population* density areas	1,000m	2,000m
Low population density areas	330m	670m
Average	500m	1,000m

* I.e., residential, industrial, and central areas, representing approximately one-third of the town area.

(2) Road Construction Programs

The road construction programs of the four towns are as follows: (Table-32)

(unit:km)

	Moshi Town	Same	Sanya Juu	Mkuu
Primary distributors				
- Present	5	1.5	0.5	0.5
- 1977-80	5	1.5	1	1
- 1981-85	10	2	1	1
- 1986-95	10	2	1	1
- Totals	30	7	3.5	3.5
Secondary distributors				
- Present	30	3	1.5	1.5
- 1977-80	10	3	1.5	1.5
- 1981-85	10	4	2	2
- 1986-95	10	4	2	2
- Totals	60	14	7	7

(3) Cost Estimates

(unit: 1,000 sh.)

	77/78	78/79	79/80	80/81	77/78 80/81	81/82 85/86
Development	5,200	10,400	10,400	10,400	36,400	51,600
Recurrent	650	650	650	780	2,730	5,550
Totals	5,850	11,050	11,050	11,180	39,130	57,150

Remarks: (i) Construction cost per meter will be 2,400 sh. in the case of primary distributors and 1,000 sh. in the case of secondary distributors.

(ii) Beginning three years after construction, the annual maintenance cost per meter will be 15 sh. for both classes.

6. VILLAGE INVENTORY

6.1 Profile

(1) Number of Villages

The order of the hierarchy of administrative levels from top to bottom is: region, district, division, ward, village. Since 1975 there has been a drive for formation of registered villages from traditional villages, the reorganization having been approximately 80% completed as of the end of 1976.

The table below gives the number of administrative units on each level.

(Table-33)

	Hai	Moshi	Rombo	Pare	Totals
Divisions	2	6	5	6	19
Wards	10	29	11	25	75
Villages	83	148	57	131	419
Breakdown:					
Registered	59	113	55	94	321
Unregistered	22	30	1	28	81
Old Ujamaa	2	5	1	9	17

(2) Village Distribution

As of 1975 the rural population distribution of the Kilimanjaro Region was as indicated in the table below, 70% of the rural population being in highland areas, 24% in upper lowland and footland areas, and only 6% in lowland areas.

Although there is no data availabe regarding the location of the 419 villages in the region, it would seem reasonable to assume that their distribution is approximately the same as the population distribution above. The following table divides the number of villages among the different zones on the basis of this assumption.

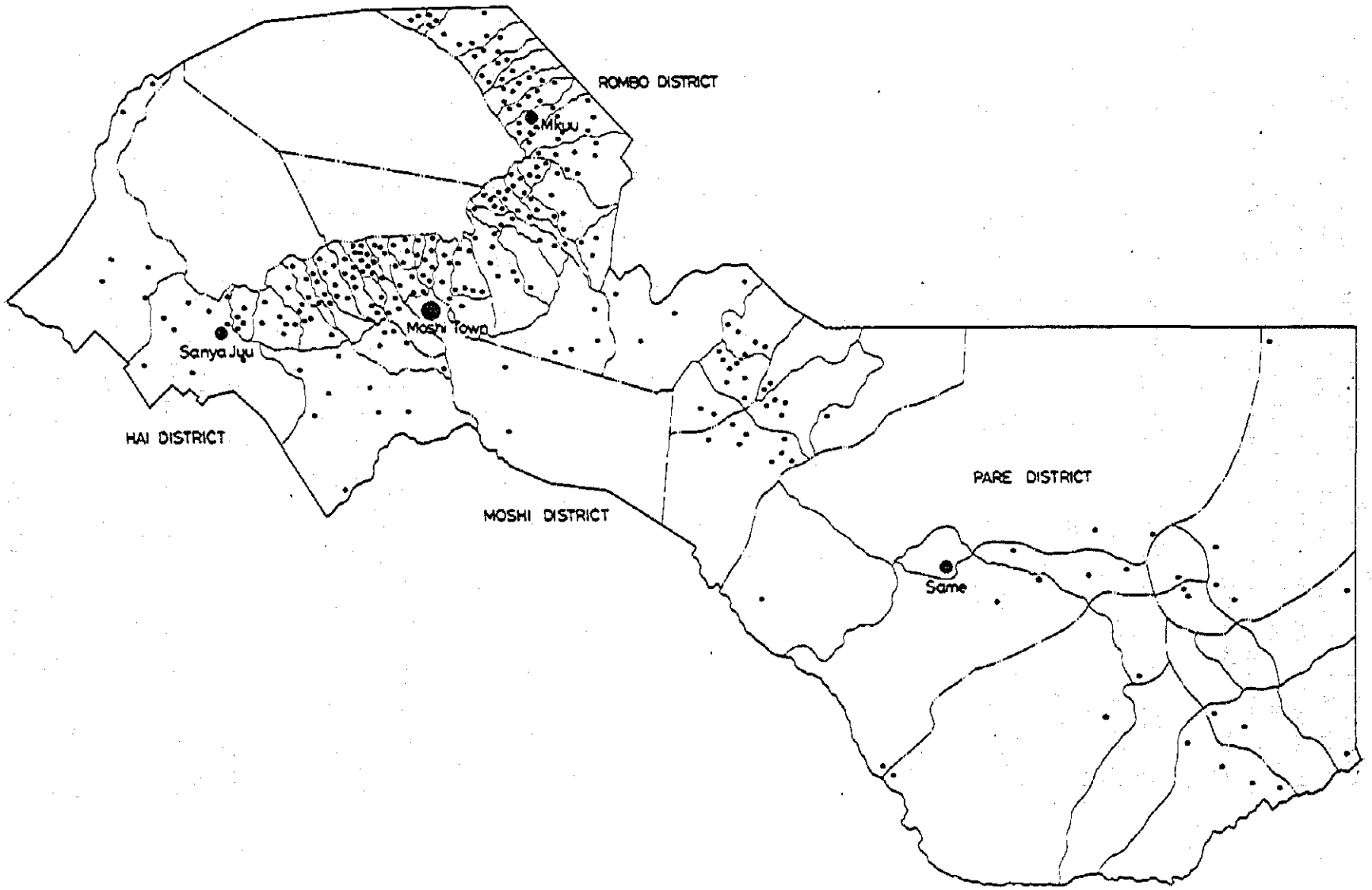
(Table-34)

	Hai	Moshi	Rombo	Pare	Totals
Highland areas	98,800 (63.5%)	242,800 (76.9%)	92,000 (65.1%)	117,200 (66.1%)	550,800 (69.7%)
Upper lowland & footland areas	36.900 (23.8%)	61,300 (19.4%)	49,300 (34.9%)	42,400 (23.9%)	189,900 (24.0%)
Lowland areas	19,800 (12.7%)	11,800 (3.7%)	0	17,700 (10.0%)	49,300 (6.3%)
Totals	155,500	315,900	141,300	177,300	790,000

Although there is no data available regarding the location of the 419 villages in the region, it would seem reasonable to assume that their distribution is approximately the same as the population distribution above. The following table divides the number of villages among the different zones on the basis of this assumption.

	Hai	Moshi	Rombo	Pare	Totals
Highland areas	53	112	37	87	293
Upper lowland & footland areas	20	29	20	31	100
Lowland areas	10	7	0	13	26
Totals	83	148	57	131	419

Village Location Map (Fig.-7)



(3) Village Size

The table below gives a breakdown of the villages for which data is available according to the amount of area that they cover, such villages representing approximately 80% of the total number of villages in the region. One would expect almost all the villages which cover an area of less than 10 km^2, which represent approximately one-half of the total to be located in highland areas and most of those which cover more than 100 km^2, which represent 14% of the total, to be located in lowland areas. The average area covered is 22.7 km^2.

(Table-35)

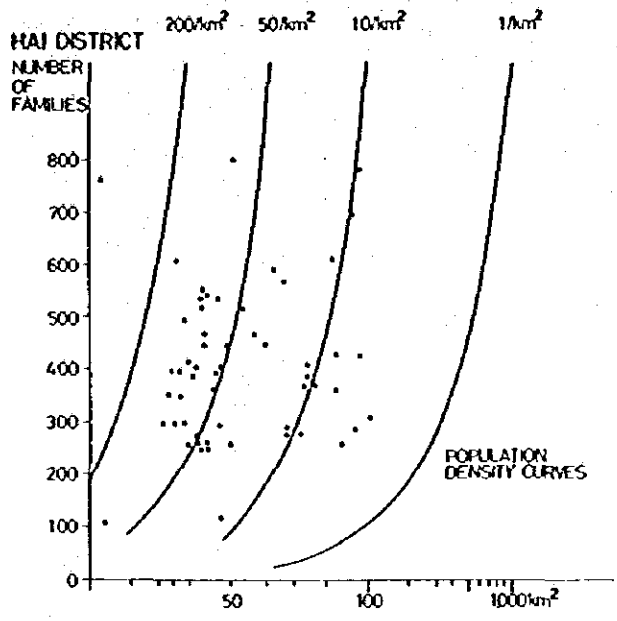
Area (km^2)	Hai	Moshi	Rombo	Pare	Totals
Under 5	15	30	27	17	89 (26.2%)
5 - 10	22	21	26	9	78 (33.0%)
10 - 15	2	23	1	6	32 (9.4%)
15 - 20	1	21	1	4	27 (7.9%)
20 - 50	10	13	0	9	32 (9.4%)
50 - 100	8	14	0	13	35 (10.3%)
100 - 200	1	0	0	12	13 (3.8%)
Over 200	0	0	0	34	34 (10.0%)
Totals	59	122	55	104	340(100%)

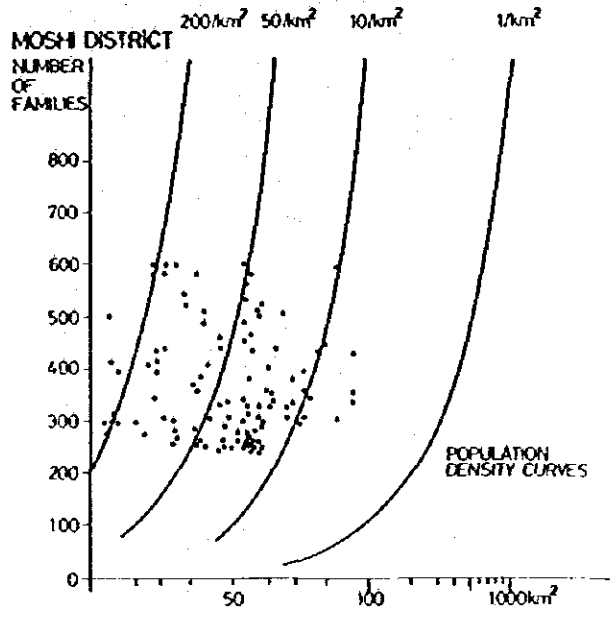
About 66.7% of the villages for which data is available consist of 200-400 households, and another 24.4% of 400-600 households, with only 8.9% having fewer than 200 or more than 600 households. The average comes to 362 households, or about 2,200 persons, since the average household consists of approximately 6 persons. The following table treaks down the total number of villages for which data is available according to the number of households in each.

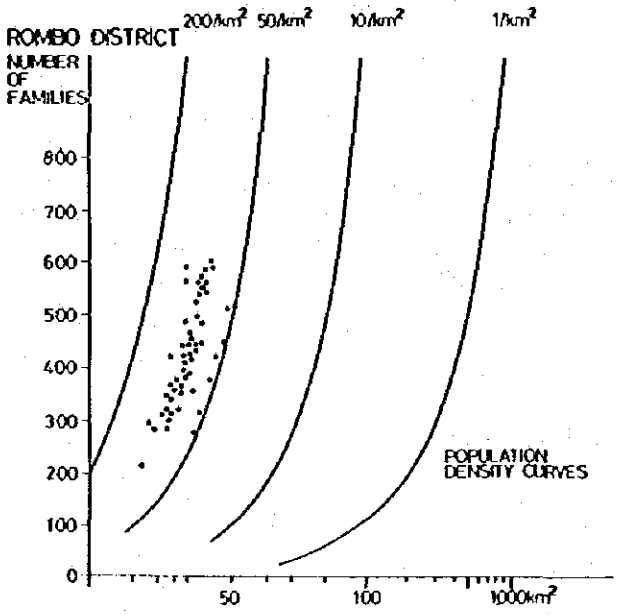
(Table-36)

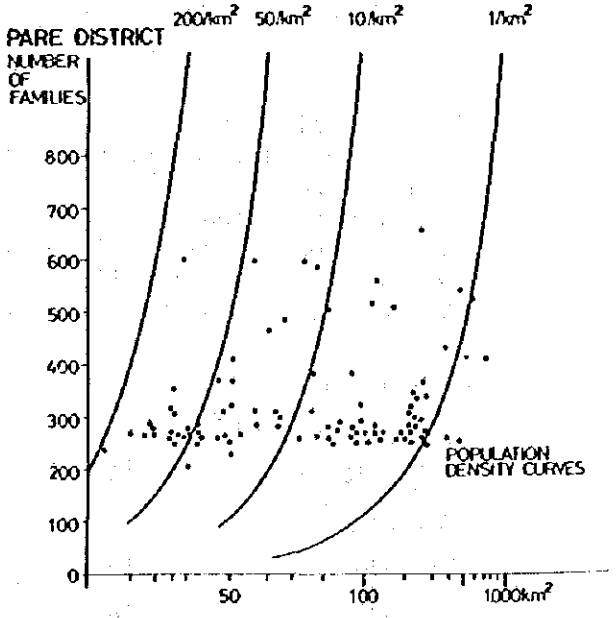
No. of Households	Hai	Moshi	Rombo	Pare	Totals
Under 100	13	0	0	0	13 (3.5%)
100-200	7	5	0	13	25 (6.8%)
200-300	13	38	9	65	125 (33.9%)
300-400	16	40	19	21	96 (26.0%)
400-500	18	22	13	3	56 (15.2%)
500-600	6	16	10	2	34 (9.2%)
600-700	3	5	4	3	12 (3.2%)
Over 700	5	2	1	0	8 (2.2%)
Totals	78	128	56	107	369 (100%)

Village Size (Fig.-8)









6.2 The Registered Village, the Basic Unit of Human Settlement

(1) Nationwide more than 7,600 villagers have been registered, 321 of them being located in the Kilimanjaro Region. Moreover, another 80-100 are expected to be registered in the region before too long.

The registered village is not only the smallest unit of regional administration but also the basic territorial community in terms of production, commerce and transportation, and education. In the Kilimanjaro Region the average village has 2,200 persons in 367 households and an area of 22.7 km^2 as well as the following public facilities as the sphere of everyday life:

- Village office
- TANU office
- Primary school
- Domestic water stand
- Dispensary
- Religious facility
- Post vender
- Small shops

On the next echelon above the village in the administrative hierarchy is the ward, which includes 5-6 villages. Above that is the division, consisting of 3-4 wards, which comprises a living sphere in which services of a higher level are available to residents.

(2) The villages of the Kilimanjaro Region can be classified into three categories--Kihamba, Shamba, and Ujamaa--each of which is described below.

(i) Kihamba Villages

The Kihamba lands in the Mt. Kilimanjaro and Pare highlands have the greatest annual rainfall in the whole country (1,000-2,000 mm) and have been settled and cultivated for more than 300 years, the chief crops presently being coffee and bananas. They are densely inhabited, chiefly by smallholders each cultivating 0.4-0.6 ha. of land and having a higher standard of living than the people in other areas of the region. Besides the traditional furrows, in recent years water pipelines have been laid for irrigation, and the road networks are well developed. Moreover, other public facilities and infrastructure are more fully provided than in other areas of the region, particularly in areas like Machame, where there are electricity, telephone service, private water supply connections, and other modern amenities even though they are rural areas.

(ii) Shambe Villages

The Shambe lands of the Mt. Kilimanjaro upper lowland and Pare footland areas have been opened up to settlement since the 1930's to relieve population pressure in the highland areas, people either living threre or commuting there to cultivate the land. There is 700-1,000 mm of rainfall a year, maize and beans are among the main crops, and the population density is medium (100-200 persons/km^2). Since there is room for extension of farmland in these areas, they will be able to accommodate the population overflow from highland areas. In terms of social infrastructure, however, they are not as well off as the highland areas.

(iii) Ujamaa Villages

In the lowland areas of the Kilimanjaro Region there are presently 17 Ujamaa villages, listed below, which have been constructed under government guidance. Since there is less than 500 mm of rainfall here annually, agriculture has to be based on irrigation. Besides improvement of the agricultural infrastructure, more social infrastructure is also urgently needed. Moreover, in view of the extremely low density (less than 20 persons/km^2) and scattered distribution of population, villagization will be necessary in order to raise infrastructural efficiency.

(Table-37)

	Location	Area(ha)	Households	Establishment
Losaa	Hai	–	48	1973
Uroni	"	100	47	1971
Miwaleni	Moshi	30	95	1970
Lotima	"	4,250	400	1971
Chekereni	"	200	250	1970
Shirima Tunda	"	267	220	1973
Mtakuja	"	115	107	1970
Chala	Rombo	150	240	1971
Bendera	Pare	–	100	1970
Kalemani	"	39	70	1971
Luani	"	200	68	1970
Kileo	"	47	134	1969
Kigonigoni	"	700	120	1969
Mkwini	"	67	103	1968
Njiro	"	110	162	1970
Kimunyu	"	40	186	–
Kazamwendo	"	–	–	–

7. VILLAGE MODERNIZATION PROGRAM

7.1 Description

(1) Purpose

The purpose of this village modernization program is to serve as a guideline for the development of villages in rural areas, which will account for 80% of the future population of the Kilimanjaro Region.

At the present time there is considerable disparity between the 419 villages of the region with respect to the state of provision of social infrastructure. Villages in the Mt. Kilimanjaro highland areas, for instance, have made considerably more progress in this respect than villages in Pare highland areas.

Generally speaking, however, the biggest gaps in terms of degree of modernization are those between the different zones of the region, the ascending order of modernization being: lowland and footland areas, upper lowland areas, and highland areas.

It is therefore as a guideline for narrowing these gaps and creating better living environments for all rural areas in the region that this program is proposed.

(2) Stages of Modernization Process

The following four stages are envisioned for the process of modernization of villages in the Kilimanjaro Region.

Stage-1: Provision of agricultural, livestock raising, forestry, fishery, and other production infrastructure.

Stage-2: Complete provision of the social infrastructure that is absolutely necessary for human settlement, including roads, water supply, compulsory education facilities, and basic medical and health facilities.

Stage-3: Provision of higher-level social infrastructure for a higher standard of rural life, including electricity, telephone service, postal facilities, and bus service.

Stage-4: Formation of a multidimensional network of a higher order between rural communities with respect to transportation, distribution of goods, communications, and other aspects of life.

(3) Application of the Program to Each Village

At the present time each village in the region has a social infrastructure level which makes one of the above four stages applicable in its case. Although it is not clear exactly how much social infrastructure each village presently has--and this will necessitate a detailed survey in the need future--the overall picture is roughly as follows.

Most of the villages in Mt. Kilimanjaro highland areas are at Stage-2, with some, such as villages in the Machame Division, already at Stage-3.

Villages in upper lowland areas are presently at either Stage-1 or Stage-2.

Those in Pare mountain areas are generally at Stage-2, with the exception of those in some parts of the south Pare area, which are still at Stage-1.

Villages in footland areas are also at either Stage-1 or Stage-2.

The following table gives the target years for successive attainment of each stage by most villages in each zone.

(Table-38)

Zones	Stage 1	Stage 2	Stage 3	Stage 4
Kilimanjaro highland areas		1980	1985	1990
Kilimanjaro upper lowland areas	1980	1985	1990	1995
North Pare mountains		1980	1985	1995
South Pare mountains	1980	1985	1995	
Lowland areas	1980	1985	1995	

7.2 Village Modernization Strategies

The following are six proposed strategies for village improvement and development:

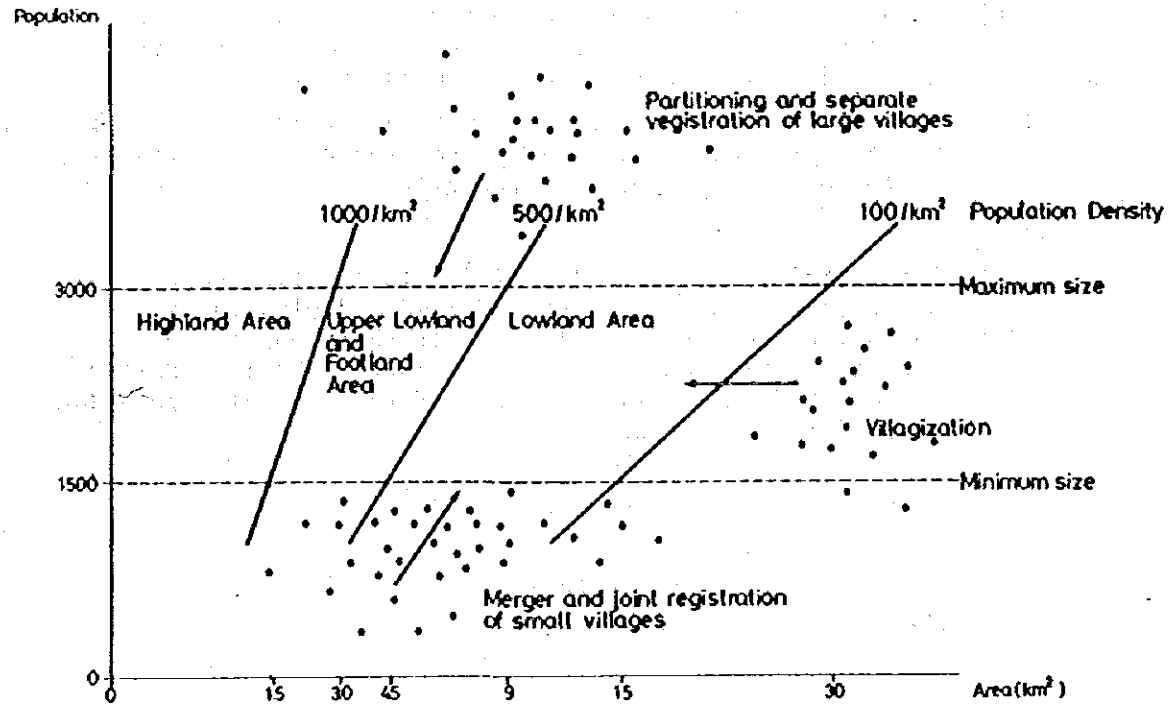
(1) Standardization of Village Size

Since unregistered villages, of which there are still 81 in the Kilimanjaro Region, or 20% of the total number of villages, are generally very large in terms of both area covered and number of households and this will cause problems in connection with the village community improvements that are to be made, it will be necessary to continue efforts to achieve a higher percentage of registration. Moreover, in view of the fact that even some of the registered villages are unwieldy, it would be advisable to set standards for village size and reorganize such registered villages.

The following standards are suggested in this respect:

Number of households	300-500
Area	2.5-5.0 km^2 in highland areas and 5.0-10.0 km^2 in upper lowland and footland areas
Population density	At least 500 persons/km^2 in highland areas, 200-500 persons/km^2 in upper lowland and footland areas, and at least 200 persons/km^2 in lowland areas

Standardization of Village Size (Fig.-9)



(2) Implementation of urgent projects for attaining civil minimums by 1980.

As short-term tactics, the five following categories of work should be given implementation priority during the period 1977-80 in order to fulfill the minimal living environment requirements of villages throughout the Kilimanjaro Region:

(i) Complete provision of educational facilities--no more villages without schools and no more long walks to and from school.

(ii) Complete provision of first-aid medical care facilities--establishment of a dispensary in each village or in accordance with other standards.

(iii) Complete provision of water for household use.

(iv) Provision of multi-purpose stores as distribution service bases.

(v) Provision and improvement of inter-village feeder roads.

Identification of shadow areas with respect to the above facilities, i.e., areas which they will not be able to serve, through diagnosis by district on a scale of 1:250,000. (see "Social Infrastructure Diagnosis" map)

(3) Key Development Measures

As medium-term strategy, the following six measures will be implemented for expansion of farmland to accommodate population growth and for improvement of the rural social infrastructure (see "Human Settlement Program" map):

(i) Provision of social infrastructure according to different standards and targets for high-density rural areas, medium-density rural areas and low-density rural areas.

(ii) Formation of village centers and subcenters for each of the 419 villages in the region for the sake of village socioeconomic and physical integrity.

(iii) Village Infull

Reorganizing and upgrading of farmland, development of hitherto unused small plots of land and planning for intensive land use in villages with high population density in Kihamba land areas so as to make it possible to accommodate a maximum amount of the natural population growth of such areas.

(iv) Village Expansion (expansion of cultivated acreage)

Doubling of cultivated acreage in villages of medium population density, mainly in upper lowland and footland areas, on the basis of land improvement and provision of irrigation facilities so as to be able to absorb not only the natural population growth of such areas but also the overflow population from highland areas.

(v) Villagization

Relization, through administrative guidance, of village formation in lowland areas of low population density and scattered population distribution for the sake of efficient allocation of public services and promotion of community cohesiveness on the basis of the Lower Moshi, Pangani Basin and Mkomazi Valley lowland rural development projects.

(vi) Group relocation of scattered rural populations of very low densities of under 20 persons/km^2 in other areas where the population density is high enough for efficient provision of social infrastructure.

(4) Construction of pilot villages by 1982 for improvement of the production and social infrastructures and imparting better definition to villages.

These pilot villages, which are described more fully in the next chapter, have been selected in such a manner as to be as fully representative as possible of all rural areas of the region in terms of district, terrain, type of development, etc., and represent experiments in village-building.

(5) Strengthening of transportation, distribution, communications and other infrastructural linkage between villages in order to conurbate rural areas.

(6) Achievement of an agro-urban region by conurbating highly agrarian society with urban areas through the implementation of the above points.

8. PILOT VILLAGE PROJECTS

8.1 General

(1) One pilot village will be constructed in each of the five communities on the district level (Hai, Moshi, Rombo, north Pare, and south Pare) as a forerunner of the village modernization program described in the preceding chapter.

Each pilot village should encompass a whole registered village and should comprise a viable sphere in social, economic, ecological, and physical terms.

Among these five pilot villages should be represented all of the production types--agriculture, forestry, livestock raising, etc.--all of the stages of development in the village modernization process, and all of the development types suggested in the preceding chapter--infill, expansion and villagization.

These pilot villages will also serve as experiments in village modernization and as enlightening examples for other villages of what can be achieved by self-reliance in village-building.

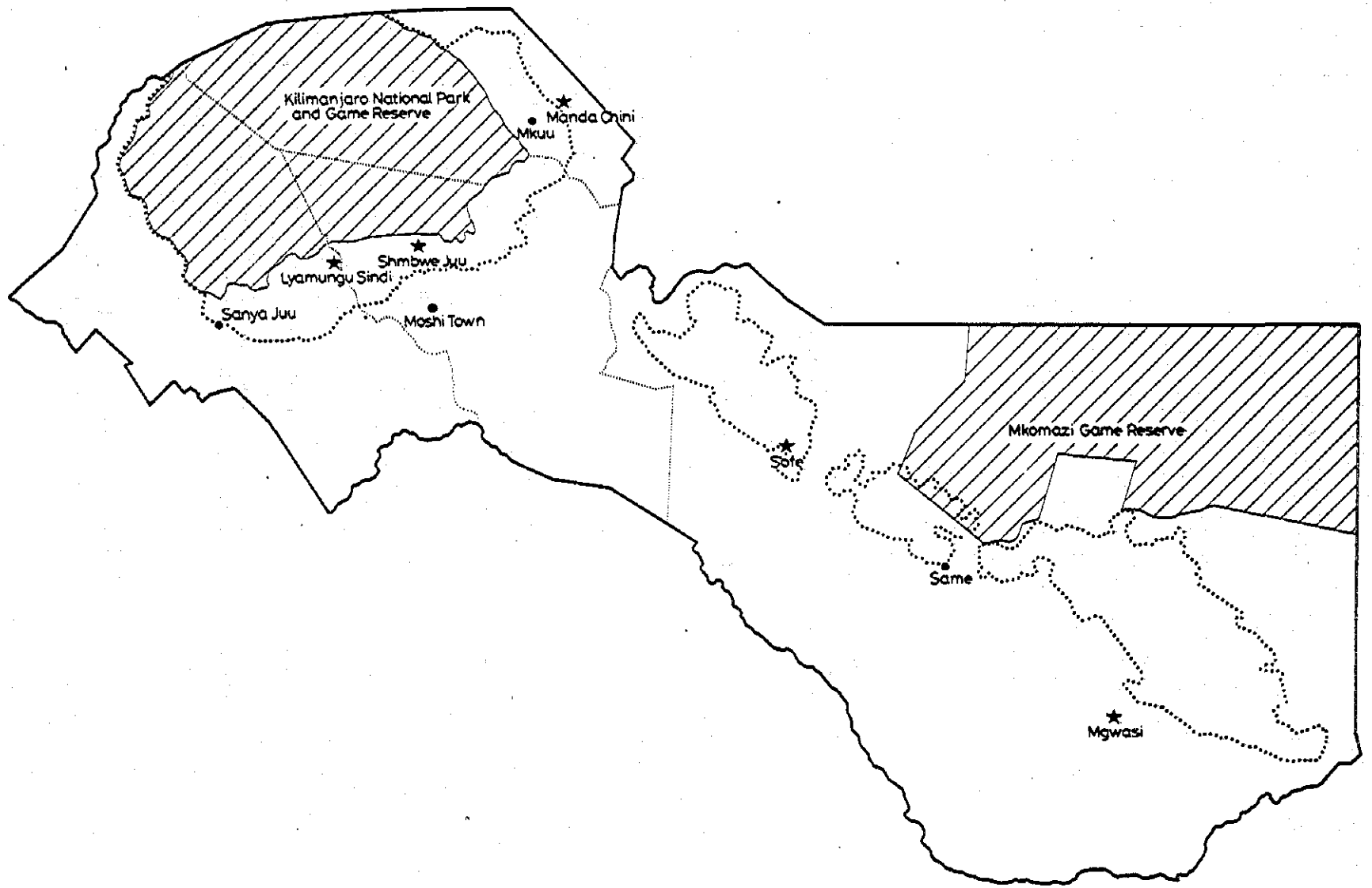
(2) Specific Projects

The following table gives an outline of the specific pilot village projects that are envisioned.

(Table-39)

	Lyamungu Sinde	Shimbwe Juu	Manda Chini	Sofe	Mgwasi
Location:					
District	Hai	Moshi	Rombo	Pare	Pare
Division	Central Hai	East Hai	Mengwe	Usangi	Chome/Suji
Ward	East Machame	Uru Shimbwe	East Mengwe	Lenbeni	Makanya
Land-use block	Highland	Highland	Upper-lowland	Highland	Footland
Population, 1975	1,969	2,314	2,535	1,594	1,612
No. of households	348	376	422	266	269
Estimated area (km^2)	2.0	1.5	8.5	3.2	10.7
Population density (persons/km^2)	1,000	1,500	300	500	150
Development type	Infill	Infill	Expansion	Infill & expansion	Villagization

Pilot Village Projects (Fig.-10)



(Table-40)

(3) Projected Development Components

	Lyamungu Sinde	Shimbwe Juu	Manda Chini	Sofe	Mgwasi
1. Land Management					
- Land improvement and remodelling	▲	▲	O	△	O
- Riparian flood and drainage improvements	△	△	▲	O	△
- Development of pond, borehole and other water sources	▲	▲	O	▲	O
- Afforestation	△	△	△	O	▲
- Ground surface greenification	▲	▲	△	▲	△
2. Agriculture					
- Development of agricultural water sources	△	△	O	△	O
- Irrigation	△	△	O	△	O
- Farmland reclamation	▲	▲	△	▲	△
- Soil improvement	▲	▲	△	▲	▲
- Farmland reorganization	O	O	▲	O	▲
- Development of common farming	▲	▲	O	▲	O
3. Livestock and Forestry					
- Development of grassland	▲	▲	O	▲	O
- Development of common livestock raising	▲	▲	O	▲	O
- Wider use of oxen	▲	▲	O	▲	O
4. Small-scale Industries					
- Cottage industries	O	O	△	△	△
- Village work shops	△	△	▲	▲	▲
- Community service industries	O	O	▲	▲	▲
5. Public Utilities					
- Domestic water supply	▲	▲	O	▲	O
- Electricity supply	O	O	▲	△	▲
6. Roads					
- Construction of inter-village feeder roads	▲	▲	O	△	O
- Improvement of village roads	O	O	▲	▲	▲
7. Communications and Transportation					
- Telephone service	O	O	△	△	△
- Postal service	△	△	▲	△	▲
- Bus service	O	O	▲	△	▲
8. Public Facilities					
- Educational facilities (construction or extension of primary schools)	▲	▲	△	△	O
- Medical care services (establishment of dispensaries)	▲	▲	O	△	O
- Distribution facilities (provision of multi-purpose stores)	O	O	△	△	△
- Improvement of other community facilities	▲	▲	▲	▲	▲
9. Housing					
- Guidance for raising the standard of housing in terms of building materials, layout, number of rooms, etc.	O	O	△	△	△

Key: O Absolutely necessary
△ Necessary
▲ Less necessary

(4) Project Costs

(i) Headquarters operational costs (1,000's of shs.)

Personnel costs (foreign experts)	7,560
Office expenses	1,300
Cost of materials	700
Totals	9,560

(ii) Cost of all on-site project terms (1,000's of shs.)

Personnel costs (Tanzanian specialists)	1,500
Social survey costs	250
Surveying and mapping costs	1,250
Total	3,000

(iii) Cost of construction materials (tentative)

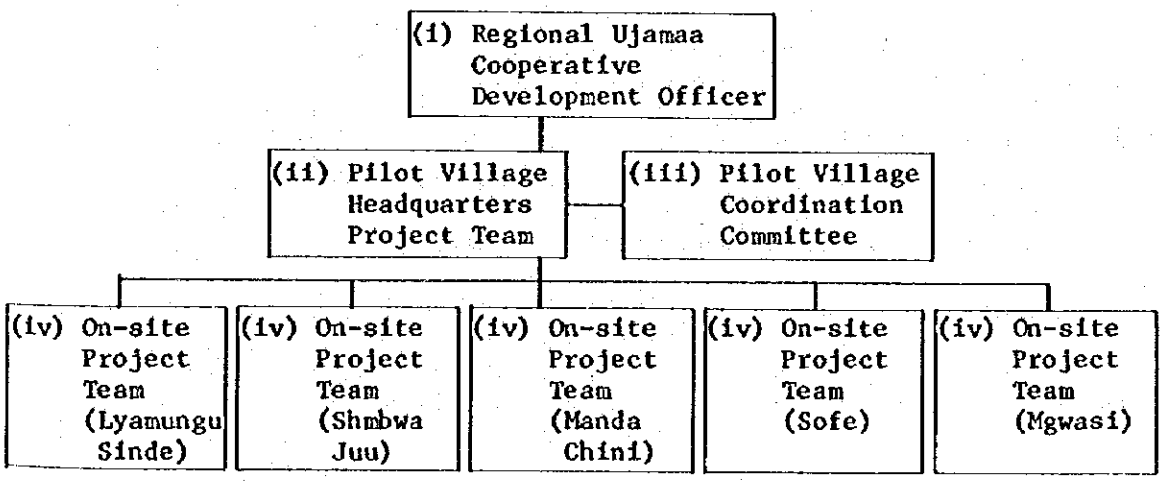
There will be some variation between the five projects as to construction material costs in view of the difference in kind and extent of development to be undertaken.

A cost of 3,000,000 shs. has been tentatively assumed for each project for construction materials, for a total of 15,000,000 shs. for construction materials for the five projects.

(iv) Total cost of the five projects (i + ii + iii) 27,560,000 shs.

(5) Project Implementation Organization

The following is the organization chart for implementation of the pilot village projects.



The roles of each organizational level or entity are as follows:

(i) Top decision-making and administrative control entity.

(ii) Entity in charge of development works, i.e., drawing up development works plans in the preparatory stage, construction and supervision in the construction stage, and operation and maintenance guidance in the post-construction stage.

(iii) Administrative and construction coordination and adjustment between related public works.

(iv) In charge of all project-site functions.

(6) Implementation Schedule

1978	Socio-economic surveys Drafting of pilot village master plans Decisions on development works
1979	Detailed design and engineering
1980-82	Construction and operation

(7) Manpower Requirements

The following are the total manpower requirements for the five projects for the period 1978-82 in man-years:

(i) Foreign personnel

Project manager	5
Physical coordinator	2
Technical coordinator	4
Civil engineer	5
Utility engineer	3
Agricultural engineer	5
Architect	2
Economist	1
Sociologist	1
Total	28

(ii) Tanzanian personnel

On-site chiefs	18
Civil engineers	18
Utility engineers	18
Specialists *	18
Administrators	18
Total	90

* Varies according to the particular needs of the project.

(iii) Construction Workers

In the case of each project, about one-half of the average of 400 households or 2,000 persons that can be accommodated will participate as construction workers.

8.2 Development Guidelines

(1) Each of the five pilot villages has been selected as being as representative as possible of its area so that it can truly serve as a pilot for the development of most of the other villages in the area in terms of the specific construction methods as well as of the overall results.

Except for Sofe, all of the pilot villages are in areas in which water resource development will be investigated and hence in agricultural development priority areas.

The detailed planning for each project will take into account the particular features and problems of each as identified in the socioeconomic surveys that will be carried out while the water resource development survey is still underway and will include specific development targets, the following being the guidelines for such development as determinable at the present time.

(2) Lyamung Sinde Village

Since the Machame area is one of the more advanced areas in the region in terms of agricultural development and social infrastructure, its further development should be promoted so that it may serve as model area for attainment of Stage-4 of the villages modernization process as described in the preceding chapter. Production will be diversified by promoting livestock raising, forestry, and small-scale manufacturing on the basis of the agricultural infrastructure, and the social infrastructure will be improved by providing better roads, telephone service, bus service, electricity and water supply by private connections.

(3) Shimbwe Juu Village

This village will be constructed as an experimental effort for kihamba land renewal by increasing agricultural intensity and population density still further-to approx. 1,500 persons/km^2 ("very high density rural area")-through provision of more social infrastructure and other measures in an area which is already densely populated and in which coffee and banana cultivation is already quite intensive.

(4) Manda Chini Village

This cooperative agricultural village will be constructed to serve as a model for systematic village reorganization and provision of social infrastructure for the purpose of accommodating the rural population overflow from the highland block of the same district (approx. 500 persons) and checking the sprawl phenomenon with respect to land use.

(5) Sofe Village

This pilot village on the edge of the north Pare mountain block will be developed as a model for accommodation of natural population growth within the block by filling in areas already substantially developed, extending development to new land, providing such social infrastructure as roads, water supply, and public facilities, and also actively undertaking afforestation of sloped land within the village for conservation purposes.

(6) Mgwasi Village

This experimental village oriented toward cooperative agriculture will be built as a model for systematic village reorganization and provision of social infrastructure for the purpose of accommodating not only the natural population growth of the Pare District but also the overflow from other districts since this block has a greater remaining development potential than the other blocks in the region.

9. LOWLAND DEVELOPMENT PROJECT

9.1 Summary of the Projects

(1) Description

These are projects for the comprehensive development of certain lowland and footland rural areas in the region, with the emphasis on agricultural development, except in the case of the Nyumba ya Mungu project.

As the agricultural development aspect of the projects is described separately in the relevant chapter, we shall confine our attention here to the social infrastructure development aspect.

Most of these projects will be located in areas for which no general social infrastructure development programs are envisaged. Accordingly, these project areas will be treated as special development areas in which social infrastructure will be provided in the context of development of agriculture.

(2) Development Strategy

Except for a part of the lower Moshi project area, all 4 project areas are extremely deficient in terms of public facilities, village roads, domestic water supply, and other aspects of social infrastructure. Present settlement in these areas consists of people who have migrated from highland areas in recent years and of farmers who have come to participate in the construction of Ujimaa villages and is extremely scattered, the population density being only about 20 persons/km^2. Among the reasons why there is only such scattered settlement are the lack of adequate agricultural infrastructure and the failure as yet to come up with suitable village settlement plans.

The development strategy for overcoming these problems in the context of agricultural development of these areas will be as follows:

(i) Movement to these areas of population equal to the full population carrying capacity of the newly developed farmland;

(ii) Construction of housing for farm families near the center of each project site of within commuting distance of the fields.

(iii) Provision in the midst of such housing of a village center offering all of the services indispensable to day-to-day life;

(iv) Efficient investment in public facilities in such village centers;

(v) Building of feeder roads between the villages to facilitate the formation of intervillage communities and commercial distribution.

(3) Development Frame

(Table-41)	Lower Moshi	Mkomazi valley	Pangani basin	Nyumba ya Mungu	Totals
Period of development	1978-82	1978-84	1978-84	1978-82	-
Population, 1975	14,273	12,080	3,735	7,351	37,439
Population, 1985	19,265	16,310	16,000	9,921	51,575
Natural increase	4,992	4,230	1,305	2,570	13,097
Social increase or decrease(-)	-2,665	-310	10,960	0	-
Population capacity	16,600	16,000	16,000	-	-
Agricultural development (ha)	3,320	3,200	3,200	0	9,720
Proposed no. of villages	11	8	8	6	33

(4) Development Components

(Table-42)	Lower Moshi	Mkomazi valley	Pangani basin	Nyunba ya Mungu	Totals
Settlement area (ha)	332	320	320	200	1,172
Village offices (A)	11	8	8	6	33
Primary schools (A)	5	0	6	6	17
" " (B)	6	8	2	0	16
Dispensaries (A)	5	3	3	3	14
" (B)	6	5	5	3	19
Multi-purpose stores (A)	6	4	4	6	20
Model housing developments (A)	11	8	8	6	33

Remarks: (A) New construction up to 1980

(B) Improvement of existing facilities (1981-84)

(5) Project Costs (in thousands of shs.)

(Table-43) (in thousands of shs.)	Lower Moshi	Mkomazi valley	Pangani basin	Nyumba ya Mungu	Totals
(1) Land preparation	33	32	32	20	117
(2) Village offices	330	240	240	180	990
(3) Primary schools *	1,275	800	1,010	810	3,895
(4) Dispensaries *	560	385	385	315	1,645
(5) Multi-purpose stores	900	600	600	450	2,550
(6) Model housing	220	160	160	120	660
Totals	3,318	2,217	2,427	1,895	9,857

* Indicates treatment as social service project.

(6) Implementation Schedule

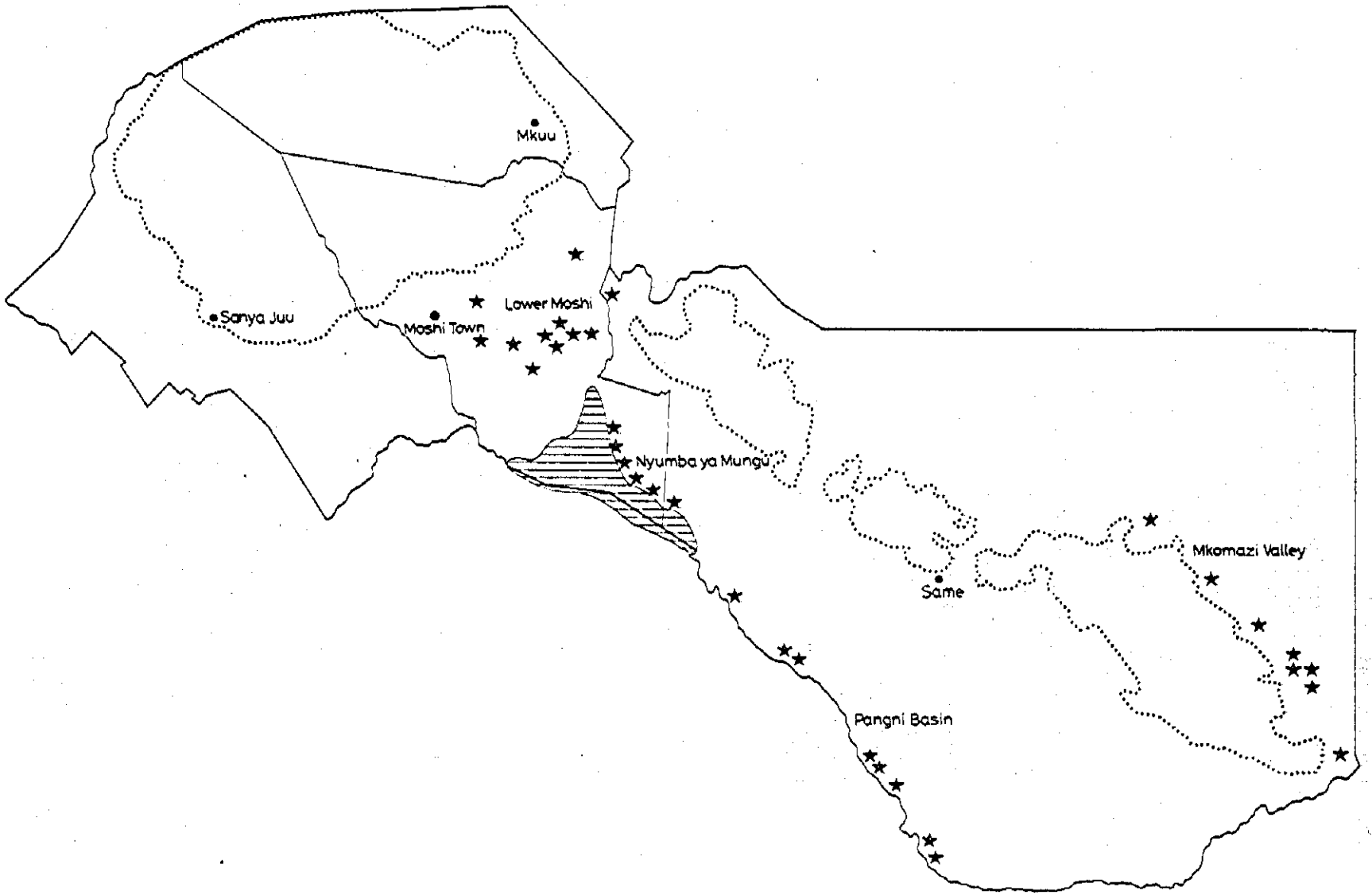
1978	Socio-economic survey Drafting of village master plans Decisions on development works
1979	Detailed design and engineering
1980-84	Construction and operation

(7) Manpower Requirements

The following are the total manpower requirements for the four projects during the period 1978-84 in man-years:

Village planner	7
Civil engineers	13
Utility engineers	13
Architects	5
Administrator	7
Totals	45

Lowland Development Projects (Fig.-11)



9.2 Lower Moshi Project

(1) General Description of Area

This is an area of approximately 700 km^2 in the Kahe basin southeast of Moshi town enclosed by a trunk road on the north side, the national boundary with Kenya on the east side, the Tanganyika Planting Company estate on the west side, and the Ruvu River on the south side and comprising the following administrative units:

West Vunjo Division
- All of Kahe Ward
- A southern part of Kirua Ward

East Vunjo Division
- A southern part of Mwika Makuyuni Ward

East Hai Division
- A southern part of West Old Moshi Ward

TPC/Arucha Chini Division
- A northern part thereof

Ugweno Division
- A northern part of Kileo Ward

In 1973 there were twenty-one traditional villages and five Ujamaa villages in the area, which have since been reorganized into thirteen registered villages. With a population of 14,300 persons in 2,300 families, the area has a net population density of 20 persons/km^2.

The hub of the area is the Kahe (Oria) Station, where a ward office, a weekly market, shops, a dispensary, a sub-departmental post office, a courthouse and other public facilities are concentrated.

Although the area has seven primary schools, the distance from school is still over 3 km in the case of a full one-third of the villages.

Since there are still no water supply facilities to speak of, the inhabitants make use of river water.

Regional roads connect Kahe Station with Moshi Town (24 km) and the Tanganyika Planting Company (12 km), and local roads lead from Kahe Station to Uchira (16 km) and Chona (12 km) and connect with trunk roads. There are bus connections between Kahe Station and Moshi Town in the morning and evening.

Sources: Socio-economic Survey of Kahe Ward, BRALUP Research Report No. 14.

Retail Service and Consumer Behaviour in Kahe, Msaranga-Mandaka Area, BRALUP Research Report No. 17.

(2) Population Distribution, 1975-85

According to a BRALUP socioeconomic survey, the area in 1975 had a population of 14,273 persons in 2,316 families. Assuming an annual growth rate of 3.27%, the population will rise to 19,265 by 1985. The table below gives population data for the present settlement groups.

(Table-44)

Code	Settlement groups	Families, 1975	Population, 1975	Projected population, 1985
1.	Rau River Juu			
2.	Rau River Kati	268	1,667	2,250
3.	Rau River Chini			
4.	Mabogeni	43	267	360
5.	Miwaleni			
6.	Lenduru	85	530	715
7.	Mkonga Juu			
8.	Mkonga Kati	110	684	925
9.	Chekereni	61	379	510
10.	Ntakuja	53	330	445
11.	Kahe (Oria) Station	305	1,897	2,560
12.	Mkonga Chini	37	230	310
13.	Longoni Lowiri			
14.	Kahe Barazani	134	833	1,125
15.	Opuruni			
16.	Mawala	49	305	410
17.	Kiterini	122	759	1,025
18.	Kilototo	73	454	615
19.	Ghona	73	454	615
20.	Kimala	24	149	200
21.	Mwangaria			
22.	Msengoni	61	379	510
23.	Soko	49	305	410
24.	Kiomu	98	610	825
25.	Makuyuni	326	1,956	2,640
26.	Kileo	272	1,631	2,200
	Totals	2,316	14,273	19,265

(3) Agricultural Acreage and Population Capacity

Assuming that one family (5 persons) can be accommodated by each hectare of farmland newly provided with irrigation, the total population capacity of the project will be 16,600 persons, the breakdown being as follows:

(Table-45)

Project sites	Agricultural acreage (ha)	Population capacity
1. Mandaka	480	2,400
2. Upper Miwaleni	400	2,000
3. East Miwaleni	280	1,400
4. Lower Miwaleni	600	3,000
5. Kitereni	200	1,000
6. Soko	280	1,400
7. Chekereni/Mtakuja	320	1,600
8. Mabogini	160	800
9. Msaranga	200	1,000
10. Kileo	200	1,000
11. Makuyuni	200	1,000
Totals	3,320	16,600

(4) Population and Community Program

Of the population of 19,265 persons that is foreseen for 1985, it will be possible to accommodate 16,600 on the newly developed land, and the others will be able to assume nonagricultural occupations in the vicinity of the Kahe (Oria) area.

On account of the fact that there are presently no relatively dense concentrations of population within the area and many of the people do not live very near the farmland that will be newly developed, efforts will have to be made for considerable villagization by 1980.

An effort will be made to approach the ideal village size of 2,000 persons through the grouping of most of the farmland. In all, there will be 9 such villages with Kahe (Oria) as their ward center and another 2 with Himo as their ward center as follows:

(Table-46)

Proposed villages	Population, 1985
• Kahe (Oria) Ward Group	
1. Kitereni	1,000
2. Mandaka/Mabogini	2,000
3. Lower Mandaka	1,200
4. Upper Miwaleni	2,000
5. Lower Miwaleni	3,000
6. East Miwaleni	1,400
7. Chekereni/Mtakuja	1,600
8. Msaranga	1,000
9. Soko	1,400
• Himo Ward Group	
10. Makuyuni	1,000
11. Kileo	1,000

(5) Social Infrastructure Development Program

The social infrastructure development program, which will be coordinated with the farmland development program and which will be divided into two stages, the first being the peiod up to 1980, during which the most urgent infrastructure will be provided, and the second the period 1981-82, will consist of the following components.

(i) Land Preparation (first stage)

The standard amount of land that will be prepared for each village in the area is 400 ha of farmland, accommodating 2,000 persons in 400 households, and an additional 10% of that, or 40 ha, for the following purposes:

- Residential lots (400 m^2 per household) 16 ha
- A public facility area 16 ha
- Land for roads and utilities 8 ha

(ii) Construction of Public Facilities

Each village in the area will be provided with a village center which will include the following public facilities:

- Village office
- Primary school
- Dispensary
- Multi-purpose store
- Post vender
- TANU office
- Religious facility

In addition to such construction of new facilities in the first stage in village without such facilities, existing facilities will be improved in the second stage.

(Table-47)

	Up to 1980	1981-82	Totals
Village offices (A)	11	-	11
Primary schools (A)	5	-	5
" (B)	-	6	6
Dispensaries (A)	5	-	5
" (B)	-	6	6
Multi-purpose stores (A)	1	5	6

Remarks: (A) New construction

(B) Improvement of existing facilities

(iii) Construction of Model Housing (first stage)

In the context of villagization, each village will be provided with a single unit of model housing for the purpose of enlightening the people with regard to the need to modernize their housing. This model housing will serve as an example in instruction and guidance of the people with respect to housing materials, structure, room arrangement, design, and construction methods.

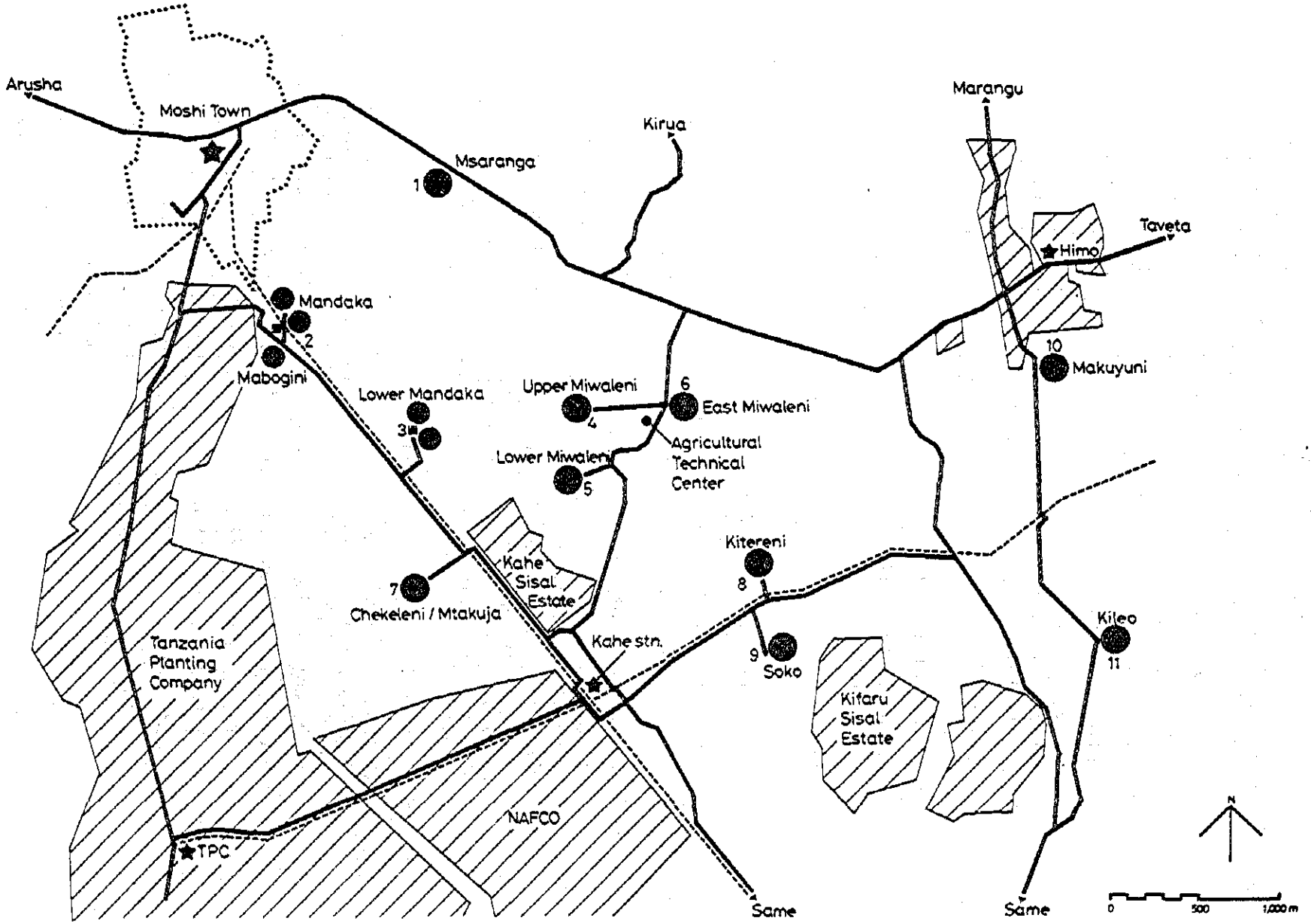
(iv) Construction of Village Roads

Earth-surface village access roads (6 m wide) and gravel-surface minor distribution roads (9 m wide) will be built as follows by 1980 in order to connect all villages in the area with their ward center and with regional distribution roads:

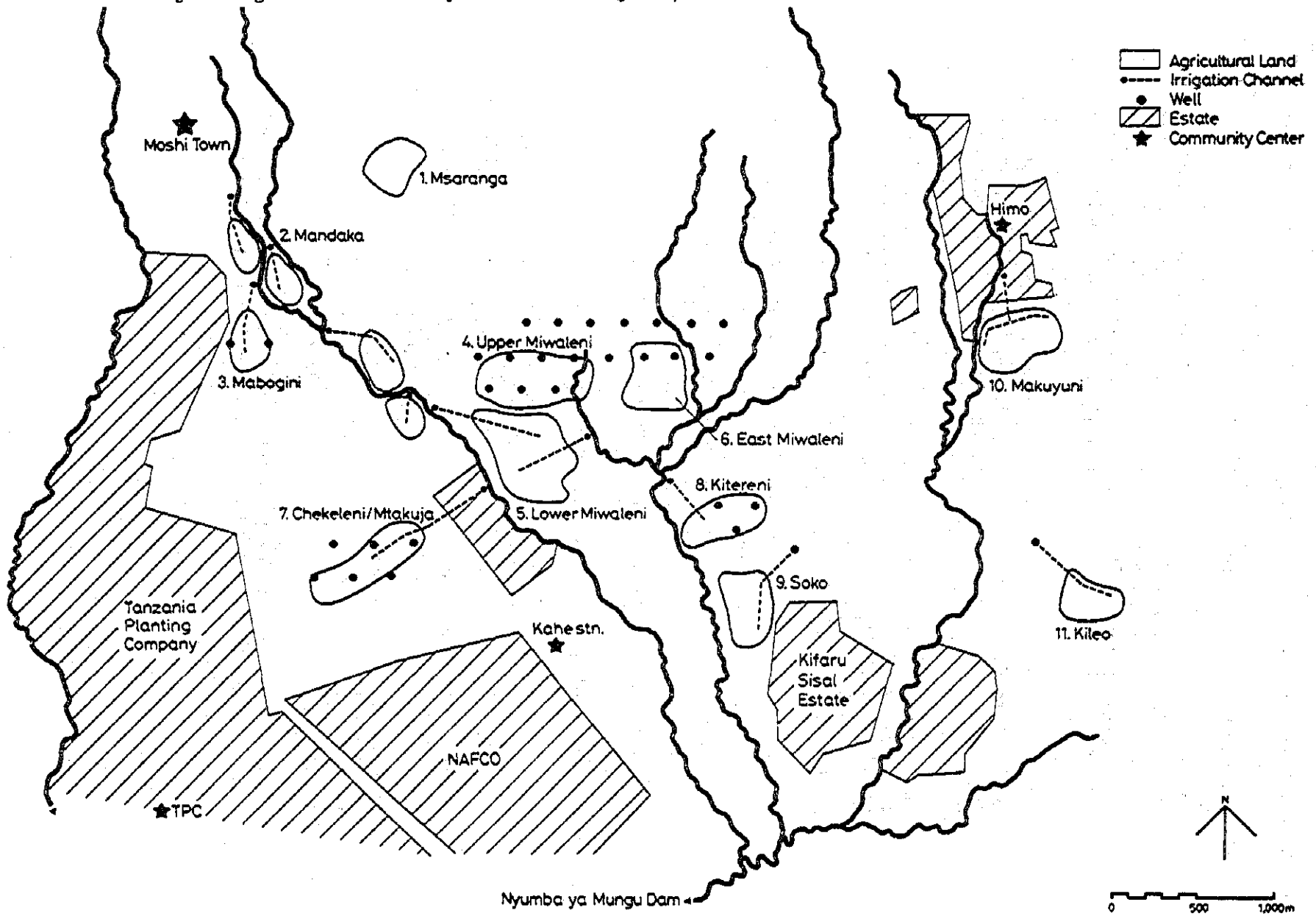
Minor distribution roads	(km)
Kahe-Uchira	12.5
Kahe-Kiomu	11.0
Himo-Kifaru	17.5
Total	41.0

Village access roads	(km)
Mandaka	1.5
Lower Mandaka	2.0
Upper Miwaleni	2.5
Lower Miwaleni	1.0
Chekeleni	1.5
Kitereni	1.0
Total	9.5

Lower Moshi Project: Community Development Plan (Fig.-12)



Lower Moshi Project: Agriculture Development Plan (Fig.-13)



9.3 Mkomazi Valley Project

(1) Project Outline and Present Conditions

In this project the five villages identified below, located in the footland along a 60 km stretch of the Mkomazi River on the east side of the South Pare Mountains, will be agriculturally developed, particularly in terms of irrigation facilities, and provided with the necessary social infrastructure incidental to such development.

The five villages are located along the Same-Gonja-Mkomazi regional road, the distances being 30 km, 22 km, 12 km, 12 km, 14 km and 4 km, respectively, in the order Same-Kishiwani-Gonja-Ndungu-Kifurio-Bendera-Mkomazi.

The western and eastern boundaries of the Mkomazi Valley have been set as the footline of the South Pare Mountains and the boundary of the Mkomazi Game Reserve, respectively.

Administrative units under which the villages fall:

Kishiwani	Kishiwani/Msindo Ward of Mwenbe/Mbaga Division
Gonja	Gonja/Maore Ward of Gonja Division
Ndungu	Ndungu Ward of Mamba/Vunta Division
Kifurio	Same as above
Bendera	Bendera Ward of Mamba/Vunta Division

(2) Agricultural Acreage and Population Capacity

	Agricultural acreage (ha)	Population capacity
Kishiwani	400	2,000
Gonja	400	2,000
Ndungu	400	2,000
Kifurio	1,600	8,000
Bendera	400	2,000
Totals	3,200	16,000

Remark: The figures for population capacity are based on an agricultural land requirement of 0.2 ha per person.

(3) Population program

(Table-48)

	Agricultural population capacity	Population, 1975	Pop. in 1985 without reallocation	Pop. in 1985 with reallocation
Kishiwani	2,000	1,970	2,660	2,255
Gonja	2,000	1,370	1,850	2,255
Ndungu	2,000	3,600	4,860	2,000
Kifurio	8,000	3,600	4,860	7,720
Bendera	2,000	1,540	2,080	2,080
Totals	16,000	12,080	16,310	16,310

Remarks: (i) An annual natural population growth rate of 3.27% has been assumed for up to 1985.

(ii) In order to balance the population of each village with its population capacity, 405 persons will be relocated from Kishiwani to Gonja, and 2,860 from Ndungu to Kifurio.

(4) Community Plan

(Table-49)

	Population, 1985	No. of Communities	Community area required (ha)
Kishiwani	2,255	1	80
Gonja	2,255	1	80
Ndungu	2,000	1	80
Kifurio	7,720	4	320
Bendera	2,080	1	80
Totals	16,310	8	640

Remarks: (i) The community, the standard size of which will be 2,000 persons (400 households), will be the basic unit of everyday life and as such will have a public facilities core which will include a primary school, a dispensary, and a village office.

(ii) Each community will require an area equivalent to 10% of the agricultural area for housing, public facilities, roads, utilities, etc.

(5) Social Infrastructure Development Program

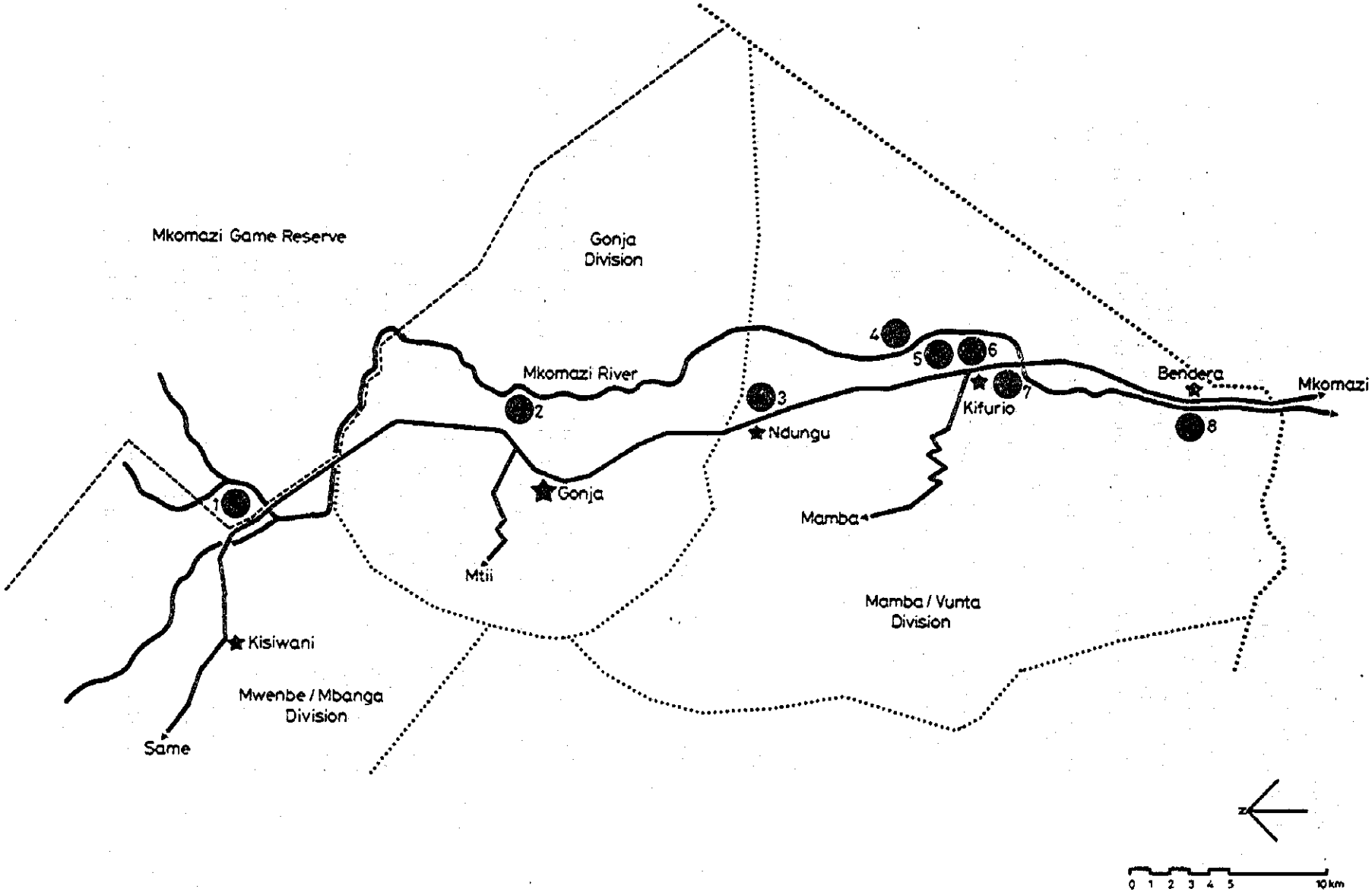
(Table-50)

Development components	Up to 1980	1981-84	Totals
1. Land to be prepared for community areas (ha)	320	-	320
2. Village offices (A)	8	-	8
3. Primary schools (B)	-	8	8
4. Dispensaries (A)	3	-	3
" (B)	-	5	5
5. Multi-purpose stores (A)	1	3	4
6. Model housing (units) (A)	8	-	8
7. Same-Mkomazi regional road (km)	99.8	-	99.8
8. Village access road (km)	10.0	-	10.0

Remarks: (A) New construction

(B) Improvement of existing facilities

Mkomaji Valley Project (Fig.-14)



9.4 Pangani Basin Project

(1) Project Outline and Present Conditions

In this project the five villages identified below, located along a 60 km stretch of the Pangani River on the Pare District side, will be provided with irrigation facilities and reclaimed agricultural land as well as incidental social infrastructure in the context of their comprehensive agricultural development.

Administrative units under which the villages fall:

Kirya	Kirya/Mbaga Ward of the Mwembe/Mbaga Division
	Same as above
Ruvu	Mwembe/Vudee Ward of Mwembe/Mbaga Division
Mferejini	Same as above
Jitengeni	Makanya Ward of Chome/Suji Division

Road distance to towns and villages along trunk road

From	Town or village along trunk road	Distance(km)	Type of road
Kirya	Lembeni	24	All-weather
Marua	Same	34	Local
Ruvu	Same	33	Local
Mferejini	Same	39	Local
Jitengeni	Makanya	36	All-weather

The five villages are also linked to one another by 13 km, 30 km, 5 km and 11 km stretches of local road, respectively (Kirya-Marua-Ruvu-Mferejini-Jitengeni).

(2) Agricultural Acreage and Population Capacity

Villages	Agricultural acreage (ha)	Population capacity
Kirya	400	2,000
Marua	800	4,000
Ruvu	800	4,000
Mferejini	400	2,000
Jitengeni	800	4,000
Totals	3,200	16,000

Remark: The figures for population capacity are based on an agricultural land requirement of 0.2 ha per person.

(3) Population Program

Villages	Agricultural population capacity	Population, 1975	Population, 1985	Additional population capacity
Kiriya	2,000	560	755	1,245
Marua	4,000	1,120	1,510	2,490
Ruvu	4,000	1,030	1,390	2,610
Mferejini	2,000	515	695	1,305
Jitengeni	4,000	510	690	3,310
Totals	16,000	3,735	5,040	10.960

Remarks: (i) An annual natural population growth rate of 3.27% has been assumed for up to 1985.

(ii) Approximately 11,000 persons will be relocated in these villages from the Mt. Kilimanjaro highland zone.

(4) Community Plan

Villages	Population, 1985	No. of communities	Community area required (ha)
Kiriya	2,000	1	80
Marua	4,000	2	160
Ruvu	4,000	2	160
Mferejini	2,000	1	80
Jitengeni	4,000	2	160
Totals	16,000	8	640

Remarks: (i) The community, the standard size of which will be 2,000 persons (400 households), will be the basic unit of everyday life and as such will have a public facilities core which will include a primary school, a dispensary, and a village office.

(ii) Each community will require an area equivalent to 10% of the agricultural area for housing, public facilities, roads, utilities, etc.

(5) Social Infrastructure Development Program

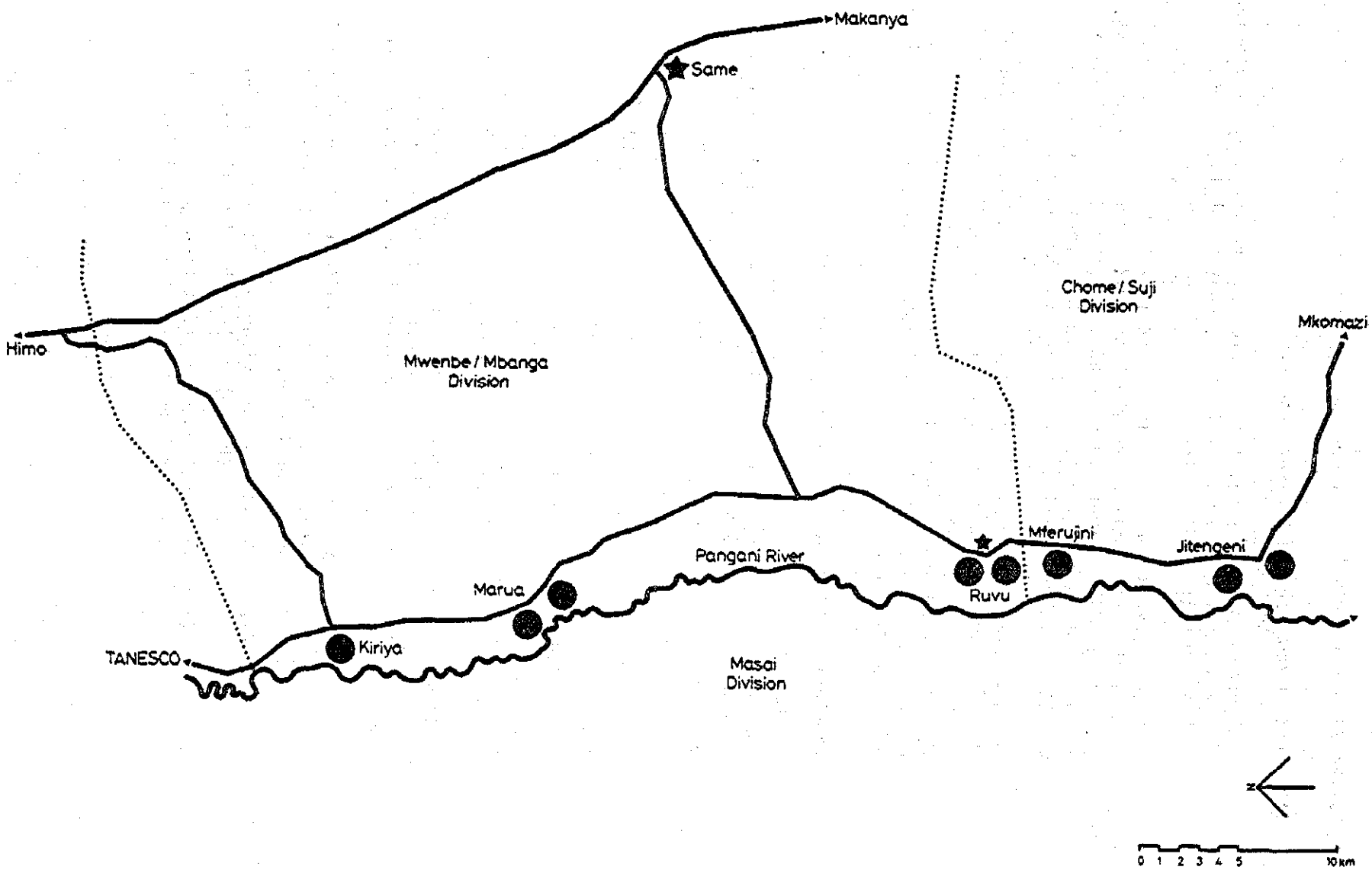
(Table-51)

Development components	Up to 1980	1981-84	Totals
1. Land to be prepared for community areas (ha)	320	-	320
2. Village offices (A)	8	-	8
3. Primary schools (A)	6	-	6
" (B)	-	2	2
4. Dispensaries (A)	3	-	3
" (B)	-	5	5
5. Multi-purpose stores (A)	1	3	4
6. Model housing (units) (A)	8	-	8

Remarks: (A) New construction

(B) Improvement of existing facilities

Pangani Basin Project (Fig.-15)



9.5 Nyumba ya Mungu Project

(1) Project Outline and Present Conditions

The purpose of this project is to provide the twenty-four fishing villages along a 30 km stretch of the eastern shore of the Nyumba ya Mungu Dam lake with better social infrastructure.

Although there is an all-weather road from Lembeni on the trunk road of the Pare District to the TANESCO (Tanzania Electric Supply Co., Ltd.) office, there is no road linkage between the villages along the shore of the lake. Nor are there any water supply facilities or other public facilities in the villages.

The area covered by the project lies in the T.P.C. Division of the Moshi District and the Usangi Division of the Pare District.

The designated project area is a 90 km^2 strip running 30 km from the dam site along the shore of the lake and having a breadth of 3 km from the lakeside.

(2) Population Distribution and Projection, 1975-85

(Table-52)

Name of "kituo"	Population, 1975	Number of fihsermen, 1975	Population, 1985
Kambi Dagaa	2,670	534	3,603
K.N.C.U.	880	176	1,187
Mikocheni	1,455	291	1,963
Ngorika	740	148	1,000
Center house	1,020	204	1,376
Magadini	590	118	796
Totals	7,355	1,471	9,925

Remarks:
(i) Figures for the number of fishermen are based on the "Annual Report of Fishery Statistics, 1975" by the Ministry of Natural Resources and Tourism.

(ii) As there is no data available on overall population, it has been assumed to be five times the number of fishermen.

(iii) The figures are given by fishing receiving station (kituo) rather than by village.

(iv) An annual natural population growth rate of 3.27% has been assumed for up to 1985.

(3) Social Infrastructure Development Program

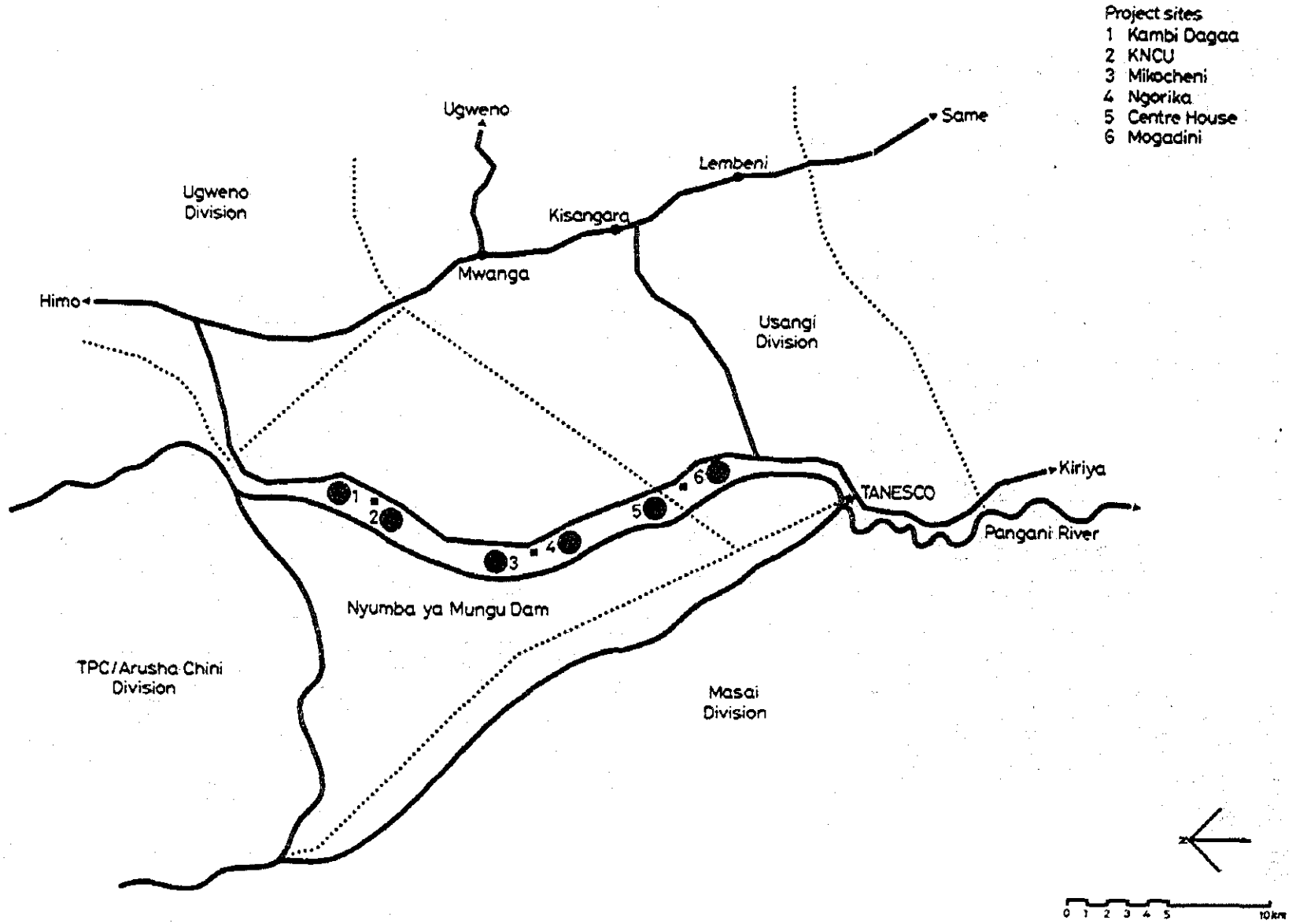
(Table-53)

Development components	Up to 1980	1981-82	Totals
1. Land to be prepared for community areas (ha)	200	-	200
2. Village offices (A)	6	-	6
3. Primary schools (A)	6	-	6
4. Dispensaries (A)	3	3	6
5. Multi-purpose stores (kituo) (B)	3	3	6
6. Model housing (units) (A)	6	-	6

Remarks: (A) New construction

(B) Improvement of existing facilities

Nyumba Ya Mungu Project (Fig.-16)



9.6 Implementation

(1) Socioeconomic Surveys

While the agricultural project team is still carrying out the technical survey, the following socioeconomic surveys will be undertaken in the first half of 1978:

- Population survey
- Survey of farm families
- Existing land-use survey
- Land ownership survey
- Public building and housing survey
- Traffic survey
- Systematic collection and filling of other statistical information regarding each village

(2) Village Master Plans

After these socioeconomic surveys are completed, a master plan consisting of the following components will be prepared for each project:

(i) Land-use plan, including population distribution and density and public facility distribution (Scale of 25,000).

(ii) Infrastructure plans such as those for roads, electricity supply, water supply, stormwater drainage, sewerage, telephone service, and so on (Scale of between 1:10,000 and 1:5,000).

(iii) Site plan for settlement areas, including village center facilities, residential lots, and village streets (Scale of 1:2,000).

(iv) Public facilities (i.e., village office, primary school, dispensary, multi-purpose store) and model housing architectural plan (Scale of between 1:500 and 1:100).

(3) Manpower Requirements Schedule

The following are the total manpower requirements for the four projects during the period 1978-84 in man-years, as personnel to participate jointly with the agricultural project team in surveying, planning, design work, and supervision and direction of construction:

	1978	1979	1980	1981	1982	1983	1984	Totals
Village planner	1	1	1	1	1	1	1	7
Civil engineers	1	2	2	2	2	2	2	13
Utility engineers	1	2	2	2	2	2	2	13
Architects	1	2	2	0	0	0	0	5
Administrator	1	1	1	1	1	1	1	7
Totals	5	8	8	6	6	6	6	45

Villagers themselves will volunteer to participate as construction workers under the direction for the above listed technical personnel.

(4) Population Accommodation

The population accommodation capacity of each project as determined by the amount of new farmland to be developed will be filled by having those who have already temporarily settled do so permanently and having additional population settle in these project areas from elsewhere in the region, a process that will be under the control of the regional Ujamaa cooperative development officer. Along with such settlement, traditional and Ujamaa villages will be reorganized into registered villages.

(5) Breakdown of Total Cost of All Four Projects

(Table-54) (unit:1,000 shs.)

	1978	1979	1980	1981	1982	1983	1984	Totals
Land preparation	0	117	0	0	0	0	0	117
Village offices	0	0	330	330	330	0	0	990
Primary schools	810	810	675	800	800	0	0	3,895
Dispensaries	350	350	280	350	315	0	0	1,645
Multi-purpose stores	150	150	300	450	450	600	450	2,550
Model housing	0	330	330	0	0	0	0	660
Totals	1,310	1,757	1,915	1,930	1,895	600	450	9,857

Remark: The following are the unit costs for each item:

(i)	Land preparation	100 shs./ha
(ii)	Village office	30,000 shs.
(iii)	Primary school	
	New construction	135,000 shs.
	Improvement of existing one	100,000 shs.
(iv)	Dispensary	
	New construction	70,000 shs.
	Improvement of existing one	35,000 shs.
(v)	Multi-purpose store	15,000 shs.
(vi)	Model housing	20,000 shs.