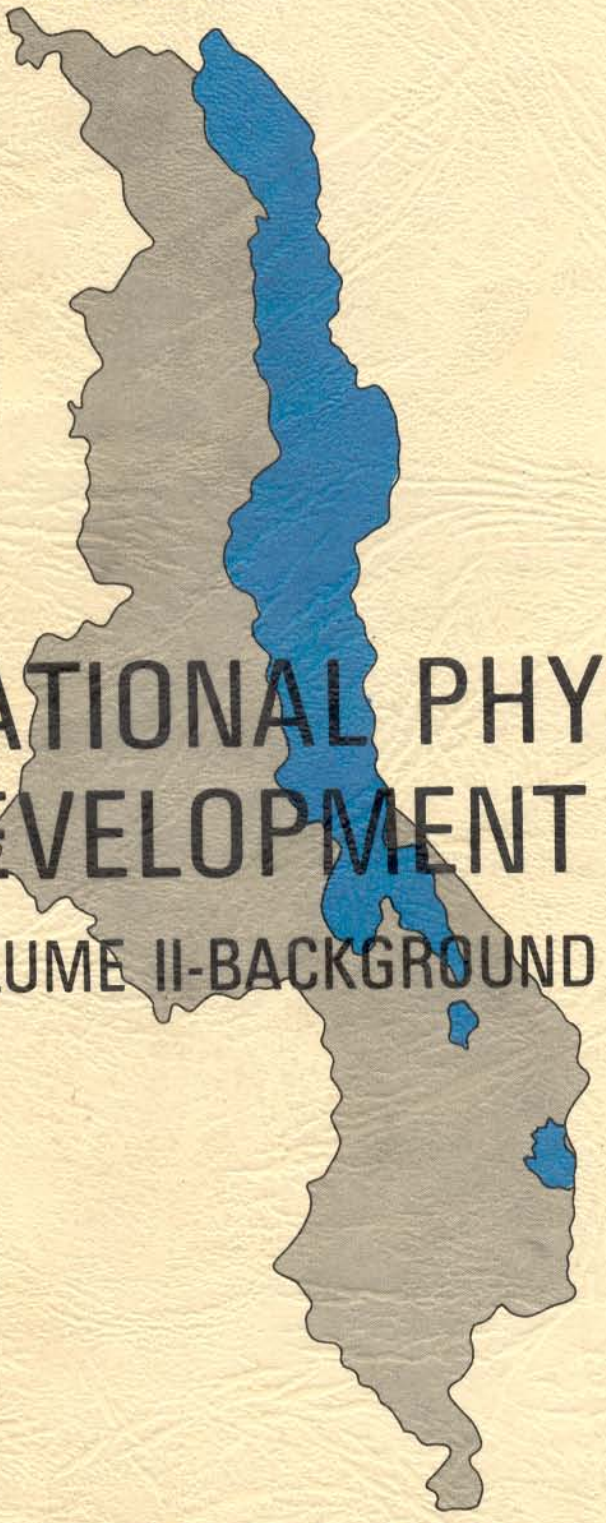
REPUBLIC OF MALAWI

OFFICE OF THE PRESIDENT AND CABINET
DEPARTMENT OF TOWN AND COUNTRY PLANNING



NATIONAL PHYSICAL DEVELOPMENT PLAN

VOLUME II-BACKGROUND STUDY REPORT

NATIONAL PHYSICAL DEVELOPMENT PLAN PROJECT
UNDP/UNCHS (HABITAT) PROJECT MLW/79/012

APPENDIX 8.6 DEFICIENCY IN FUELWOOD AND POLES IN CHRONOLOGICAL ORDER

North	1980	1985	1990	1995	2000
Chitipa	.	.	.	.	.
Karonga	.	.	.	.	.
Nkhata Bay	.	.	.	.	.
Rumphi	.	.	.	.	x
Mzimba	.	.	x	x	x
Central					
Kasungu	.	x	x	x	x
Nkhotakota	.	.	.	.	x
Ntchisi	x	x	x	x	x
Dowa	x	x	x	x	x
Salima	.	x	x	x	x
Lilongwe	x	x	x	x	x
Mchinji	.	x	x	x	x
Dedza	.	x	x	x	x
Ntcheu	.	x	x	x	x
South					
Mangochi	x	x	x	x	x
Machinga	x	x	x	x	x
Zomba	x	x	x	x	x
Chiradzulu	x	x	x	x	x
Blantyre	x	x	x	x	x
Mwanza	.	x	x	x	x
Thyolo	x	x	x	x	x
Mulanje	x	x	x	x	x
Chikwawa	x	x	x	x	x
Nsanje	x	x	x	x	x

Note: It is assumed that tobacco estates will be self-sufficient by 1990.

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PREFACE

Until the 1970s physical planning in Malawi was limited to local planning only, involving the preparation of plans for urban centres (ranging from cities to rural centres) and selected special areas; and the exercise of development control in statutory planning areas. Today physical planning has assumed a wider role as an integral part of national development policy, and it is applied at national, regional, district and local levels. The first three levels constitute "country planning" and the local level is basically "town planning".

I need not overemphasize the necessity and need for physical planning services in this country. Experience in other parts of the world has clearly shown that the more a country becomes developed the more physical planning services become necessary and essential. Malawi is no exception to this phenomenon because of the reasons stated below. Rapid urbanisation is inevitable and we must plan for it in advance. Rapid socio-economic development is accompanied by intensive competing and conflicting demands for land. The country is already experiencing land pressures in urban centres and in some districts. Public infrastructure investments are long-term and long-lasting hence must be properly located in relation to resources and present and future population distribution. Furthermore, rapid economic development if not properly planned and effectively guided can result in adverse environmental effects, particularly pollution.

This Background Study Report, which forms the basis for the preparation of the National Physical Development Plan, is the first comprehensive study of its kind in Malawi. Apart from serving as basis for the formulation of the Plan, this Background Study Report has provided information and data which the Government, the private sector and donors will find useful. The Plan (Policy Document) which has been published separately, is an attempt (a) to integrate socio-economic planning and development with physical or spatial planning in order; (b) to achieve spatially balanced development; (c) to co-ordinate sectoral development; (d) to ensure the proper use of land; (e) to provide for the sound development of service centres and inter-settlement functional linkages; (f) to enhance environmental conservation and preservation; and (g) to provide, generally, guidelines for public and private investment activities.

S. M. Kakhobwe
SECRETARY TO THE PRESIDENT AND CABINET

ACKNOWLEDGEMENT

We are indebted to the National Physical Development Plan Project Team (See Appendix 1) for their concerted effort and co-operation in preparing this Study Report. We would like to extend our gratitude to the various government and statutory organisations for their co-operation and valuable contributions in the form of the provision of data/information and written comments on the draft documents of the Background Study Report and consultations. We wish also to gratefully acknowledge the contribution made by the Centre for Social Research of the University of Malawi who, as a consultant, undertook a study of inter-settlements functional linkages as an input for the Background Study Report.

We acknowledge with thanks the assistance given by the United Nations Development Programme (UNDP), the funding agency, and the United Nations Centre for Human Settlements (Habitat), the executing agency.

It is not possible to mention all those organisations who assisted during the preparation of this Background Study Report. But we should mention the Survey Department, who in spite of heavy commitment to their work programme, deployed some of their staff full-time in cartographic work.

INTRODUCTION:

PURPOSE AND SCOPE OF THE STUDY

Purpose

This Study Report forms the basis for the preparation of the National Physical Development Plan (Policy Document, Volume One). The background document covers a wide range of analytical studies of existing socio-economic and physical conditions in Malawi.

The Policy Document was prepared as a result of Government's concern for or interest in (a) the integration of social, economic and physical development; (b) a spatially balanced development which would spread the fruits of development as evenly as possible throughout all parts of the country; (c) the development of a hierarchy of urban and rural service centres; (d) the promotion of inter-settlement functional linkages; (e) the spatial coordination of sectoral development within the context of a national physical development plan; and (f) rational use of land. The objectives of the Policy Document are

(a) to integrate all aspects of physical planning into national programmes of development so that the physical development of Malawi is accomplished with the optimal use of all national resources, both human and physical;

(b) to provide a spatial framework for the coordination and implementation of sectoral programmes and development projects;

(c) to facilitate the promotion of a more spatially balanced economic growth that will ensure an optimal distribution of productive activities and population;

(d) to promote the development of a system of urban and rural settlements and a hierarchy of service centres that will be in conformity with the location of natural and human resources and permit the provision of infrastructure and other facilities on an economic basis;

(e) to provide guidelines for the development of a transportation network to strengthen the functional links between rural and urban settlements with respect to the movement of people, commodity flows, the delivery of services, and generally socio-economic activities;

(f) to provide a spatial framework for the provision of physical infrastructure and social services in relation to the distribution of productive activities and population; and

(g) to rationalise and promote the optimal use of land and, in particular, the preservation of the best arable lands.

In order to address the preceding matters of interest to the Government, it was necessary (a) to have, at least, an overview of productive activities, and infrastructure; (b) to obtain a good knowledge of human settlements and service centres, population growth and characteristics, the existing national land use structure, development trends and the planning legislation; and (c) to consider the implications, of the existing conditions and growth/development trends, for the preparation of the Policy Document. The various components of the Background Study Report are presented in the following sections:

Section 1

An overview of the geography and history of the country.

Section 2

A critical analysis of population growth and characteristics including age/sex distribution, population movement and future population levels and characteristics.

Section 3

An overview of the economy including, existing employment structure and trends; the agricultural sector in relation to general land use and population carrying capacity of the land; the characteristics of the industrial sector and the geographical distribution of industries; tourism trends, existing facilities, attractions and development potential.

Section 4

Urban population levels, growth and characteristics.

Section 5

The role of service centres, the hierarchy and pattern of service centres, and disparities in the distribution of services and facilities.

Section 6

Survey and analysis of existing major land uses, natural physical constraints and pattern of human settlements, and land use issues.

Section 7

An overview of major infrastructure, including (a) the geographical and demographic aspects of educational facilities. Also disparities in the distribution of facilities and future requirements; (b) the disparities in the geographical distribution

of health facilities , and future requirements; (c) an overview of the existing modes of transportation. In particular, the road network in relation to human settlements and functional linkages; (d) an overview of the existing system of electricity supply and demand; and (e) existing water supplies.

Section 8

An overview of energy supply and consumption with special reference to fuelwood.

Review of
The Existing Town and Country Planning Act

A review of the existing Town and Country Planning Act (the Act) is part of the NPDP background studies, but has been published separately. (Limited copies). The report critically reviews the Act and other related legislation and among other things identifies the weaknesses in the existing Act which need to be addressed by any new law. In the light of the objectives and purposes of existing and proposed physical development plans, the review report also lays down the principles on which a new Act should be based

Sources Of Information And Methodology

The Study Report is based on (a) data collected from various Government ministries, departments and statutory organisations; and (b) field and research surveys carried out by the NPDP team. The methodology employed is described in the appendices or briefly outlined in the main text.

Consultations

Consultations were held with Government ministries, departments and statutory organisations. Draft of the individual components of the study reports were distributed to the preceding bodies.The written comments which were received were considered in the preparation of the final Report.

Table 2.2:
Urban Population and Growth Rates 1966 — 1977

Urban Area	1966 Census Data	1966 Adjusted Data (1)	1977 Census Data	Average Annual Growth Rate (%)
All Small Urban Centres (2)	33,960	75,682	106,012	3.1
Major Urban Centres				
Mzuzu(3)	8,490	8,490	16,108	6.0
Lilongwe	19,425	45,380	98,718	7.3
Zomba	19,666	19,666	24,234	1.9
Blantyre	109,461	109,461	219,011	6.5
Total Major Urban Centres	157,042	182,997	358,071	6.3
Total Urban Population	191,002	258,679	464,083	6.5
Urban Population as % of National Population	4.7	6.4	8.4	-

Notes: (1) The adjustment takes account of boundary changes or urban areas between 1966 and 1977 as explained in the text.

(2) Small urban centres are those centres defined as urban in the 1966 census with populations of fewer than 5,000 persons according to the unadjusted 1966 figures.

(3) The old township area has been used for Mzuzu as the recent boundary change covers a large rural area.

Table 2.3
Intercensal Growth Rate 1966 — 77 by Sex and Age

Age Group	Male	Female
0-4	3.3	3.3
5-9	2.9	2.9
10-14	2.7	2.4
15-19	2.8	2.6
20-24	3.2	3.2
25-29	4.2	2.6
30-34	3.3	1.8
35-39	1.9	1.7
40-44	2.8	2.2
45-49	2.1	1.3
50-54	1.6	3.1
55-59	2.8	2.8
60-64	3.5	4.5
65+	3.6	4.2
TOTAL	**3.02**	**2.72**
0-14	3.04	2.97
15-49	2.99	2.24
50+	2.92	3.64
20-35	3.61	2.63

Source: 1966 and 1977 Census of Malawi

For females over 50 years the Table shows an above average rate of growth. The growth rates for children 0-4 years and females 50+ probably resulted from more accurate age-reporting in the 1977 census, reduced mortality rates or increased fertility. But the causes of
these different growth rates cannot be determined.

Age and Sex Distribution

Different age/sex groups (cohorts) represent different needs and makes different demands for facilities, particularly in the field of health, education. For example, the number of schools required depends on the number of children of school age. The overall age/sex distribution of the population in 1966 and 1977 are shown in Table 2.4 and 2.5.

Malawi's population is young, but not excessively so when compared with other East and Central African countries. In the 1977 Census, the proportion under 15 years of age was 46% for males and 43% for females. Age and sex distribution of the 1977 population, by region and by district, have been presented separately in a table in the appendices. It shows that Central Region had a distinctly younger population than either the North or South. That is, 20.3% of the total population was less than 5 years old compared with 18.7% in the North and 19% in the South. Old people made up a smaller proportion of the population in the Central Region with the 50+ age group comprising 10.9% of the population compared with 12.1% and 11.9% in the North and South respectively.

Population Movement

Malawi has a very mobile population. The 1977 Census showed that in 9 out of the 24 districts, between 25% and 45% of the population were not born in these districts. In 8 other districts 15 - 25% of these people originally came from elsewhere. Migration, therefore, has played a large part in population distribution pattern in Malawi. There have also

Table 2.4
Comparison of Age and Sex Distribution, 1966 and 1977

Age Group	% Distribution Males		% Distribution Females		Sex Ratio	
	1966	1977	1966	1977	1966	1977
0-4	19.1	19.7	18.0	19.2	95.8	95.8
5-9	15.5	15.3	14.2	14.5	97.9	98.1
10-14	11.4	11.0	9.9	9.6	102.9	106.2
15-19	10.0	9.0	9.9	9.8	91.4	93.1
20-24	7.1	7.3	8.4	8.8	76.2	76.6
25-29	6.7	7.6	8.2	8.1	73.3	87.4
30-34	5.3	5.4	6.2	5.6	76.6	90.1
35-39	5.6	4.9	6.3	5.1	79.7	90.8
40-44	3.6	3.5	4.0	3.8	81.7	86.9
45-49	4.4	3.9	4.6	3.9	85.0	92.9
50-54	2.9	2.5	2.7	2.8	95.6	81.1
55-59	2.5	2.4	2.3	2.3	98.4	96.9
60-64	1.7	1.8	1.6	1.9	100.2	89.1
65+	4.3	4.6	3.7	4.4	103.0	96.9
Not stated	-	0.2	-	0.2	-	116.3
Total	**100.0**	**100.0**	**100.0**	**100.0**	**90.0**	**93.0**

Source: Malawi Population Census 1966 and 1977

Table 2.5:
Summary of Age and Sex Distribution 1966 and 1977

Age Group	% Distribution ~~Males~~		% Distribution Females		Sex Ratio	
	1966	1977	1966	1977	1966	1977
0-14	46.0	46.0	42.1	43.3	98.2	98.9
15-49	42.6	42.4	47.6	45.1	80.7	87.7
50 +	11.4	11.3	10.3	11.4	99.3	91.7
20-35	19.1	20.3	22.8	22.5	75.3	83.8

Source: Malawi Population Census 1966 and 1977

been movements into and out of the country. In 1966 census 295,000 persons were recorded as having been born abroad, representing 7.3% of the total population. By 1977 the number had fallen to 289,000, 5.2% of the total. Most of these migrants were from Mozambique. Until recently there was heavy emigration, mainly of young adult males, to Zimbabwe, South Africa and Zambia where they worked on farms and in the mines. Generally they were absent for only a few years, but some never returned.

In 1974, emigration to the mines in the Republic of South Africa was halted and there was a mass return to Malawi. But some out-migration has persisted though on a much reduced scale. In 1982 and 1983 14,000 and 13,000 workers respectively were recruited in Malawi by the Employment Bureau of Africa Limited to work in South Africa. There are no readily available records of men going to Zimbabwe and Zambia to seek work although such movements still seem to be on a small scale.

Over time, male emigration is likely to decrease as the traditional reception areas of Zimbabwe, South Africa and Zambia experience shortage of jobs for their own growing populations and cease to attract imported labour. Also job opportunities in Malawi have improved so the economic pressure to migrate for wage employment has been lessened.

Tables 2.6 and 2.7 summarise the data on sex ratios,(1) place of birth and the gains and losses resulting from migration within the country.

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(1) Sex ratios, the number of males per 100 females can give an indication of missing population. If there is no migration it is assummed that there would be equal number of males and females.

Table 2.6
Population by Region, Sex Ratio and Place of Birth

Region	% of National Population		Sex Ratio (Males/100 Females)		% Population still Resident in Region of Birth	
	1966	1977	1966	1977	1966	1977
Northern	12.3	11.7	85	90	94	89
Central	36.5	38.6	88	95	97	96
Southern	51.2	49.7	92	92	97	95
Malawi	**100.0**	**100.0**	**90**	**93**	—	—

Source: Demography of Malawi - unpublished World Bank Working Paper 1981

Table 2.7
Regional Population Movement

Region	Internal Migrants Gained		Internal Migrants Lost of Internal Migrants		Net Gains (+) or Losses (—)	
	1966	1977	1966	1977	1966	1977
Northern	33,265	28,701	54,130	73,475	-20,865	-44,774
Central	149,627	152,004	139,961	85,049	+ 9,666	+ 66,955
Southern	270,890	98,583	259,691	120,764	+ 11,199	-22,181

Source: 1966 and 1977 Census of Malawi

The data show that the relatively sparsely populated Northern region has been losing population for a considerable time, mainly to Central Region. Southern Region, on the other hand, was gaining population but later lost at the expense of the Centre. Fig. 2.1 shows the pattern of regional population movements based on place of birth and residence data from 1977 Census.

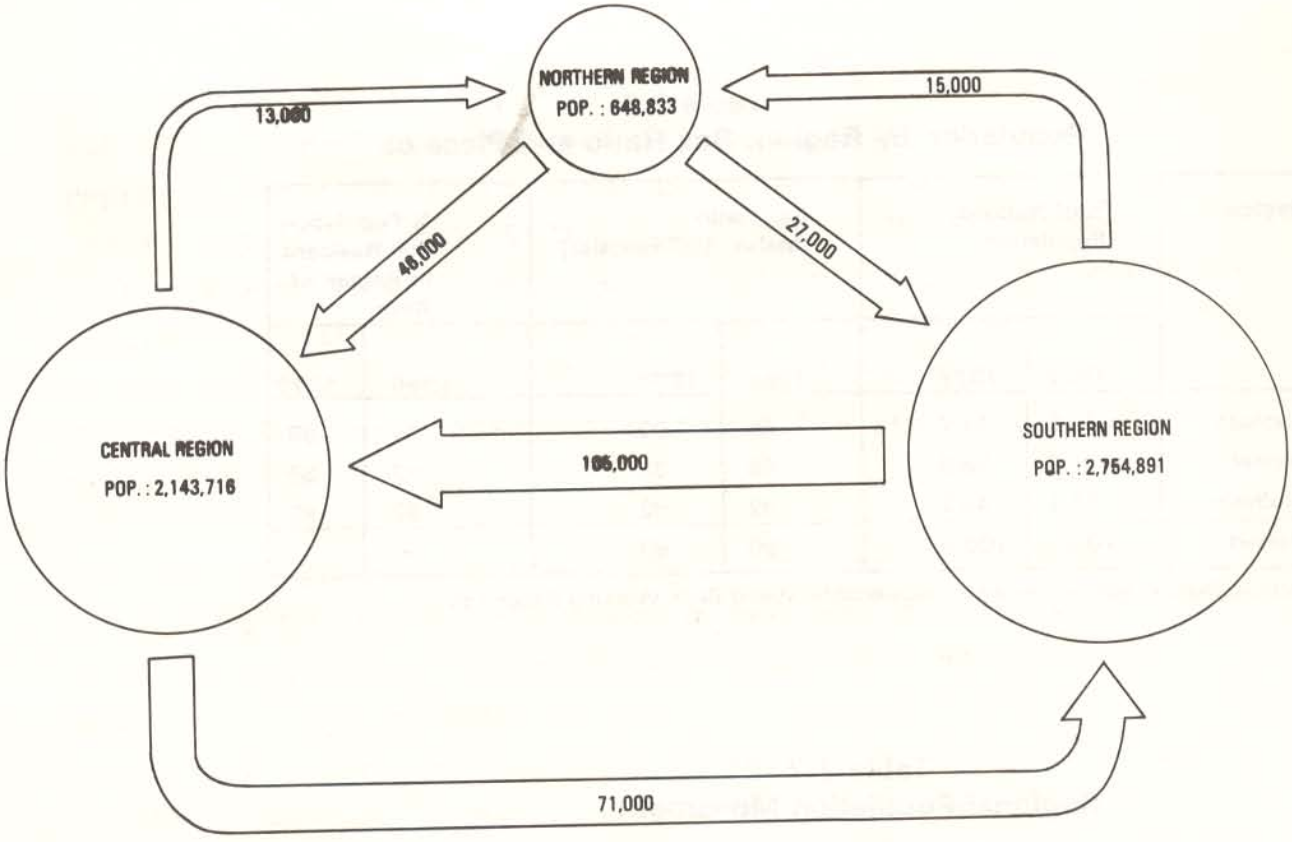

Figure 2-1: REGIONAL POPULATION MOVEMENT 1966-1977

The North has traditionally been most affected by out-migration, both internal and international. This out-movement is reflected in the low sex ratio and the proportion of people born in the region and still resident there. The 1966 level of in-migration was the lowest of the three regions and the net loss of population through out-migration was the greatest. In 1966 the net loss was about 21,000 persons. Between 1966 and 1977 the region did not increase in its attractiveness. Although its sex ratio rose it remained the lowest of the three regions. By 1977 the net internal loss of population had more than doubled to nearly 45,000 persons.

Southern Region was historically the most attractive of Malawi's regions, both to immigrants from abroad, principally Mozambique, and to internal migrants because this was the most developed part of the country with the best opportunities for wage employment. In 1966 the region's sex ratio and level of immigration was the highest in Malawi with a net gain of over 11,000 persons. But by 1977 southern region's attraction had waned. The sex ratio remained unchanged, suggesting that any returning male migrants were balanced by male out-migration. Overall, by 1977 there was net out-migration of 22,000 persons.

Central region has benefited from these changes. Between 1966 and 1977 it developed into a major attraction for migrants. In 1966 the region had a gain of less than 10,000 migrants but in 1977 this had risen to a gain of 67,000. It is reasonable to suppose that many of the returning migrants from Northern and Southern regions chose to settle in the Central region where the estates sector had grown rapidly in the inter-censal period with a consequent increase in the demand for labour. Also the establishment of Lilongwe as the capital city has increased the region's attractiveness.

At the District level Table 2.8 below shows the internal migration and sex ratios for 1966 and 1977. As discussed in the previous section the sex ratio gives an indication of missing males, presumably working away from their place of birth. At the district level the changes in the sex ratio between 1966 and 1977 allow some conclusions on population movement to be made.

Table 2.8
Internal Migration and Sex Ratios 1966 and 1977

District Region	Sex Ratios (males/100 females)		1966			1977		
	1966	1977	In-migrants	Out-migrants	Net gain/loss	In-migrants	Out-migrants	Net gain/loss
NORTHERN REGION								
Chitipa	88.6	88.8	1725	4345	- 2620	3582	11,911	- 8,329
Karonga	88.3	89.7	7,813	4,313	+3500	16,740	12,620	+4,120
Nkhata Bay	83.8	90.9	7,076	8,630	-1,554	15,010	21,775	- 6,765
Rumphi	82.6	87.1	7,466	7,041	+ 425	12,455	16,427	-3,972
Mzimba	84.6	90.1	9,185	29,801	- 20,616	26,322	56,150	- 29,828
CENTRAL REGION								
Kasungu	87.0	107.4	17,913	7,286	+10,627	72,042	15,814	+56,228
Nkhotakota	86.0	93.5	9,087	7,823	+ 1,264	20,040	13,027	+7,013
Ntchisi	87.4	92.1	5,097	8,502	-3,405	10,354	21,324	- 10,970
Dowa	91.4	95.6	14,373	28,582	-14,209	31,559	46,752	- 15,193
Salima	84.1	94.0	11,972	6,791	+5,181	28,791	17,215	+11,576
Lilongwe	93.6	98.0	55,462	22,828	+32,639	117,826	76,932	+40,894
Mchinji	90.1	103.9	6,534	5,889	+645	38,060	12,359	+25,701
Dedza	83.2	85.2	14,021	21,179	-7,158	22,759	47,468	- 24,709
Ntcheu	80.3	85.6	15,168	31,086	-15,918	28,394	51,979	- 23,585
SOUTHERN REGION								
Mangochi	80.3	84.4	11,395	30,217	-18,822	27,561	52,574	-25,013
Machinga	83.6	85.5	42,576	15,666	+26,910	77,210	33,773	+43,437
Zomba	97.6	92.6	42,551	42,905	-354	59,780	78,591	-18,811
Chiradzulu	88.8	86.7	13,038	38,903	-25,865	18,508	59,535	-41,027
Blantyre	109.8	(108.6)	75,718	37,688	+38,030	148,940	68,029	+80,911
Mwanza	85.8	(89.0)	—	—	—	9,803	10,954	- 115
Thyolo	97.4	95.5	32,209	26,133	+6,076	43,613	50,632	- 7,019
Chikwawa	93.7	96.4	25,381	7,714	+17,667	35,428	22,030	+13,398
Mulanje	91.7	89.1	23,224	32,062	- 8,838	28,407	60,458	-32,051
Nsanje	87.6	89.3	4,798	28,403	- 23,605	10,503	45,358	-34,855

Source: 1966 and 1977 Census of Malawi

Generally the sex ratios in most districts increased, reflecting the decline to some extent in the importance of international migration. But districts with a tradition of exporting male labour continued to do so, as shown in their low sex-ratios. For example, Dedza, Ntcheu, Mangochi and Machinga have ratios of less than 86 males/100 females. The exceptions to the trend of increasing sex rations were: Chitipa, where it remained almost static at 88.8, and Zomba, where it decreased from 97.6 in 1966 to 92.6 in 1977, showing the effect of the moving Central Government services to Lilongwe, the new capital city. Chiradzulu, Thyolo and Mulanje all show slight decreases. The districts which have proved to be the major attractions for male labour have been Kasungu and Mchinji, where there have been large commercial estate developments; Lilongwe because of agricultural development and the new capital city; and Blantyre, the main urban/industrial area of Malawi.

All districts increased their population between 1966 and 1977. But it can be seen by examining the data on inward and outward flows of migrants that some districts are gaining population at the expense of less well favoured areas. Except in two cases, Rumphi and Thyolo, the districts which gained population by inward migration in 1966 have continued to do so. In 1966 Rumphi had a net gain in population of 425 but in 1977 this had changed to a loss of almost 4,000 persons. There is no obvious explanation for this reversal. Thyolo in 1966 had a net gain over 6,000 persons whilst in 1977 the loss was over 7,000. Here it appears that growth of the commercial estate sector was still taking place in 1966 but by 1977 the tea estates had stopped expanding, thus the need for extra labour had waned and people were obliged to seek work elsewhere, outside the district.

It appears that in Northern Region the principal course of migration is the lack of wage-earning jobs there, but not a need for people to move long distances to find land because there is still adequate unused agricultural land in the North which could be occupied by families in the subsistence sector. Only Karonga, with its major rural development project, has managed to gain population probably due to migration. The remaining districts where land suitable for agriculture is available have all lost people.

In the Central Region the attraction of migrants to districts needing labour and the loss of people in districts with few opportunities for wage employment can be seen most clearly. Kasungu and Mchinji with their rapid expanding estate sectors have attracted large influxes of migrants. Lilongwe, with the new capital city, has also been a powerful magnet. To a lesser extent Salima and Nkhotakota, containing the Lakeshore Development Project, have also been successful in gaining migrants. But Ntchisi, Dowa, Dedza and Ntcheu, where there are few estates to employ workers have all exported migrants.

In the Southern Region, Blantyre, Machinga and Chikwawa have benefited from inward migration. Blantyre gained over 80,000 persons (1977 Census) principally because as the largest city in Malawi it offers job prospects for migrants. There seem to be several factors affecting the attraction of Machinga for inward moving migrants. First there has been a rapid expansion for commercial farming and secondly Liwonde has been established as a new town for industry. It also has the advantage of being adjacent to districts with large populations, e.g. Zomba, Mangochi and Ntcheu. Chikwawa seems to have gained population because of the setting up of the Sucoma Sugar estate and its refinery, which have needed large labour forces and also the establishment of the Shire Valley

Agricultural Development Project. The districts losing population have been Nsanje, Mulanje, Zomba and Mangochi. Mwanza district, where there is land for agriculture, lost only 1,000 persons because of out-migrations.(1)

Typical patterns of population movement are shown in Maps 2-1, 2-2 and 2-3. Map 2-1 shows how Kasungu has gained population from other districts; Maps 2-2 and 2-3 show how Mulanje and Dedza have lost people through out-migration. It is clear from the patterns illustrated that most migrants moved only short distances. In Kasungu 68% of the in-migrants came from neighbouring districts (those with a boundary in common with Kasungu). Similarly 45% of the migrants from Mulanje went to Zomba, Chiradzulu and Thyolo. From Dedza 56% went to neighbouring districts and 42.5% to Lilongwe alone. Obviously the towns are very attrative to migrants from rural areas.

From the data analysed here, it is difficult to establish why Lilongwe City attracts migrants. Lilongwe district not only contains the new capital city but also has a considerable estates sector creating a demand for labour. But, as mentioned above, 42.5% of Dedza's emigrants and nearly 5% of Mulanje's went to Lilongwe district. It can be assumed that substantial proportions of these emigrants came to the capital city. The attraction of the urban areas is also seen in the regional data. 20% of Northern emigrants went to Blantyre and 18.5% went to Lilongwe. Migration to the urban areas is discussed in depth in the section on urbanization.

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(1) Working papers present data for all districts on place of birth and place of residence at the time of the 1977 Census.

Although no surveys have been undertaken to find out why people move in Malawi, it appears that availability of paid employment is one of the most important factors. "Land pressure" i.e. a shortage of agricultural land to support a growing number of families, is often cited as a reason for migration in developing countries but, there is no concrete evidence that this mechanism is a major factor in migration in Malawi. Table 2.9 below shows by district the proportion of the population born in each district who leave and settle elsewhere.

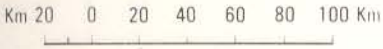
Table 2.9:
Proportion of Population Leaving District of Birth 1977

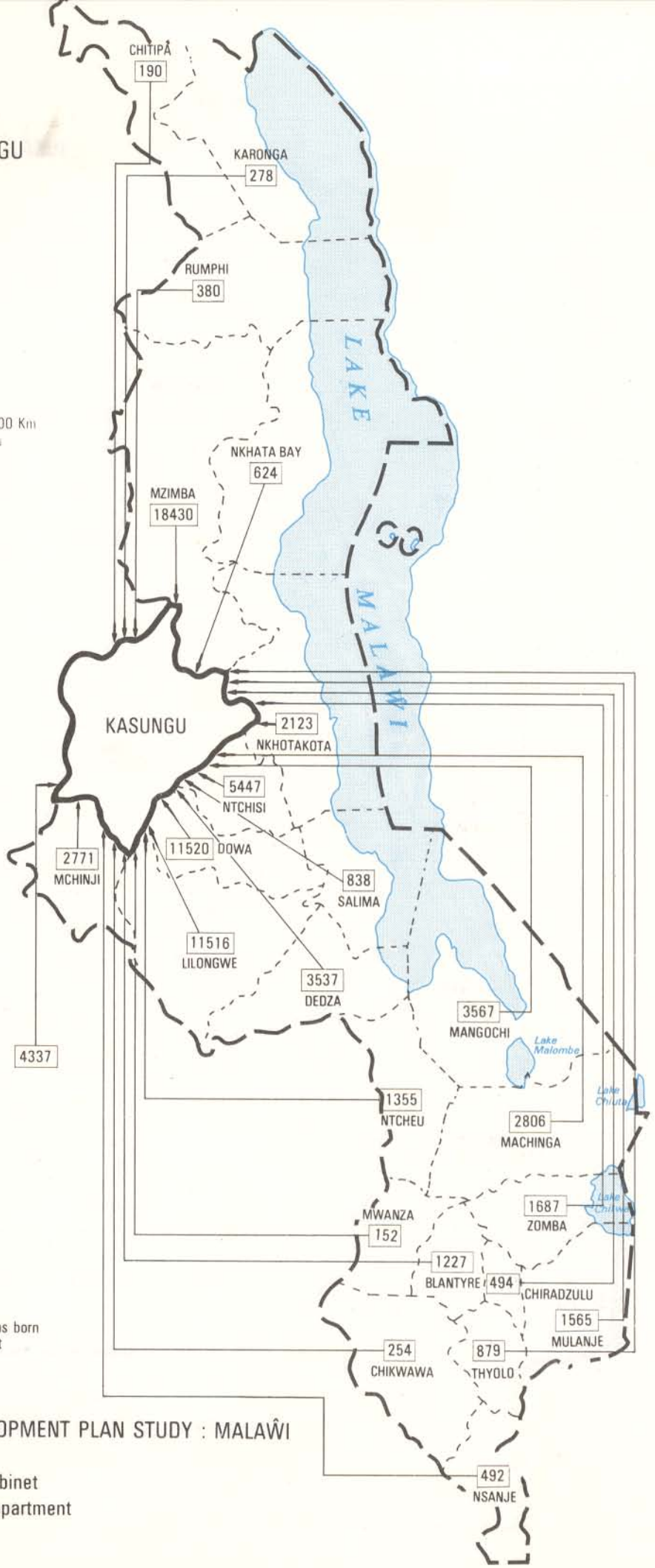
District and Region	Total Population Born in District	Total Population Leaving District	% Population Leaving District
Northern REGION			
Chitipa	75,721	11,902	15.7
Karonga	94,273	12,592	13.4
Nkhata Bay	103,253	21,752	21.1
Rumphi	62,710	16,409	26.2
Mzimba	321,902	56,120	17.4
Central REGION			
Kasungu	130,739	15,800	12.1
Nkhotakota	82,591	13,014	15.8
Ntchisi	97,797	21,320	21.8
Dowa	261,467	46,913	17.9
Salima	115,984	17,213	14.8
Lilongwe	645,212	76,872	11.9
Mchinji	120,270	12,348	10.3
Dedza	313,260	47,434	15.1
Ntcheu	238,357	51,896	21.8
Southern REGION			
Mangochi	295,103	52,501	17.8
Machinga	273,942	33,701	12.3
Zomba	354,872	78,486	22.1
Chiradzulu	212,605	59,438	28.0
Blantyre	303,795	67,616	22.3
Mwanza	63,257	10,924	17.3
Thyolo	311,665	48,825	15.7
Mulanje	482,251	60,190	12.5
Chikwawa	158,696	20,417	12.9
Nsanje	86,200	45,358	52.6

Source: Malawi Population Census 1977 (Extract)

IN-MIGRATION TO KASUNGU DISTRICT 1977

Map 2-1





Figures in box are total number of persons born in district but resident in Kasungu District

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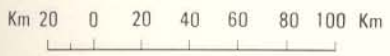
OUT-MIGRATION FROM MULANJE DISTRICT 1977

Map 2-2



Figures in box are total residents of the district born in Mulanje

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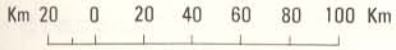
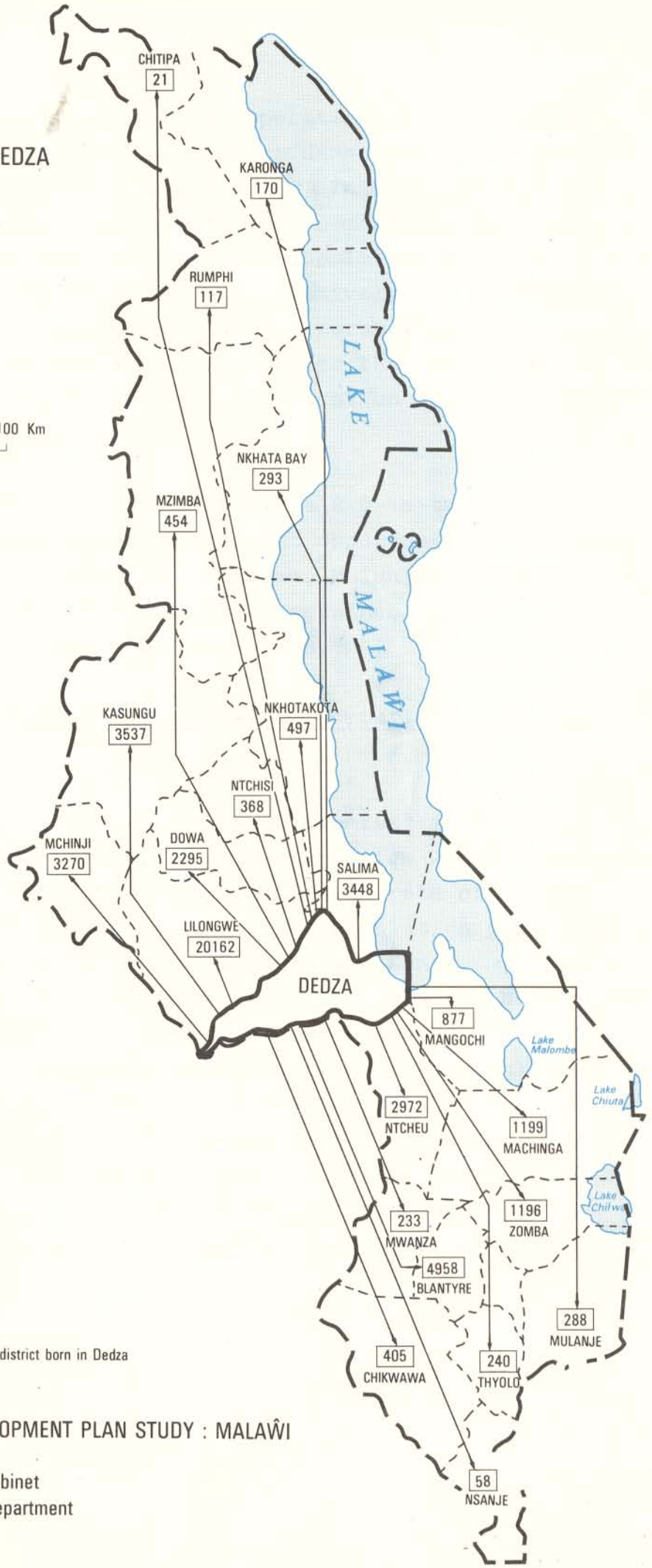
OUT-MIGRATION FROM DEDZA DISTRICT 1977

Map 2-3





Figures in box are total residents of the district born in Dedza

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If the "land pressure" factor was operating in the country then those districts with the highest densities would show the highest proportion of people leaving . This is not the case, as the figures show. Nsanje with only a moderate density by Malawi's standards had over half its population by birth emigrate. Similarly Rumphi with a relatively low density had one quarter of its population move, comparable with Chiradzulu which had a high density, and much higher than Thyolo where only 16% of its population moved. Population densities are discussed in Part 5.

The only discernable pattern from Table 2.9 is that those districts where there are the greatest opportunities for paid employment (Kasungu, Mchinji, Lilongwe, Mulanje, Thyolo in the estate sector; Lilongwe urban area) retained a greater proportion of their original population.

Population Characteristic of Malawi in Comparison with other African States.

To set the Malawi situation in a wider context it is useful to compare some of its population characteristics with those of its neighbours. The national annual growth rate of 2.86% (1966-1977) is not exceptional, as the population growth rate from 1970 to 1978 was 3.4% for Tanzania and Kenya, 3.1% for Zambia, 3% for Uganda, 2.7% for Zaire and 2.5% for Mozambique and Nigeria, according to the World Bank Atlas, 1980. In 1977, however, Malawi showed the highest overall population density in East and Central Africa with 59 persons per square kilometre (gross land area) compared with 52 in Uganda , 25 in Kenya, 17 in Tanzania, 12 in Mozambique, 11 in Zaire and 7 in Zambia, according to the U.N. Demographic Year Book 1977. Each of these countries, however, has a much larger territory than Malawi.

2.3 SIZE DISTRIBUTION OF SETTLEMENTS POPULATION

The size distribution of settlements in Malawi existing in 1977 is shown in Table 2.10 and Figure 2-2. The table indicates that 3,477,600 persons representing 62.7% of the 1977 national population lived in 2,652 nucleated settlements (villages, towns and cities) while 2,069,800 persons, representing 37.3% of the total population lived in scattered and ribbon settlements (1).

The country's population living in nucleated settlements is broken down as follows:

22.1% or 1,225,600 persons lived in 1,532 settlements within the population of 500-1000 persons. The 1,532 settlements consisted of 21 urban places and 1,511 villages.

31.4% or 1,743,500 persons lived in 1,087 settlements within the population range of 1,001-3,000 persons. The 1,087 settlements consisted of 26 urban places and 1,061 villages.

2% or 111,000 persons lived in 26 settlements within the population range of 3,001-10,000 persons. The 26 settlements consisted of 22 urban place and 4 villages.

1.4% or 77,500 persons lived in urban areas within the population range of 10,001-100,000; and

5.8% or 320,000 persons lived in the two cities of Lilongwe and Blantyre within the population range of 100,000 persons and over.

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(1) Definitions of nucleated and scattered settlements are given in part 5.

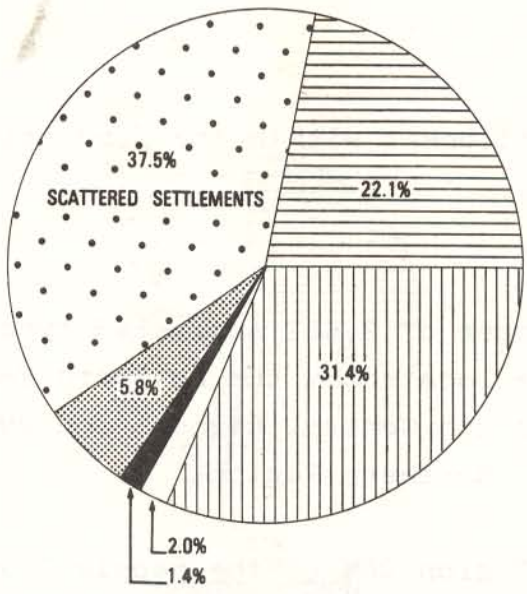

Figure 2-2: SIZE-DISTRIBUTION OF SETTLEMENTS 1977

Table 2.10
Size Distribution of Settlements Population 1977

Settlement (Range of Population)*	Number	Population	% of National Population
Pop. 500-1,000	1,532	1,225,600	22.1
Pop. 1,001-3,000	1,087	1,743,500	31.4
Pop. 3,001-10,000	26	111,000	2.0
Pop. 10,001-50,000	5	77,500	1.4
Pop. 50,001-100,000	-	-	-
Pop. 100,000 and over	2	320,000	5.8
	2,652	3,477,600	62.7
Scattered Settlements		2,069,800	37.3

* Unequal class interval has been used because it is not practical to construct class intervals of equal sizes.

There was no settlement within the population range of 50,001-100,000 persons.

Of the total number of 2,652 nucleated types of settlements, 1,293 (49%) were located in the Southern Region; 1,063 (40%) were located in the Central Region; and 296 (11%) were located in the Northern Region.

In the Central Region 26% of the people lived in settlements within the population range of 500-1,000 persons compared to 24% in the Northern Region and 19% in the Southern Region; 36.5% of the people in the Southern Region lived in settlements within the population range of 1,001-3,000 persons compared to 27.1% and 24.4% in the Central and Northern Regions respectively; 2.8% of the people in the Northern Region lived in settlements within the population range of 3,001-10,000 persons compared to 2.5% and 1.1% in the Southern and Central regions respectively; 4.5% of the people in the Northern Region lived in settlements within the population range of 10,001-50,000 persons compared to 1.4% and 0.5% in the Southern and Central Regions respectively; 8% of the people in the Southern Region lived in the City of Blantyre and 1% of the people in the Central Region lived in the City of Lilongwe. There was no city-size settlement in the Northern Region. (See Table 2.11 and figure 2-3).

Within the regions 44.5% of the population of the Northern Region lived in scattered settlements compared to 40.7% in the Central Region and 32.9% in the Southern Region.

At the district level, as shown in Table 2.12, Lilongwe District, in absolute numbers, had more settlements within the population range of 500-1,000 persons than any other in the country. Its 207 of such settlements represented 13.5% of

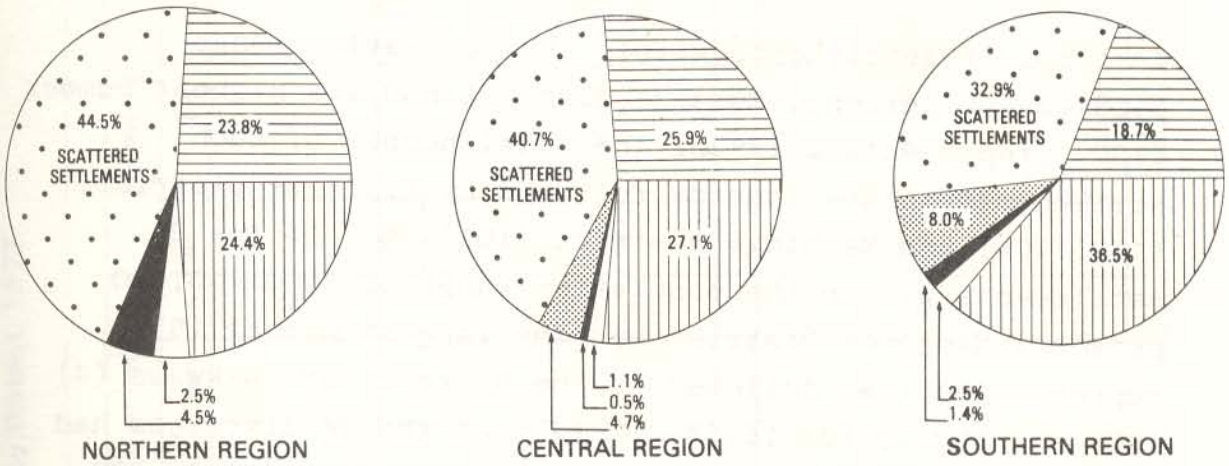

Figure 2-3: SIZE DISTRIBUTION OF SETTLEMENTS BY REGION 1977

Table 2.11
Size Distribution of Settlement Population by Region 1977

Settlement Population Range	North			Central			South		
	No.	Pop.	%	No.	Pop.	%	No.	Pop.	%
500-1,000	193	154,400	23.8	696	556,800	25.9	643	514,000	18
1,001-3,000	97	158,500	24.4	360	579,000	27.1	630	1,006,000	36
3,001-10,000	4	18,000	2.8	5	23,500	1.1	17	69,500	2
10,001-50,000	2	29,000	4.5	1	10,500	0.5	2	38,000	1
50,001-100,000	-	-	-	-	-	-	-	-	-
100,000 and over	-	-	-	1	100,000	4.7	1	220,000	8
Total	**296**	**359,900**	**55.5**	**1,063**	**1,269,800**	**59.3**	**1,293**	**1,847,900**	**67**
Scattered Settlements	-	289,000	44.5	-	873,900	40.7	-	906,900	32

the total number of settlements in the country within that population range. Machinga and Mzimba districts followed with 8%; and 7% respectively.

In terms of settlements within the population range of 1,001-3,000 persons, Mulanje District had the highest number (130), representing 12% of the total number of such settlements in the country followed by Lilongwe District, (112) 10%; and Machinga District (101) 9%. Of the 26 settlements within the population range of 3,001-10,000 persons, Mangochi District had the largest number (5) representing 19%; followed by the District of Chikwawa (4) 15%; and Thyolo (3) 11.5%. Only 5 of the 24 districts had settlements within the population range of 10,001-50,000 persons. These were the Districts of Karonga, Mzimba, Nkhotakota, Zomba and Chikwawa.

Of the total number of 2,069,800 persons who lived in scattered settlements, 256,000 persons lived in the District of Lilongwe representing the largest proportion (12%); followed by Mulanje District (9%); Zomba District (7.3%) and Mzimba District 7.2%). Within the various districts, Ntchisi had as much as 72% of its population living in scattered settlements, followed by Dowa District 59%, Chitipa District 53.5%, Salima District 52.4% and Kasungu District 49.7%. Blantyre District with 10.6% had the lowest proportion of population living in scattered settlements. Ntcheu had 14.9% and Machinga had 21%. Of the rest of the districts, each had between 30-49% of its population living in scattered settlements. (Table 2.12).

With respect to the country's 2,069,800 persons living in scattered settlements 906,900 (43.8%) lived in the Southern Region; 873,900 (42.2%) lived in the Central Region and 289,000 (14%) lived in the Nothern Region. (Table 2.12).

The problems created by the size distribution of settlements in the country are discussed in parts 4 (Urbanization), 5 (Land Use) and 3.3 (Agriculture).

Table 2.12
Size Distribution of Human Settlements Population by District, 1977

DISTRICTS	Settlement Population Range																		Scattered Settlements	
	500 - 1,000			1,001 - 3,000			3,000 - 10,000			10,001 - 50,000			50,001 - 100,000			100,000 Plus				
	No.	Pop.	%	No.	Pop.	%	No.	Pop.	%	No.	Pop.	%	No.	Pop.	%	No.	Pop.	%	Pop.	%
Chitipa	19	15,200	21.0	10	15,000	20.7	1	3,500	4.8	-	-	-	-	-	-	-	-	-	38,600	53.5
Karonga	11	8,800	8.2	27	50,500	47.2	-	-	-	1	12,500	11.7	-	-	-	-	-	-	25,100	32.9
Nkhata Bay	29	23,200	21.9	23	36,500	34.5	1	4,500	4.3	-	-	-	-	-	-	-	-	-	41,600	39.3
Rumphi	20	16,000	25.6	11	16,500	26.4	1	4,500	7.2	-	-	-	-	-	-	-	-	-	25,500	40.8
Mzimba	114	91,200	30.3	26	40,000	13.3	1	5,500	1.8	1	16,500	5.4	-	-	-	-	-	-	148,200	49.2
North	**193**	**154,400**	**23.8**	**97**	**158,500**	**24.4**	**4**	**18,000**	**2.8**	**2**	**29,000**	**4.5**	**-**	**-**	**-**	**-**	**-**	**-**	**289,000**	**44.5**
Kasungu	86	68,800	35.4	15	22,500	11.6	1	6,500	3.3	-	-	-	-	-	-	-	-	-	96,600	49.7
Nkhotakota	24	19,200	20.3	20	34,000	36.0	-	-	-	1	10,500	11.1	-	-	-	-	-	-	30,700	32.5
Ntchisi	21	16,800	19.2	5	7,500	8.6	-	-	-	-	-	-	-	-	-	-	-	-	63,100	72.2
Dowa	66	52,800	21.3	27	44,500	18.0	1	3,500	1.4	-	-	-	-	-	-	-	-	-	146,800	59.3
Salima	35	28,000	21.1	19	30,500	23.1	1	4,500	3.4	-	-	-	-	-	-	-	-	-	69,300	52.4
Lilongwe	207	165,600	23.5	112	182,000	25.8	-	-	-	-	-	-	-	-	-	1	100,000	14.2	256,500	36.5
Mchinji	76	60,800	38.3	15	22,500	14.2	-	-	-	-	-	-	-	-	-	-	-	-	75,500	47.5
Dedza	100	80,000	26.8	68	111,000	37.2	1	5,500	1.8	-	-	-	-	-	-	-	-	-	101,700	34.2
Ntcheu	81	64,800	28.6	79	124,500	55.0	1	3,500	1.5	-	-	-	-	-	-	-	-	-	33,700	14.9
Central	**696**	**556,800**	**25.9**	**360**	**579,000**	**27.1**	**5**	**23,500**	**1.1**	**1**	**10,500**	**0.5**	**-**	**-**	**-**	**1**	**100,000**	**4.7**	**873,900**	**40.7**
Mangochi	48	38,400	12.7	84	135,000	44.6	5	18,500	6.1	-	-	-	-	-	-	-	-	-	110,400	36.6
Machinga	125	100,000	29.3	101	160,500	46.9	2	9,000	2.6	-	-	-	-	-	-	-	-	-	72,300	21.2
Zomba	56	44,800	12.7	87	131,500	37.3	-	-	-	1	24,500	7.0	-	-	-	-	-	-	151,500	43.3
Chiradzulu	43	34,400	19.5	40	62,000	35.2	-	-	-	-	-	-	-	-	-	-	-	-	79,800	45.3
Blantyre	106	84,800	20.8	38	60,000	14.7	-	-	-	-	-	-	-	-	-	1	220,000	53.9	43,300	10.6
Mwanza	31	24,800	34.7	13	20,500	28.7	-	-	-	-	-	-	-	-	-	-	-	-	26,100	36.6
Thyolo	95	76,000	23.6	62	95,000	29.5	3	10,500	3.3	-	-	-	-	-	-	-	-	-	140,500	43.6
Mulanje	92	73,600	15.4	130	211,000	44.2	1	3,500	0.7	-	-	-	-	-	-	-	-	-	189,400	39.7
Chikwawa	22	17,600	9.0	51	88,500	45.5	4	16,000	8.2	1	13,500	6.9	-	-	-	-	-	-	58,800	30.3
Nsaje	25	20,000	18.4	24	42,000	38.6	2	12,000	11.0	-	-	-	-	-	-	-	-	-	34,800	32.0
South	**643**	**514,400**	**18.7**	**630**	**1,006,000**	**36.5**	**17**	**69,500**	**2.5**	**2**	**38,000**	**1.4**	**-**	**-**	**-**	**1**	**220,000**	**8.0**	**906,900**	**32.9**
Malawi	**1,532**	**1,225,600**	**22.1**	**1,087**	**1,743,500**	**31.4**	**26**	**111,000**	**2.0**	**5**	**77,500**	**1.4**	**-**	**-**	**-**	**2**	**320,000**	**5.8**	**2,069,800**	**37.3**

2.4. FUTURE POPULATION GROWTH

The projection of future population, like any attempt to predict the future, cannot be entirely accurate because it is based on assumptions. No two experts or demographers can arrive at the same prediction of the level of future population. The longer the time frame, the less reliable the projections will be as so many variables are involved. The factors affecting future population levels are birth rates (that is, natural increase) and migration. Assumptions, based on existing data, have to be made about the future performance of these factors in preparing population projections. The usual way to reduce uncertainty with projections is to prepare a series of them, varying the assumptions so as to cover a range of likely changes in birth rates, etc. This approach has been adopted here and two projections have been used - a cohort survival projection taken from the World Bank Study entitled "Demography of Malawi" and the geometric growth rate projections using the National Statistical Office's official population growth rate. Thus high and low growth rates, respectively (See Appendix 2.1) have been arrived at.

Given the uncertainty of estimating the future levels of population, the two distinct methods of projections presented in this study should be regarded as the two probable ranges of population growth. A brief description of the methodology is given in Appendix 2.1. The population projection results are presented under the following sub-headings: population levels; population characteristics and special population groups.

The results of the high and low population growth projections under each sub-heading are illustrated in time-scale tables, diagrams and sex-age distribution pyramids.

Future Population Levels*

The results of the population projections have indicated that the existing national population of 5.5 million persons will increase by the year 2000 to 11.9 million under the high growth projections and to 10 million under the low growth projections. The high growth projection is based on an annual average population growth rate of 3.3% for the 23-year period while the minimum growth projection is based on an annual population growth rate (between 1977 and 2000) of 2.6 percent. (See Tables 2.13 and 2.14 and Figure 2-4)

Within the methodological parameters and assumptions used by the World Bank (for the maximum projections) and by the National Physical Planning team (for the minimum projection), the differential population growth level of 1.9 million by the year 2000 can be expected. To reiterate, words with a great degree of confidence it can be expected that by the year 2000, the population of Malawi will reach a level of between 10 and 11.9 million persons. (See Figure 2-4).

This implies that by the year 2000 there will be an additional population of 4.5 million persons under the low growth rate, and an additional 6.4 million persons under the high growth rate.

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* This NPDP population study was completed before the publication of NSO's analytical report "Volume II, Fertility, Mortality and Population Projection". The difference between NSO's projections and the ones by NPDP is negligible, NSO's average growth rate 1977-2000 being 3.27% and that by NPDP being 3.36. In absolute figures a difference of only 231,400 people by the year 2000. As the NPDP figures had been used extensively in other background studies, it was agreed, at a meeting chaired by OPC and attended by the NSO, EPD, MOA and TCPD, to use the figures adopted by the NPDP. But in any future review of the Plan the official NSO (national) figure will be used.

Table 2.13
High Growth Population Projection 1977—2000 (in thousands)

Age Group (Years)	1977						2000					
	Females	% Total Pop.	Males	% Total Pop.	Total	% Column	Females	% Total Pop.	Males	% Total Pop.	Total	% Column
0-4	551.6	9.9	528.6	9.5	1,080.1	19.5	1,153.0	9.7	1,168.3	9.8	2,321.3	19.5
5-9	416.7	7.5	408.7	7.4	825.3	14.9	891.1	7.5	901.6	7.6	1,792.7	15.1
10-14	276.8	5.0	293.8	5.3	570.6	10.3	712.8	6.0	722.2	6.1	1,435.0	12.1
15-19	280.0	5.0	260.8	4.7	540.8	9.7	586.3	5.0	594.8	5.0	1,181.1	10.0
20-24	254.1	4.6	194.8	3.5	449.0	8.1	502.7	4.2	511.1	4.5	1,013.8	8.5
25-29	233.2	4.2	203.8	3.7	437.1	7.9	441.7	3.7	416.3	3.5	858.0	7.2
30-34	161.1	2.9	145.1	2.6	306.3	5.5	355.8	3.0	353.9	3.0	709.7	6.0
35-39	145.0	2.6	131.6	2.4	276.6	5.0	211.4	1.8	234.6	2.0	446.0	3.8
40-44	109.0	2.0	94.7	1.7	203.7	3.7	253.8	2.2	228.6	1.9	482.4	4.1
45-49	113.3	2.0	105.3	1.9	218.7	3.9	216.7	1.8	176.2	1.5	392.9	3.3
50-54	81.1	1.5	65.8	1.2	146.8	2.6	196.1	1.7	215.2	1.8	411.3	3.5
55-59	66.8	1.2	64.7	1.2	131.5	2.4	115.5	1.0	123.1	1.0	238.6	2.0
60-64	54.8	1.0	48.8	0.9	103.6	1.9	110.1	0.9	117.4	1.0	227.5	1.9
65+	126.2	2.3	122.2	2.2	248.4	4.5	183.2	1.6	168.6	1.4	351.8	3.0
Not Stated	4.2	0.1	4.9	0.1	9.1	0.2	-	-	-	-	-	-
Total	**2,873.9**	**51.8**	**2,673.6**	**48.3**	**5,547.5**	**100.0**	**5,930.0**	**49.9**	**5,931.9**	**50.0**	**11,861.9**	**100**

Source: (1) 1977 Census of Malawi NSO.

(2) World Bank "Demography of Malawi" 1981, Projections A.2.1

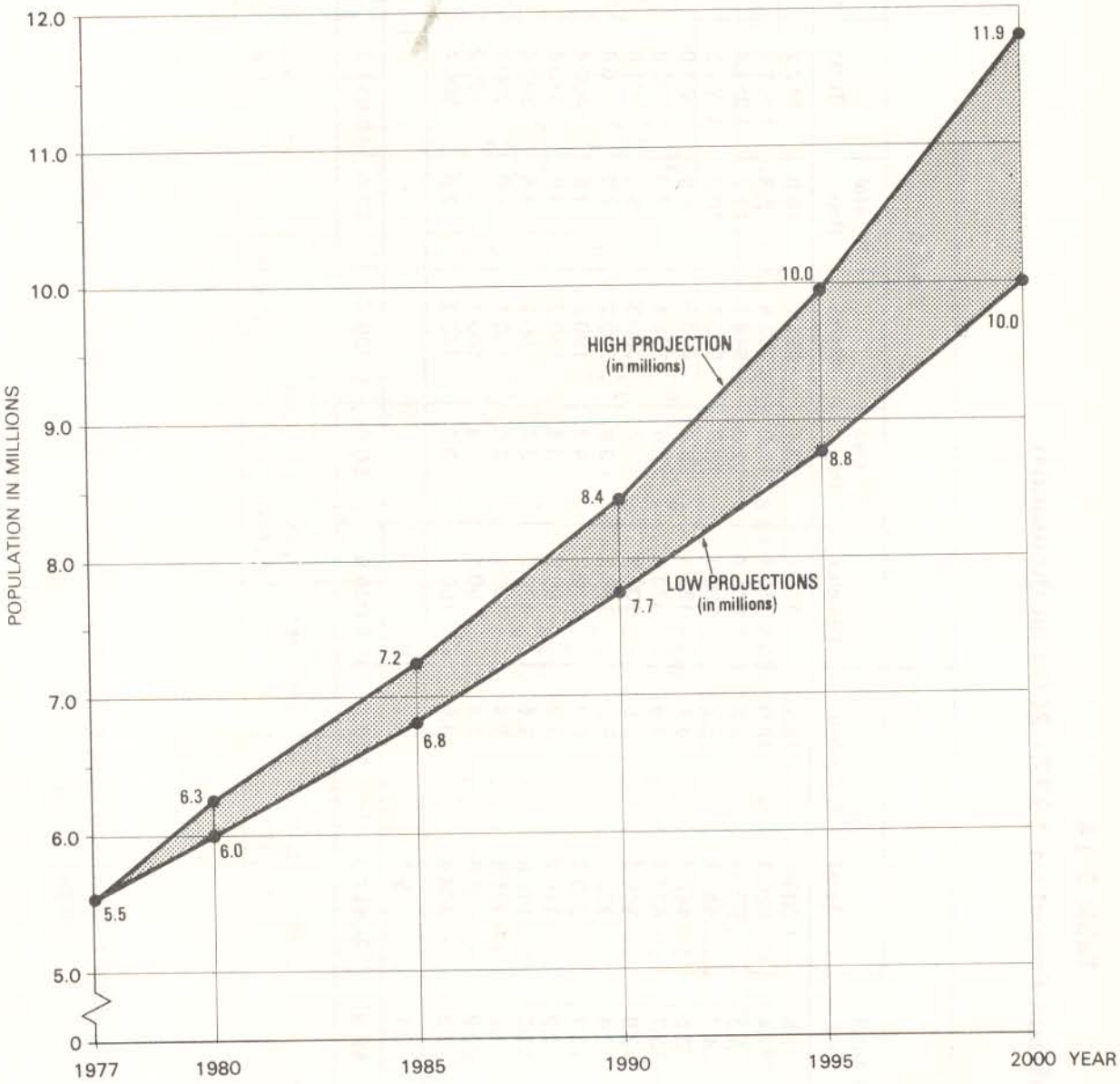
Table 2.14

Low Growth Population Projection 1977—2000 (in thousands)

Age Group (Years)	1977						2000					
	Females	% Total Pop.	Males	% Total Pop.	Total	% Column	Females	% Total Pop.	Males	% Total Pop.	Total	% Column
0-4	551.6	9.9	528.6	9.5	1,080.1	19.5	971.1	19.4	991.1	19.8	1,962.2	19.6
5-9	416.7	7.5	408.7	7.4	825.3	14.9	750.8	15.0	760.8	15.2	1,511.6	15.1
10-14	276.8	5.0	293.8	5.3	570.6	10.3	600.7	12.0	610.7	12.2	1,211.4	12.1
15-19	280.0	5.0	260.8	4.7	540.8	9.7	500.6	10.0	500.6	10.0	1,001.2	10.0
20-24	254.1	4.6	194.8	3.5	449.0	8.1	420.5	8.4	430.5	8.6	851.0	8.5
25-29	233.2	4.2	203.8	3.7	437.1	7.9	370.4	7.4	350.4	7.0	720.8	7.2
30-34	161.1	2.9	145.1	2.6	306.3	5.5	300.3	6.0	300.3	6.0	600.6	6.0
35-39	145.0	2.6	131.6	2.4	276.6	5.0	180.2	3.6	200.2	4.0	380.4	3.8
40-44	109.0	2.0	94.7	1.7	203.7	3.7	210.2	4.2	190.2	3.8	400.4	4.0
45-49	113.3	2.0	105.3	1.9	218.7	3.9	180.2	3.6	150.2	3.0	330.4	3.3
50-54	81.1	1.5	65.8	1.2	146.8	2.6	170.2	3.4	180.2	3.6	350.4	3.5
55-59	66.8	1.2	64.7	1.2	131.5	2.4	100.1	2.0	100.1	2.0	200.2	2.0
60-64	54.8	1.0	48.8	0.9	103.6	1.9	90.1	1.8	100.1	2.0	190.2	1.9
65+	126.2	2.3	122.2	2.2	248.4	4.5	160.2	3.2	140.2	2.8	300.4	3.0
Not Stated	4.2	0.1	4.9	0.1	9.1	0.2	-	-	-	-	-	-
Total	**2,873.9**	**51.8**	**2,673.6**	**48.3**	**5,547.5**	**100.0**	**5,005.6**	**50.0**	**5,005.6**	**50.0**	**10,011.2**	**100.0**

Source: 1) 1977 Census of Malawi, NSO

2) NPDP Population Study 1982.



Data Source: 1. 1977 Census of Malawi
2. "Demography of Malawi" The World Bank 1981
3. Population Study, NPDP, 1982

Figure 2-4: **LOW AND HIGH POPULATION PROJECTIONS: 1977-2000**

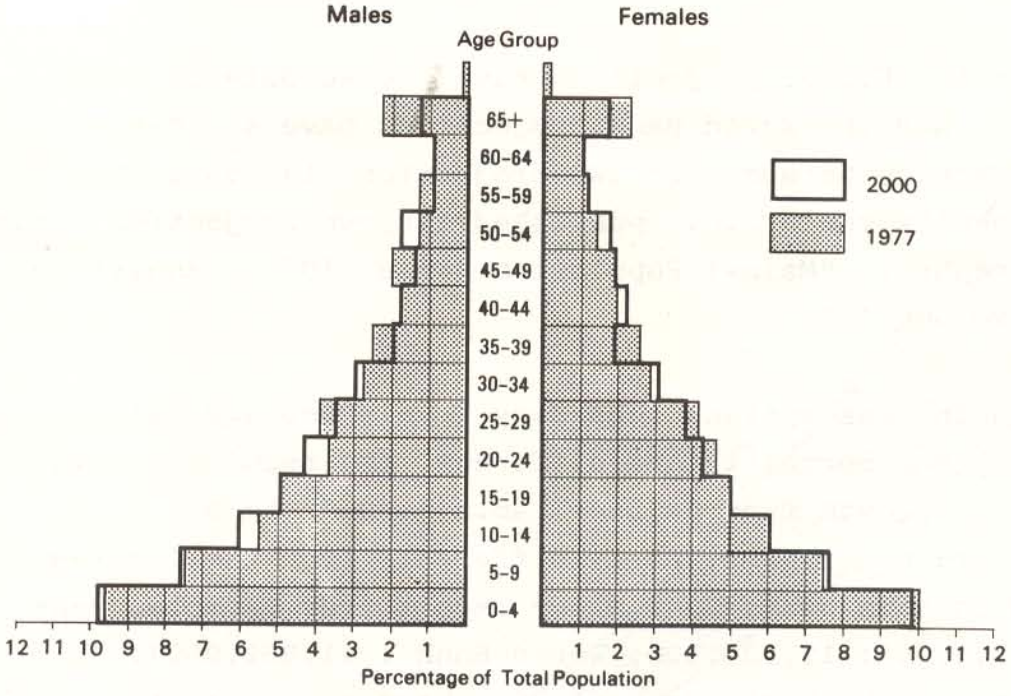
Although the N.S.O. projections have a base date of 30th September and the World Bank projections have a mid-year base, the difference between the two projections is negligible. Very recently the N.S.O. published its own projection figures in its report: "Malawi Population Census 1977 : Analytical Report Volume II".

Although the assumptions regarding levels and age-patterns of fertility and mortality are different, the resulting high population growth figures (see Table A. 9.43 in N.S.O.'s Report) are not significantly different from the figures adopted in this background study report (for example, year 2000 : N.S.O. : 11,630,500; World Bank : 11,861,900). For consistency, the World Bank figures have been used throughout the various study reports.

Future Population Characteristics

The sex and age specific distribution of population for the years 1977 and 2000 is illustrated in Figure 2-5. In 1977, 51.8% (approximately 2.9 million) of the total population of Malawi were females. The high female percentage is a natural outcome of the employment-related male out-migration to neighbouring countries. By 2000 there will be a relatively more balanced sex distribution, resulting from the assumption made for the projections.

In terms of age distribution the population to year 2000 indicates that in comparison to 1977, the greater proportion (57% of the population) will be under 20 years old. In 1977, approximately 54 percent of the population (over 3 million persons) was below the age of 20. Also, because of expected improvements in health care, which are related to longevity, a general increase in the level of adult population (persons over 50 years old) is expected. In 1977, there were approximately 630,000 persons aged 50 and over. By year 2000, it is expected that there will be between 1.0 and 1.3 million persons over 50 years old.



Data Source: 1. 1977 Census of Malawi
2. "Demography of Malawi" The World Bank 1981

Figure 2-5: SEX AGE DISTRIBUTION OF POPULATION: 1977-2000

The following is an analytical presentation of special population groupings under the sub-headings of pre-school; school-age; potential mothers; maternity-health; and working age populations:-

PRE-SCHOOL AGE POPULATION

Age Group 0-4 Years Old

The 1977 census indicates that 19.3% of the population (over one million persons) was below the school age. The year 2000 population projections indicate that there will be between 1.9 and 2.3 million pre-school age persons comprising approximately 19.5% of the total population (See Table 2.15 and Figure 2-6).

SCHOOL AGE POPULATION

Age Group 5-20 Years Old.

In 1977 there were over 1.9 million school age persons. That is 34% of the total population. By year 2000, it is estimated that over 37% of the total population (3.7 to 4.4 million persons) will be within the school age bracket. (See Table 2.15 and Figure 2-6)

Table 2.15
Special Population Group Data: 1977-2000

Special Population Groups	1977		2000		
	Number (in Millions)	% of Total	Number (in Millions)	% of Total	% Increase
Pre-School (0-4 yrs.)	1.08	19.5		18.7	
High Growth			2.32		1.15
Low Growth			1.96		0.81
School Age 5-20 yrs	1.94	35.0		37.2	
High Growth			4.41		1.27
Low Growth			3.72		0.92
Potential Mothers (Fem 15-49 yrs.)	1.30	23.4		22.3	
High Growth			2.57		0.98
Low Growth			2.16		0.66
Maternity (Fem 15-49-+0-4 yrs.)	2.38	42.9		40.9	
High Growth			4.89		1.05
Low Growth			4.12		0.73
Working Age (10+ yrs.)	3.64	65.6		65.3	
High Growth			7.75		1.13
Low Growth			6.54		0.80

Source: (1) 1977 Census of Malawi.

(2) "Demography of Malawi" The World Bank, 1981.

(3) Population Study, NPDP, 1982.

POTENTIAL-MOTHER POPULATION

Females 15-49 Years Old

Of the total population in 1977, 23.2% (1.3 million females) were potential mothers. The population forecast results have indicated that by 2000 there will be 2.2 to 2.6 million potential mothers. (See Table 2.15 and Figure 2-6).

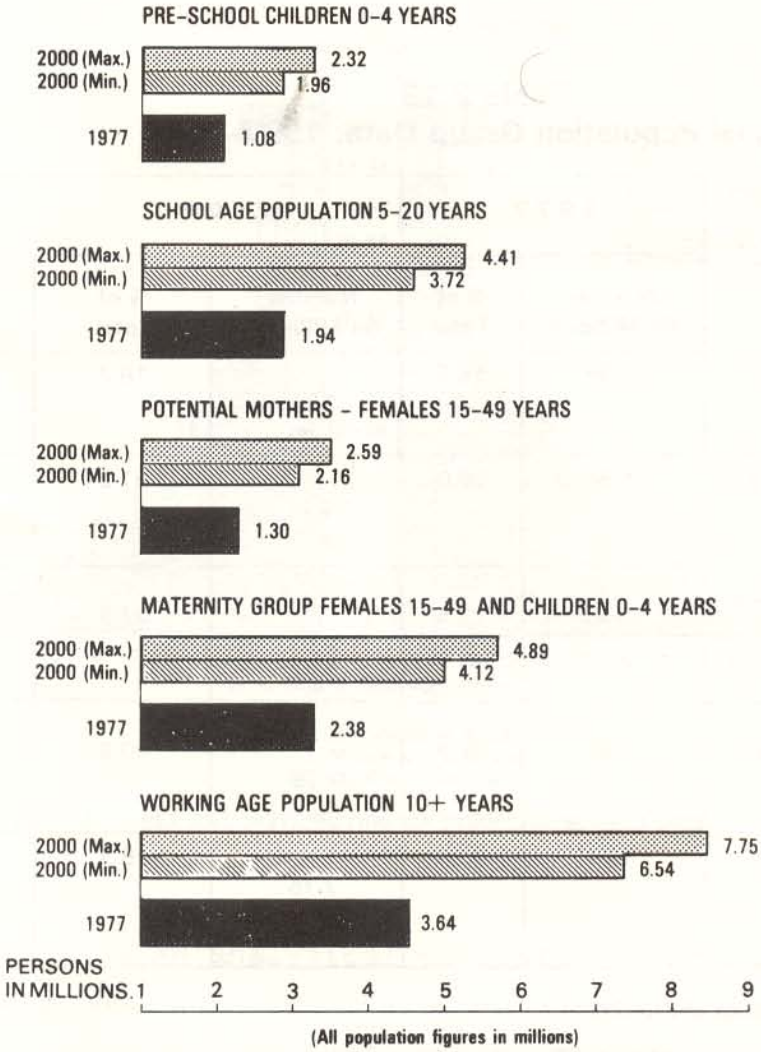


Figure 2-6: **SPECIAL POPULATION GROUPS: 1977-2000**

Maternity Population
Female 15-49 Plus
Children 0-4 Years Old

The census results in 1977 indicated that there were approximately 2.4 million persons, 43% of the total population, who may be qualified as the maternity population. By 2000, it is estimated that under both growth assumptions approximately 41% (4.1 to 4.9 million persons) of the population will qualify as the maternity population. (See Table 2.15 and figure 2-6).

Working Age Population
Persons over 10 years old

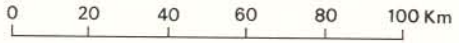
In 1977 the total labour force of the country consisted of about 3.6 million persons over 10 years old representing over 65% of the total population. It is expected that by 2000 the labour force portion of the total population will increase to 67%. In absolute numbers that means that there will be between 6.5 and 7.8 million persons comprising the total labour force of the country by 2000. (See Table 2.15 and Figure 2-6)

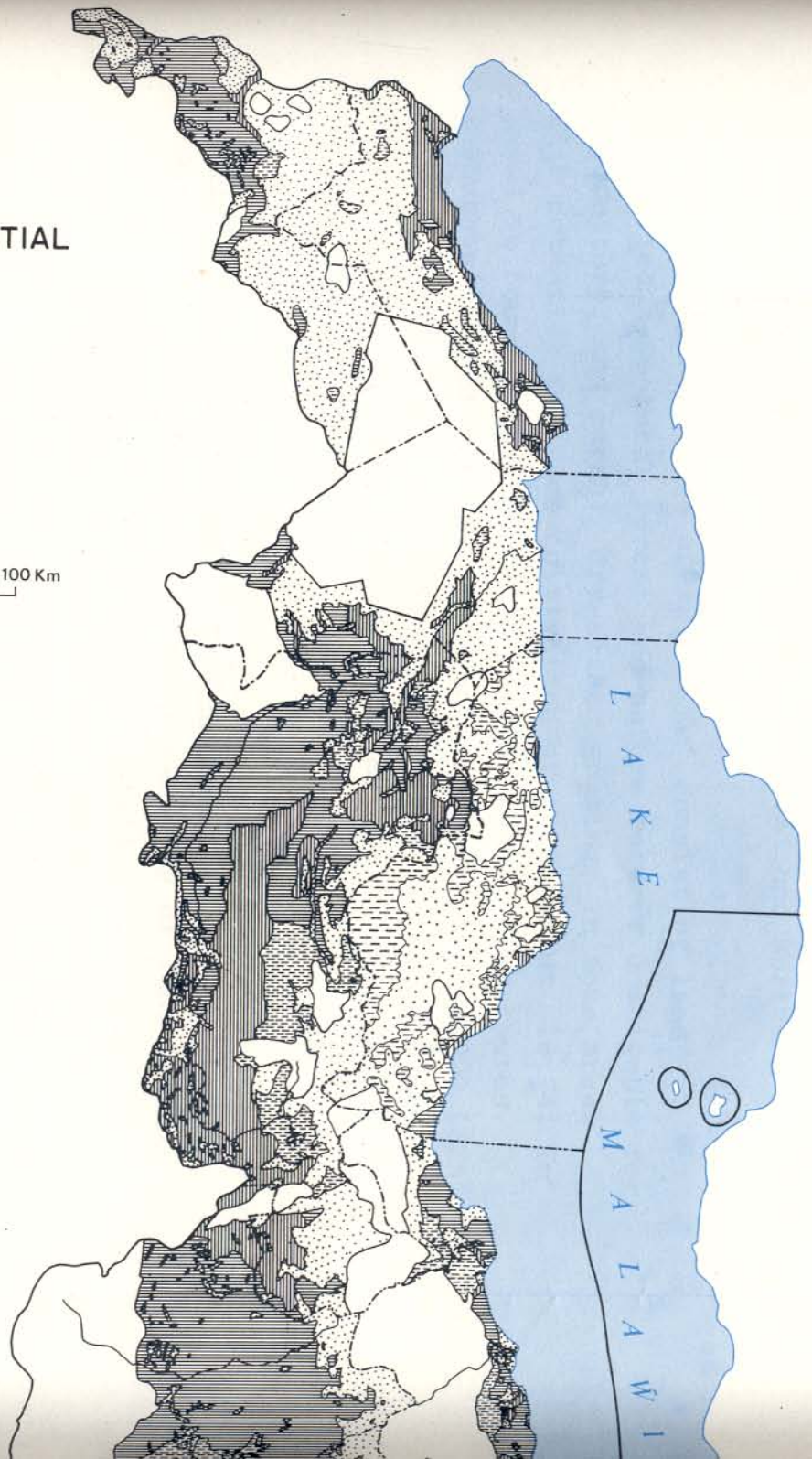
2.5 CONCLUSIONS AND IMPLICATIONS

The results of the projection indicate that by year 2000 the population of Malawi will be between 10 and 12 million persons, representing the low and high levels of the future population respectively. The demographic considerations in this study have implications for socio-economic development and the preparation of the National Physical Development Plan. In preparing such a plan it is a wise practice to consider the higher of the two levels of population growth presented in this study report, in order to ensure that the plan is flexible and capable of accommodating a higher growth or demand for land for various facilities, service and general uses.

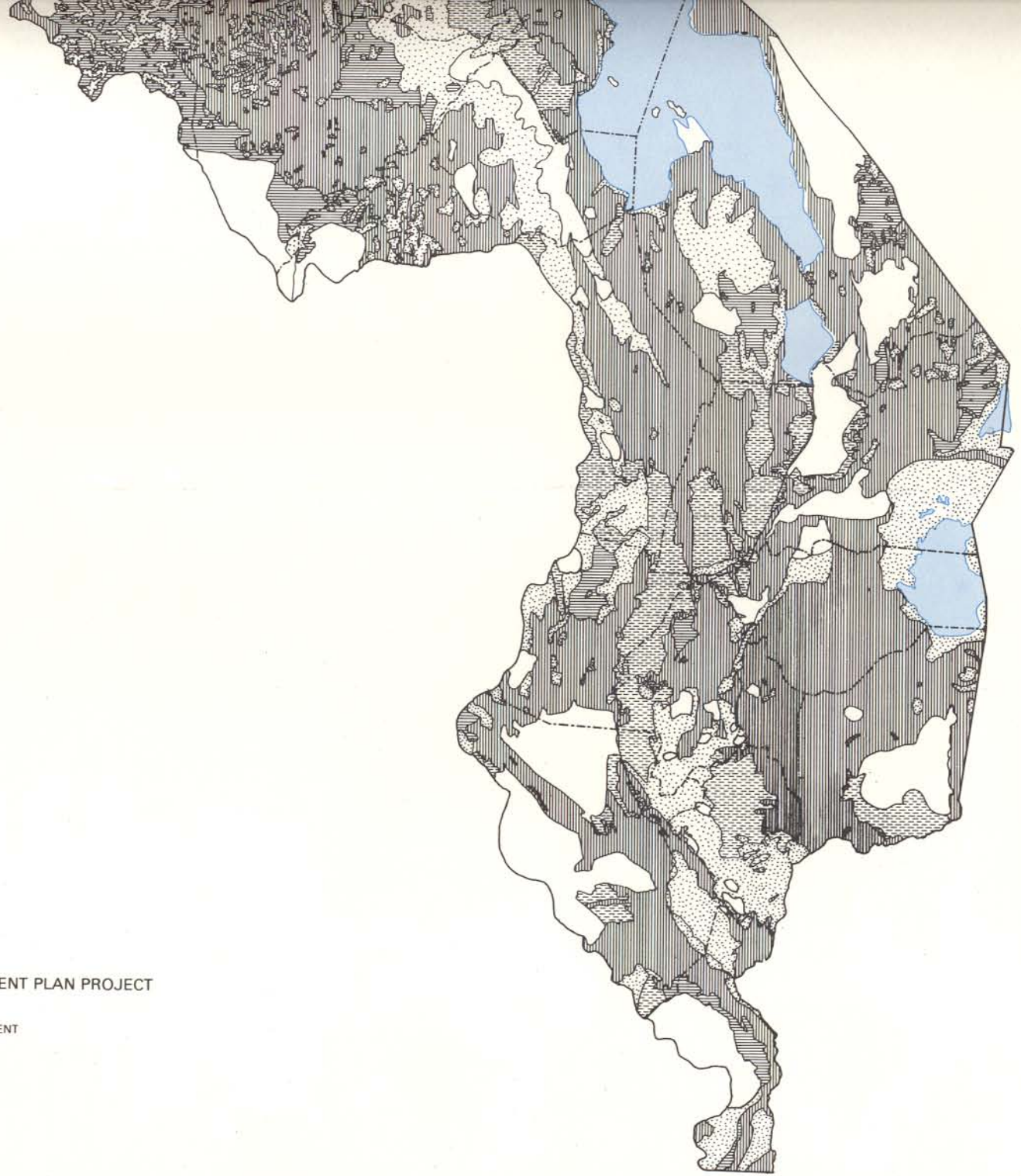
AGRICULTURAL POTENTIAL

Map 3.2-2






MALAWI



HIGH POTENTIAL

MEDIUM POTENTIAL

LOW POTENTIAL

MARGINAL/UNSUITABLE

PROTECTED LANDS NOT AVAILABLE FOR AGRICULTURE

INTERNATIONAL BOUNDARY

REGIONAL BOUNDARY

DISTRICT BOUNDARY

NATIONAL PHYSICAL DEVELOPMENT PLAN PROJECT

OFFICE OF THE PRESIDENT AND CABINET
TOWN AND COUNTRY PLANNING DEPARTMENT
UNDP/UNCHS PROJECT MW/79/012

Printed by the Department of Surveys, Blantyre 1987

The following are the implications for the preparation of the National Physical Development Plan:

(1) The need to plan for the most desirable distribution of land for subsistence farming among the growing rural population, taking into consideration the population carrying capacity of the available farmland.

(2) The need to formulate a strategy for the distribution of the future population taking into consideration the existing pattern of settlements, the hierarchy of service and growth centres, and the population threshold and economies of scale required to support service and investments in towns and villages.

(3) The need to distribute population in relation to the location of natural resources.

(4) The need to minimize or forestall future growth ressures through appropriate planning measures.

(5) The need to consider the future population of school-going age and translate the ensuing school enrolments into requirements for school facilities and land, and to prepare a long-term school building programme.

(6) The need to consider the future maternity population and other age groups prepare a long-term programme for the development of health facilities.

(7) The need to determine the requirements of the future population for other physical and social infrastructure.

Other implications of the future population growth are dealt with in parts 4 (Urbanization), 5 (Land Use), 7 (infrastructure facilities) and 8 (Energy).

3. THE ECONOMY

3.1 EMPLOYMENT

3.1.1 INTRODUCTION

The spatial distribution of population and human settlements pattern are dictated, to some extent by employment opportunities in the country. In other words, employment opportunities generate internal migration of people and affect the general land use structure. A study of employment trends, therefore, is of interest to physical planning.

3.1.2 EXISTING EMPLOYMENT STRUCTURE

The employment situation in Malawi at the time of the 1977 Census can be well appreciated if it is related to the economic status of the population 10 years and over, that is, those persons who were enumerated as being old enough to work at that time.

According to the 1977 Census as shown in Table 3.1.1 there were 3,642,000 persons aged 10 years and over, representing 65.7% of the total national population of 5,547,400 . (Table 3.1.1). Of the population 10 years and over, 2,288,300 persons or 63% constituted the labour force. That is persons who were active or could work and earn income. Out of the same population 10 years and over, 1,353,700 persons or 37% were in-active, including students, dependent people, the sick and home-keepers. The Northern Region had the highest percentage of inactive labour force, that is 54.9% compared with 32.7% for the Central Region, 36.4% for the Southern Region and 37.2% for the country as a whole. Of the 2,288,300 active persons (labour force) 2,241,700 persons or 98% were employed while 46,600 or 2.0% were un-employed. (Table 3.1.1).

Table 3.1.1
Economic Status of Population 10 years and over - 1977

Region	Total Population	Population 10 Years and Above						
		Total Number	Economically Active					Economically Inactive (Number)
			Number	Employed		Unemployed		
				Number	Percent	Number	Percent	
Northern	648,900	427,800	143,100	184,400	95.5	8,700	4.5	234,700
Central	2,143,700	1,398,000	940,700	930,400	98.9	10,300	1.1	457,300
Southern	2,754,900	1,816,200	1,154,500	1,126,900	97.6	27,600	2.4	661,700
Malawi	**5,547,500**	**3,642,000**	**2,288,300**	**2,241,700**	**98.0**	**46,600**	**2.0**	**1,353,700**

Source: NPDP (Computed from Malawi Population Census, 1977, Vol. 2)

Sectoral Structure:

Table 3.1.2 shows the sectoral employment structure in 1977. Agriculture alone employed 1,932,400 or 86.2% of the total 2,241,700 employed persons, while manufacturing employed 84,600 or 3.8%, utilities 4,200 or 0.2%, construction 47,400 or 2%, distribution 62,600 or 2.8%, transport 23,400 or 1%, finance 4,500 or 0.2% and services 82,500 or 3.7%. Of the agricultural employment 1,723,500 persons or 89.2% were smallholders or subsistence farmers (Mlimi).

Table 3.1.2
Sectoral Employment Structure - 1977

Sub-sector	Employment	Percent Employment
Agriculture	1,932,400	86.2
Manufacturing	84,600	3.8
Utilities	4,200	0.2
Construction	47,400	2.0
Distribution	62,600	2.8
Transportation	23,400	1.0
Finance	4,500	0.2
Services	82,500	3.7
Total	**2,241,700**	**100.0**

Source: NPDP (Computed from Malawi Population Census, 1977, Vol. 2)

Regional Structure

Regionally, the North had the least of the total employment, that is 184,400 or 8.2% while the Central and the Southern Regions had 930,400 (41.5%) and 1,126,900 (50.3%) respectively (Table 3.1.3). In terms of employment in the primary sector (i.e. agriculture), the Northern Region had 156,000 persons or 8.1%, Central Region 843,900 or 43.7% and Southern Region 932,500 or 48.2%. Both the secondary and tertiary sectoral employment as shown in Table 3.1.3, were also dominated by the Southern Region, followed by the Central and Northern Regions.

Table 3.1.3
Regional Employment Structure - 1977
Employment

Region	Total		Primary Sector		Secondary Sector		Tertiary Sector	
	No.	%	No.	%	No.	%	No.	%
Northern	184,400	8.2	156,000	8.1	12,500	9.2	15,900	9.2
Central	930,400	41.5	843,900	43.7	35,700	26.2	50,800	29.3
Southern	1,126,900	50.3	932,500	48.2	88,000	64.6	106,400	61.5
Malawi	**2,241,700**	**100.0**	**1,932,400**	**100.0**	**136,200**	**100.0**	**173,100**	**100.0**

Source: NPDP (Computed from Malawi Population Census, 1977, Vol. 2)

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The Central Region was the most agricultural region with 91% of its total employment being agricultural compared with 85% for the Northern Region, 83% for the Southern Region and 86% for the country as a whole. Conversely, the Southern Region was the most non-agricultural, thus reflecting the Region's higher level of industrialization and urbanization (Table 3.1.4).

Table 3.1.4
Agricultural Employment as a Percent of Total Employment within Regions — 1977

Region	Total		Employment Agricultural		Non-Agricultural	
	No.	%	No.	%	No.	%
Northern	184,400	100	156,000	85	28,400	15
Central	930,400	100	843,900	91	86,500	9
Southern	1,126,900	100	932,500	83	194,400	17
Malawi	**2,241,700**	**100**	**1,932,400**	**86**	**309,300**	**14**

Source: NPDP (Computed from Malawi Population Census, 1977, Vol. 2)

District Structure and Labour Participation

Table 3.1.5 and map 3.1.1 show the 1977 district employment structure and labour participation. (That is the number of active persons who were actually working). It can be seen from these tables that in 1977 only Blantyre District had more than half of its workforce (53.6%) in non-agricultural activities. All other districts in the country, except Rumphi District (21.3%), had less than one-fifth of their employment in non-agricultural activities, thus emphasizing the predominant role of agriculture.

Urban-Rural Structure:

Table 3.1.6a shows the urban and rural employment structure in the country. It is apparent from the Table that in 1977 the Southern Region had the greatest share of both the urban (145,800 or 62.9%) and rural (981,100 or 48.8%) employment. The rest of urban employment was divided between the other regions as follows: the Central Region 64,800 or 27.9% and the Northern region 21,300 or 9.2%. Of the remaining rural employment, the Central Region had 865,600 or 43.1% while the Northern Region absorbed 163,100 or 8.1%

Table 3.1.6a
Urban and Rural Employment Structure by Region — 1977

Region	Employment					
	Total		Urban		Rural	
	No.	%	No.	%	No.	%
Northern	184,400	8.2	21,300	9.2	163,100	8.1
Central	930,400	41.5	64,800	27.9	865,600	43.1
Southern	1,126,900	52.3	145,800	62.9	981,100	48.8
Malawi	**2,241,700**	**100.0**	**231,900**	**100.0**	**2,009,800**	**100.0**

Source: NPDP computation from 1977 Population Census Vol.2

Note (1) 1977 urban employment computed from 1977 Population Census Report Vol. 2. The 1977 Population Census Report shows urban employment by worker's place of residence instead of place of work. This approach made rural non-agricultural workers, more than urban non-agricultural because of the NSO definition of "urban" which is different from the NPDP's definition (See B.S.R. on Urbanization). Another reason is for the large rural non-agricultural employment. The commuters from the rural areas, e.g. from Chiradzulu working in Blantyre. To determine urban employment by place of work all non-agricultural employment was reduced by 1/4 to reflect the rural portion of the overall non-agricultural employment. This fraction was arrived at through successive calculations.

Table 3.1.5:

Employment Structure & Labour Participation by Region/District - 1977

District	Total Population	Population 10 years and over	Labour Force	Total Employment	Agric. Employment		Non-Agric. Employment		Labour Participation Rate
					No	% of Total Employment	No	% of Total Employment	
NORTHERN REGION									
Chitipa	73,300	46,000	21,200	20,900	19,200	91.9	1,700	8.1	0.99
Karonga	106,900	70,100	31,000	30,400	25,400	83.6	5,000	16.4	0.98
Nkhata Bay	105,800	70,900	31,400	26,200	21,500	82.1	4,700	17.9	0.83
Rumphi	62,500	40,800	18,600	18,300	14,400	78.7	3,900	21.3	0.98
Mzimba	301,400	200,000	90,900	88,600	75,500	85.2	13,100	14.8	0.97
Tot (Region)	**648,900**	**427,800**	**193,100**	**184,400**	**156,000**	**84.6**	**28,400**	**15.4**	**0.95**
CENTRAL REGION									
Kasungu	194,400	130,100	87,700	86,200	77,500	89.9	8,700	10.1	0.98
Nkhotakota	94,400	61,300	34,700	33,700	28,400	84.3	5,300	15.7	0.97
Ntchisi	87,400	56,800	41,500	41,500	40,200	96.9	1,300	3.7	0.99
Dowa	247,600	160,600	107,900	107,300	102,500	95.5	4,800	4.5	0.99
Salima	132,300	86,400	65,600	65,200	56,200	86.2	9,000	13.8	0.99
Lilongwe	704,100	458,800	296,800	293,700	253,400	86.2	40,300	13.8	0.99
Mchinji	158,800	104,000	78,200	78,000	73,900	94.7	4,100	5.3	0.99
Dedza	298,200	189,300	136,700	135,600	129,000	95.1	6,600	4.9	0.99
Ntcheu	226,500	150,600	91,500	89,300	82,900	92.8	6,400	7.2	0.99
Tot (Region)	**2,143,700**	**1,398,000**	**940,700**	**930,400**	**843,900**	**90.7**	**86,500**	**9.3**	**0.99**
SOUTHERN REGION									
Mangochi	302,300	197,600	122,100	117,000	102,800	87.9	14,200	12.1	0.96
Machinga	341,400	220,900	152,400	149,900	139,100	92.8	10,800	7.2	0.98
Zomba	353,300	238,900	140,900	136,500	112,200	82.2	24,300	17.8	0.97
Chiradzulu	176,200	118,200	69,300	67,900	54,500	80.3	13,500	19.7	0.98
Blantyre	408,500	277,000	149,100	143,600	66,600	46.4	77,000	53.6	0.96
Mwanza	71,400	46,800	36,400	36,400	34,200	94.0	2,200	6.0	0.99
Thyolo	322,000	209,800	134,400	132,100	112,200	84.9	19,900	15.1	0.98
Mulanje	447,500	311,100	196,800	191,600	171,600	89.6	20,000	10.4	0.97
Chikwawa	194,400	125,500	97,600	96,600	88,400	91.5	8,300	8.5	0.99
Nsanje	108,800	70,400	55,400	55,300	51,000	92.2	4,300	7.8	0.99
Tot (Region)	**2,755,800**	**1,816,200**	**1,154,500**	**1,126,900**	**932,500**	**82.7**	**194,400**	**17.3**	**0.98**

Source: Malawi Population Census 1977, Vol. 2 - National Statistical Office

(1) Labour Force is equivalent to the Economically active population 10 yrs. and over

(2) Labour Participation Rate is the ratio between employment and Labour Force.

DISTRICT NON-AGRICULTURAL EMPLOYMENT AS PERCENT OF TOTAL EMPLOYMENT 1977

MAP 3.1

Km 20 0 20 40 60 80 100 Km

OVER 30%

20-30%

10-20%

LESS THAN 10%

NATIONAL BOUNDARY

DISTRICT BOUNDARY

NATIONAL PHYSICAL DEVELOPMENT PLAN STUDY :MALAWI

Office of The President and Cabinet
Town And Country Planning Department
UNCHS/UNDP Project

Printed by the Department of Surveys, Blantyre 1987

In terms of rural urban composition of employment within regions, the Southern Region had the largest proportion of urban employment that is, 12.9% compared with 11.6% for the Nothern Region, 7.0% for the Central Region and 10.3% for the country as a whole. Conversely, the Central Region had the largest proportion of rural employment, that is 93.o% compared with 88.4% for the Northern region, 87.1% for the Southern Region and 87.7% national average. See Table 3.1.6b

Table 3.1.6b
Rural — Urban Composition of Employment within Regions — 1977

Region	Employment					
	Total		Urban		Rural	
	No.	%	No.	%	No.	%
Northern	184,400	100.0	21,300	11.6	163,100	88.4
Central	930,400	100.0	64,800	7.0	865,600	93.0
Southern	1,126,900	100.0	145,800	12.9	981,100	87.1
Malawi	**2,241,700**	**100.0**	**231,900**	**10.3**	**2,009,800**	**89.7**

Source: NPDP (Computed from 1977 Population Census Vol. 2).

3.1.3 TRENDS IN FORMAL SECTOR EMPLOYMENT : 1977-1983

Since the 1977 Population Census, there have been about as many persons working in the formal (paid employment) agricultural sector as in the formal non-agricultural sector. (Table 3.1.7). In 1977, 154,700 persons were in paid agricultural employment especially the estates, representing 50.1% of the total formal sector employment of 308,900. Employment in the formal non-agricultural sector was about the same, that is 154,200 or 49.9%. In 1980, however, there was a slight change. The non-agricultural sectoral employment had increased to 186,200 or 50.7% of the total formal sector employment of 367,300 as against agriculture's share of 181,100 or 49.3%.

Table 3.1.7
Trends in Formal Sector Employment Structure 1977 — 1983 [1/]

Sector	Employment											
	1977		1978		1979		1980		1982		1983	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Agricultural	154,700	50.1	169,000	49.9	178,800	50.8	181,100	49.3	157,200	45.7	197,200	50.9
Non-Agricultural	154,200	49.9	169,900	50.1	173,500	49.2	186,200	50.7	186,900	54.3	190,300	49.1
Total	**308,900**	**100.0**	**338,900**	**100.0**	**352,300**	**100.0**	**367,300**	**100.0**	**344,100**	**100**	**387,500**	**100.0**

Source: Economic Reports: 1979-85 DEPD/OPC

([1/] Formal Employment means paid employment).

Total formal sector employment showed a cumualative growth over the period 1977-83, though not without minor periodic fluctuations. As can be seen from Table 3.1.8, the total formal sector employment registered an overall increase of 25.4% over the period. Agricultural activities registered a higher growth rate of 27.5% compared with the non-agricultural activities, which showed an increase of 23.4%

Table 3.1.8
Formal Sector Employment Growth 1977 — 1983

Sector	Employment													
	1977	1978		1979		1980		1981		1982		1983		
	No.	No.	% Increase 77-78	No.	% Increase 78-79	No.	% Increase 79-80	No.	% Increase 80-81	No.	% Increase 81-82	No.	% Increase 82-83	% Increase 77-83
Agricultural	154,700	169,000	9.2	178,800	5.8	181,100	1.3	157,100	-13.3	157,200	0.06	197,200	25.4	27.5
Non-Agricultural	154,200	169,900	10.2	173,500	2.1	186,200	7.3	170,400	-8.5	186,900	9.7	190,300	1.8	23.4
Total	308,900	338,900	9.7	352,300	4.0	367,300	4.3	327,500	-10.9	344,100	5.1	387,500	12.6	25.4

Source: NPDP (Computed from Table 7)

3.1.4 FUTURE EMPLOYMENT : 2000

Total employment is projected to increase from 2,241,700 in 1977 to 4,783,300 in 2000. See Appendix 3.1.1: Methodology. Under medium economic growth assumptions, the non-agricultural employment is estimated to increase from 309,300 in 1977 to 971,100 in 2000, while under high (5.8%) and low (3.9%) economic growth assumtions the non-agricultural employment will increase to 1,131,200 and 745,700 respectively.

Agricultural employment is projected to be lower under medium economic growth assumptions than under high economic growth assumptions and projected agricultural employment will be lower under both high and medium economic growth assumptions than under low economic growth assumptions because as the economy improves less people will be in agriculture which is dominated by subsistence/smallholder farming. Thus, whereas agricultural employment in the Year 2000 will be 3,652,100 and 3,821,200 under high and medium economic growth assumptions respectively, it is expected to be 4,037,600 under low economic grow assumptions.

Changes are expected to take place in the sectoral and spatial employment structure from 1977 to Year 2000. Only the changes under the medium economic growth assumptions are described here for the sake of brevity and considering that the changes that will take place under the high and low economic growth assumptions will follow a similar pattern as changes under the medium growth assumptions. Under the medium growth assumptions the share of the non-agricultural employment will increase from 13.8% of the total employment in 1977 to 20.3% in Year 2000(Table 3.1.9). Conversely, the share of the agricultural employment will decrease from 86% in 1977 to 79.7% in Year 2000. Thus there will be a shift of some persons from subsistence/smallholder agriculture to non-agricultural activities.

Table 3.1.9
Sectoral Employment Structure 1977 & 2000

Sector	Employment			
	1977		2000	
	No.	% Share	No.	% Share
Agricultural	1,932,400	86.2	3,812,200	79.7
Non-Agricultural	309,300	13.8	971,100	20.3
Total	**2,241,700**	**100.0**	**4,783,300**	**100.0**

Source: NPDP (Computed from 1977 Pop. Census Vol. 2)

Regionally, under the medium economic growth assumptions, the Southern Region will continue to have the highest shares of the country's total employment in both agricultural and non-agricultural activities in the Year 2000, followed by the central and Northern Regions, thus reflecting their respective labour force strengths. Whereas the Southern Region will have 1,839,600 or 48.2% of the total agricultural employment, the Central Region will have 1,664,800 or 43.7% and the Northern Region, 307,800 or 8.1%. With respect to non-agricultural employment, the shares will be: Southern Region 610,400 (62.8%), Central Region 271,500 (28.0%) and the Northern Region 89,200 (9.2%) (Table 3.1.10)

Table 3.1.10
Regional Employment Structure — 2000

Region	Employment					
	Agricultural		Non-Agricultural		Total	
	No.	% Share	No.	% Share	No.	% Share
Northern	307,800	8.1	89,200	9.2	397,000	8.3
Central	1,664,800	43.7	271,500	28.0	1,936,300	40.5
Southern	1,839,600	48.2	610,400	62.8	2,450,000	51.2
Malawi	**3,812,200**	**100.0**	**971,100**	**100.0**	**4,783,300**	**100.0**

Source: NPDP (Computed from 1977 Population Census Vol. 2)

As shown in Table 3.1.11. the Central Region will continue to be the most agricultural region with 86% of its total employment in agriculture by Year 2000. The Southern Region will continue to lead in non-agricultural employment with 24.9% of its projected employment in non-agricultural activities, followed by the Northern and Central Regions with 22.4% and 14.0% respectively.

Table 3.1.11
Employment Structure within Regions - 2000

Region	Employment					
	Agricultural		Non-Agricultural		Total	
	No.	% Share	No.	% Share	No.	% Share
Northern	307,800	77.6	89,200	22.4	397,000	100
Central	1,664,800	86.0	271,500	14.0	1,936,300	100
Southern	1,839,600	75.1	610,400	24.9	2,450,000	100
Malawi	**3,812,200**	**79.7**	**971,100**	**20.3**	**4,783,300**	**100**

Source: (Computed from 1977 Population Census Vol. 2)

Table 3.1.12 indicates that under the medium growth assumptions urban employment will increase from 231,900 in 1977 to 728,100 in Year 2000, while rural employment will grow from 2009,300 in 1977 to 4,054,900 in year 2000. The urban employment share of the total employment will increase from 10.4% in 1977 to 15.3% in 2000. Figure 3.1 reflects the expected growth in the economy and some movement of people from subsistence economy to urban-type jobs. Conversely, rural employment, based on the same expected growth in the economy, will decline from 89.6% in 1977 to 84.7% by Year 2000.

FIGURE 3.1
1977–2000 EMPLOYMENT GROWTH BASED ON HIGH, MEDIUM AND LOW ELASTICITY ASSUMPTIONS

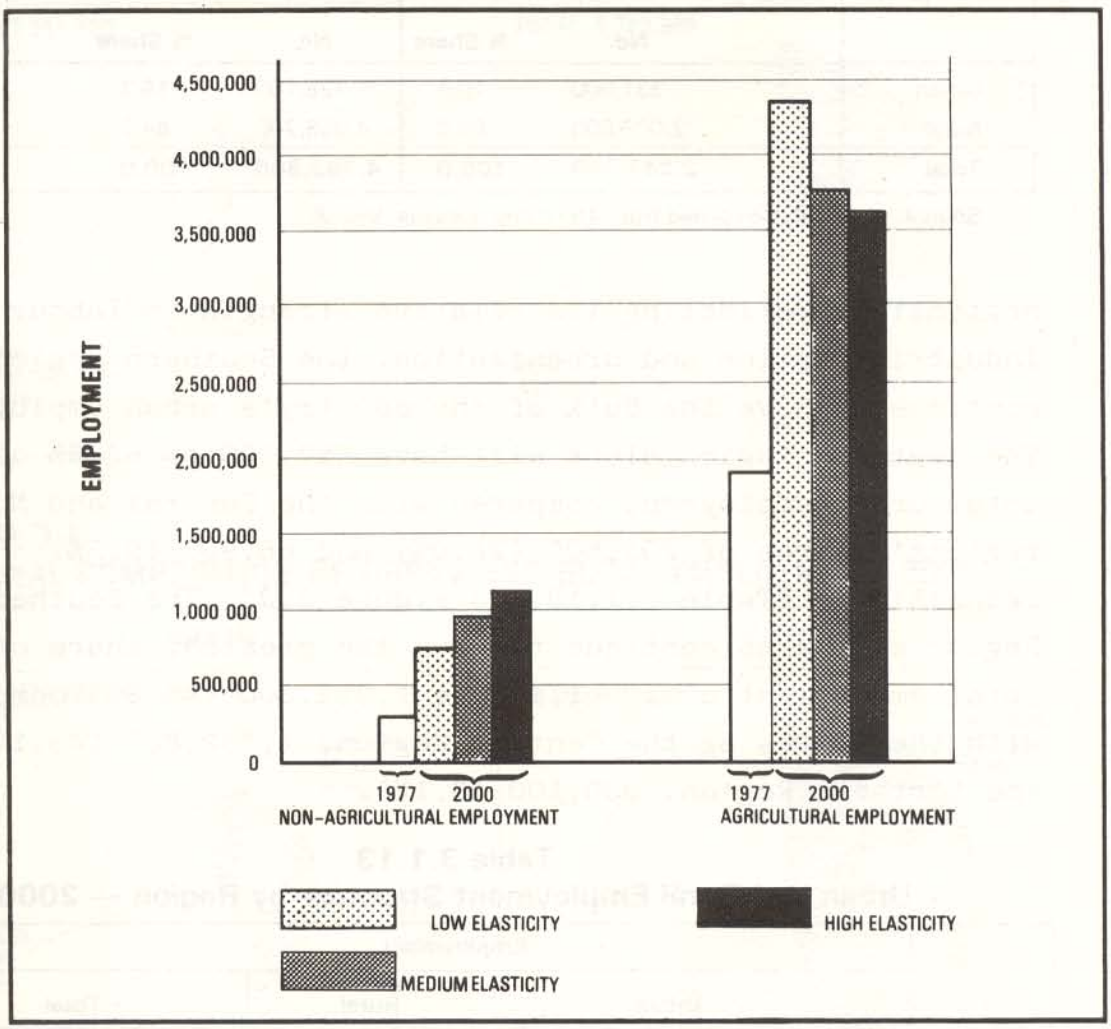

Table 3.1.12
Urban & Rural Employment Structure 1977 & 2000

Sector	Employment			
	1977		2000	
	No.	% Share	No.	% Share
Urban	231,900	10.4	728,100	15.3
Rural	2,009,800	89.6	4,055,200	84.7
Total	**2,241,700**	**100.0**	**4,783,300**	**100.0**

Source: NPDP (Computed from 1977 Pop. Census, Vol. 2)

Regionally, reflecting its relative strength in labour force, industrialization and urbanization, the Southern Region will continue to have the bulk of the country's urban employment. The southern Region alone will have 457,700 or 62.8% of the total urban employment compared with the Central and Northern regions' shares of 203,500 (28.0%) and 66,900 (9.2%) respectively (Table 3.1.13 and Figure 3.2) The Southern Region will also continue to have the greatest share of the rural employment as it will have 1,992,300 (48.8%) compared with the shares of the Central Region, 1,732,800 (43.1%) and the Northern Region, 330,100 (8.1%).

Table 3.1.13
Urban and Rural Employment Structure by Region — 2000

Region	Employment					
	Urban		Rural		Total	
	No.	% Share	No.	% Share	No.	% Share
Northern	66,900	9.2	330,100	8.1	397,000	8.3
Central	203,500	28.0	1,732,800	43.1	1,936,300	40.7
Southern	457,700	62.8	1,992,300	48.8	2,450,000	51.0
Malawi	**728,100**	**100.0**	**4,055,200**	**100.0**	**4,783,300**	**100.0**

Source: NPDP (Computed from 1977 Pop. Census Vol. 2)

Table 3.1.14 and Figure 3.3. show the urban/rural employment within regions. The Southern Region's employment will continue to be the most urban as it will have 18.8% of its employment in the urban areas compared with 16.9% and 10.4% for Northern and Central Regions respectively. On the other hand, the Central Region's employment will be the most rural, 89.6%, compared with 83.1% for the Northern Region and 81.2% for the Southern Region.

FIGURE 3.2
RURAL AND URBAN EMPLOYMENT STRUCTURE: 1977 AND 2000

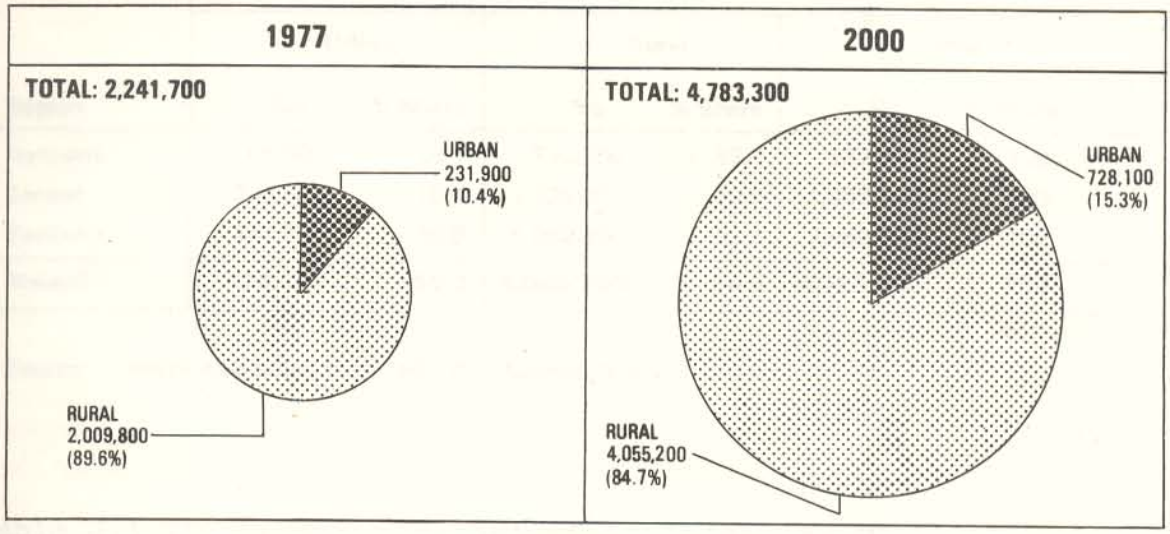

FIGURE 3.3
REGIONAL COMPOSITION OF URBAN AND RURAL EMPLOYMENT: 2000

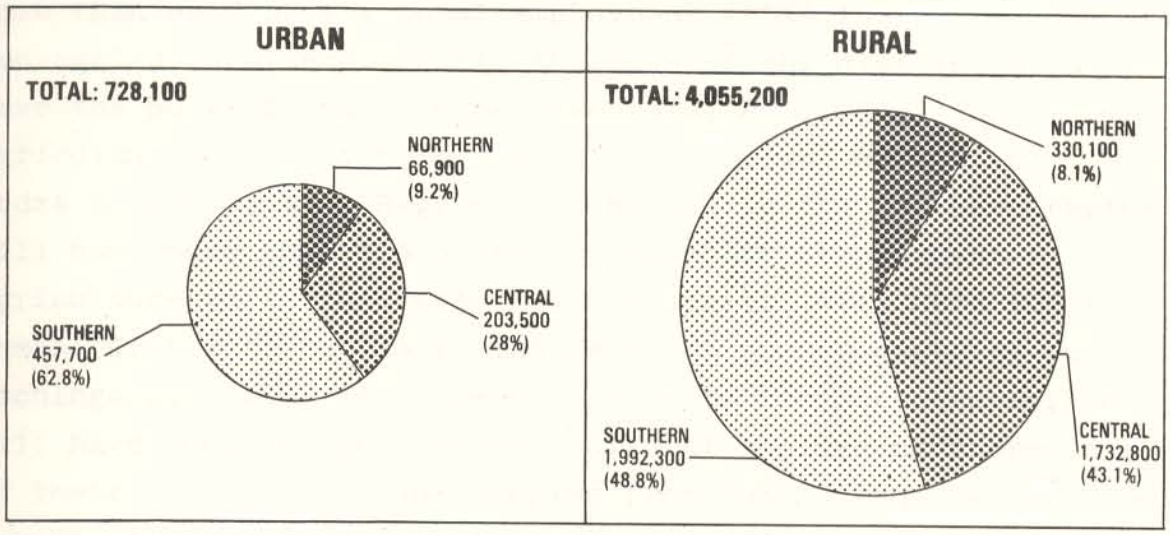

FIGURE 3.4
REGION -SPECIFIC URBAN AND RURAL EMPLOYMENT: 2000

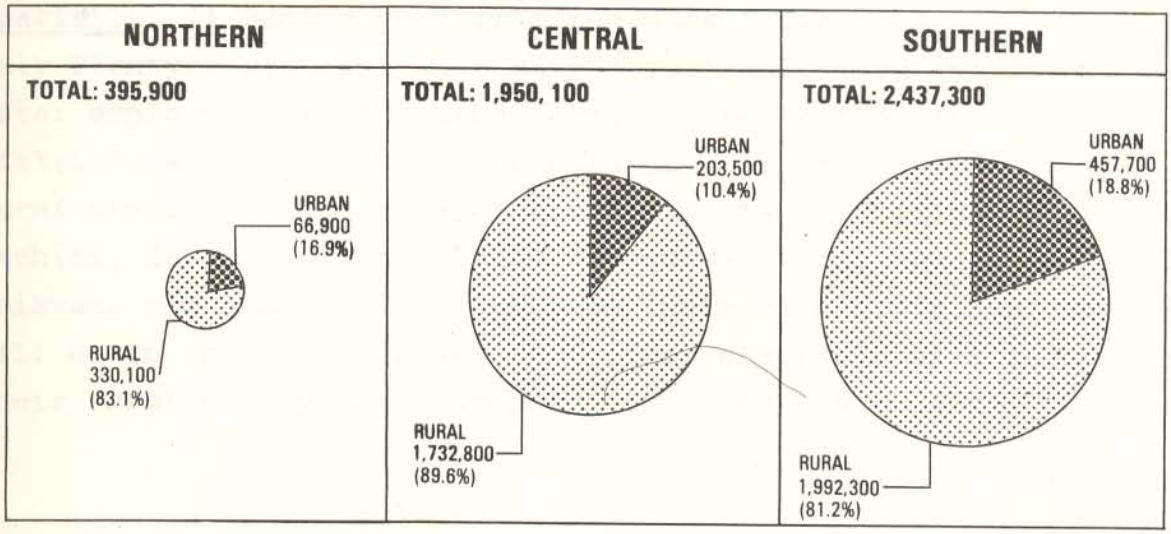

Table 3.1.14
Urban & Rural Employment Structure within Regions — 2000

Region	Employment					
	Urban		Rural		Total	
	No.	% Share	No.	% Share	No.	% Share
Northern	66,900	16.9	330,100	83.1	397,000	100
Central	203,500	10.4	1,732,800	89.6	1,936,300	100
Southern	457,700	18.8	1,992,300	81.2	2,450,000	100
Malawi	**728,100**	**15.2**	**4,055,200**	**84.8**	**4,783,300**	**100**

Source: NPDP (Computed from 1977 Pop. Census, Vol. 2)

Table 3.1.15 shows a forecast of sectoral and spatial employment by district Year 2000. It can be seen from the table that, sectorally only the Blantyre District will have more than half of its total employment (65%) in non-agricultural employment, the rest of the district will have the bulk of their respective total employment in agriculture. The Districts of Ntchisi, Dowa, Mchinji and Dedza in the Central Region, and Mwanza in the Southern region will have more than 90% of their respective employment in agriculture while the rest of the districts will have 70% (for Rumphi District) to 89% in the cases of Ntcheu district and Machinga District. All the districts in the Northern Region will have their respective agricultural employment shares out of their total employment ranging from 70% in the case of Rumphi District to 88% in the case of Chitipa district.

Spatially, it can be seen from the same table (3.1.15) that only Blantyre District will have almost half (49%) of its total employment in the urban areas. The rest of the districts will still have the bulk of their employment in the rural areas. In the case of the Districts of Chitipa, Ntchisi, Dowa, Mchinji, Dedza, Ntcheu,Machinga, Mwanza, Chikwawa and Nsanje 90% or more of their respective employment will be in the rural areas. All other districts will have their rural employment shares ranging from 77% to 89%.

Table 3.1.15
Employment Structure by District - 2000

District	Employment									
	Distribution by Productive Sector				Spatial Distribution				Total	
	Agric.	%	Non-Agric.	%	Urban	%	Rural	%	No.	%
Chitipa	37,800	88	5,300	12	4,000	9	39,100	91	43,100	100
Karonga	50,200	76	15,800	24	1,800	18	54,200	82	66,000	100
Nkhata Bay	42,500	74	14,800	26	11,200	20	66,100	80	57,300	100
Rumphi	28,400	70	12,200	30	9,200	23	31,400	77	40,600	100
Mzimba	148,900	78	41,100	22	30,700	16	159,300	84	190,000	100
N. Region	**307,800**	**78**	**89,200**	**22**	**66,900**	**17**	**330,100**	**83**	**397,000**	**100**
Kasungu	152,900	45	27,200	15	20,500	11	159,600	89	180,100	100
Nkhotakota	56,000	77	16,600	23	12,500	17	60,100	83	72,600	100
Ntchisi	79,300	95	4,100	5	3,100	4	80,300	96	83,400	100
Dowa	202,200	93	15,100	7	11,300	5	206,000	95	217,300	100
Salima	110,900	80	28,300	20	21,200	15	118,000	85	139,200	100
Lilongwe	499,800	80	126,500	20	94,800	15	531,500	85	626,300	100
Mchinji	145,800	92	12,900	8	9,600	6	149,100	94	158,700	100
Dedza	254,400	92	20,700	8	15,500	6	259,600	94	275,100	100
Ntcheu	163,500	89	20,100	11	15,000	8	168,600	92	183,600	100
C. Region	**1,664,800**	**86**	**271,500**	**14**	**203,500**	**11**	**1,732,800**	**89**	**1,936,300**	**100**
Mangochi	202,800	82	44,600	18	33,400	14	214,000	86	247,400	100
Machinga	274,400	89	33,900	11	25,400	8	282,900	92	308,300	100
Zomba	221,300	74	76,200	26	57,200	19	240,300	81	297,500	100
Chiradzulu	107,500	72	42,400	28	31,800	21	108,100	79	149,900	100
Blantyre	131,400	35	241,600	65	181,200	49	191,800	51	373,000	100
Mwanza	67,500	91	6,900	9	5,200	7	69,200	93	74,400	100
Thyolo	221,300	78	62,500	22	46,800	16	237,00	84	283,800	100
Mulanje	338,400	84	62,800	16	47,100	12	354,100	88	401,200	100
Chikwawa	174,400	87	26,000	13	19,500	10	180,900	90	200,400	100
Nsanje	100,600	88	13,500	12	10,100	9	104,00	91	114,100	100
S. Region	**1,839,600**	**75**	**610,400**	**25**	**457,700**	**19**	**1,992,300**	**81**	**2,450,000**	**100**
Malawi	3,812,200	80	971,100	20	728,100	15	4,055,200	85	4,783,300	100

3.1.5 Conclusion

The labour supply and employment forecast made in this study will provide a basis for the formulation of spatial strategies for population distribution, productive activities, human settlements and related infrastructure. Of course the NPDP will also take into consideration, the Government's policy to decentralize employment opportunities from the Southern Region to the Central and Northern Regions of the country.

3.2 AGRICULTURE

3.2.1 THE ROLE OF AGRICULTURE IN THE NATIONAL ECONOMY

Agriculture is the backbone of the economy of Malawi. Its contribution to the gross domestic product in 1980 was approximately 41%. The Agricultural Sector accounted for nearly 90% of the total labour force, and K140 million or 89% of the country's export earning in 1978. Between 1971 and 1978 the real annual growth rate of the sector was 3.5%. The estate subsector of agriculture was the major growth point, as real output increased by more than 20% between 1981 and 1982. This performance was due to increased production of tea and tobacco. The major export crops in the country include tobacco, tea, sugar and groundnuts.

Recently, 1983-1984, the agricultural sector experienced an increased average growth rate of 6.3% per annum. The smallholder agriculture accounted for the entire increase in agriculture value added as large-scale agricultural output became stagnant(1).

3.2.2 DEVELOPMENT POLICY

The Government's major policy statement on agricultural development since independence has always emphasized "a general rise in agricultural productivity to be achieved quickly and using the most economical means" so that the country can achieve its objectives of self-sufficiency in food staples and expansion of agricultural exports. This general policy applies to all aspects of agricultural activity, including animal husbandry, fishing and forestry(2).

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(1) Source: EPD, NSO, Treasury and Reserve Bank of Malawi in "Economic report, 1985"

(2) Statement of Development Policies 1971-80

Prior to the mid-seventies one of the major thrusts of public investments in smallholder agriculture was the introduction of intensive integrated development programmes which provided infrastructure (roads, market, water, health facilities), credit facilities, land improvements, extension services, etc. The programmes included: (i) the Lilongwe Land Development programme; (ii) the Shire Valley Agriculture Development Project; (iii) the Salima Lakeshore Rural Development Project; and (iv) the Karonga Rural Development Project.

In the mid-1970's, it was realized that such intensive and costly capital investments could not be replicated in other parts of the country within a reasonably short time. The Government consequently considered an alternative strategy which resulted in the introduction of the National Rural Development Programme (NRDP), a programme directed towards (a) providing agricultural services to a larger segment of the population but concentrating resources on the more immediately productive areas; (b) increasing the level of smallholder production through the provision of agricultural inputs and farm services including market and credit services; (c) preserving the natural resources through proper land use, protection and conservation measures; and (d) generally spreading the benefits of rural development more rapidly in order to raise the living standards of the smallholder farmer. The country is divided into eight Agricultural Development Divisions (ADD) for NRDP activities.

3.2.3 EXISTING PRODUCTIVE ACTIVITIES

Agricultural produce in Malawi includes a wide range of crops which are cultivated on small customary land holdings and large leasehold/freehold estates.

Smallholder Subsector

The smallholder subsector accounts for over 86% of all agricultural production, meets the country's demand for food staples (maize, beans, groundnuts, sweet potatoes and rice) and provides some surplus for export. Sometimes smallholders sell to private traders at the farm, local village markets, district council markets, and the markets in urban areas, and occasionally they dispose of their surplus through barter with other farmers.

A majority of smallholders also grow cash crops such as tea and tobacco on a commercial basis. Farming methods are extremely labour intensive. Most farmers work with simple hand tools such as hoes and axes. The use of work oxen and ox-carts is being encouraged. Except some irrigated rice in the Lakeshore and other lowland areas, all farming takes place under rainfed conditions.

Estates/Plantations

The estate sub-sector concentrates on tobacco, tea and sugar, which accounts for about 80% of all exports from that sub-sector. Cotton, macadamia nuts and coffee are also grown by the estate sector. The bulk of the country's agricultural exports come from this sub-sector, which has functioned as a principal earner of foreign exchange and stimulated Malawi's development. As of March 1980 the number of estates totalled 1,108. Of these 524 produced flue-cured tobacco; 556, Burley tobacco; 26, tea; and 2, sugar. Smallholders are also encouraged to grow flue-cured tobacco, tea and sugar under controlled schemes financed with commercial loans.

Paid Employment

Employment in the agricultural sector increased from 42,600 in 1969 to 148,300 in 1978 and in the process absorbed a great number of the returning migrant labour from South Africa and Zambia. This translates into an average annual growth rate of 15% per annum. Agricultural estates maintained permanent field labourers and hired additional labourers as needed during the peak periods. Some estates were farmed by tenants who sold their produce to the estate owner at a guaranteed price. The average number of paid employees in the sector in 1981 was 157,195. The total number of hired workers on the estates in 1983 was between 154,000 and 171,000. A sample survey of farm labourers on the various estates carried out in 1983 provided the following ratios of farm labourers per hectare of estate land under cultivation shown in Table 3.2.1. The information is useful as a guideline for long term planning purposes.

3.2.4 CASH CROPS AND THEIR GEOGRAPHICAL DISTRIBUTION

Map 3.2-1 shows predominant areas which produce export cash crops such as tobacco, tea, sugar, rice, groundnuts, coffee and cotton.

Tea

All the tea in Malawi is grown in the District of Mulanje, Thyolo and Nkhata Bay, because these districts have suitable conditions of soil, rain-fall and temperature. 98% of the green-leaf tea was grown on estates, most of which had been in operation for many years. The tea estates covered an area of about 18,000 hectares and the average size of an estate was about 700 hectares. The remaining tea (2%) was grown by smallholders under the Smallholders Tea Authority, which supervises planting

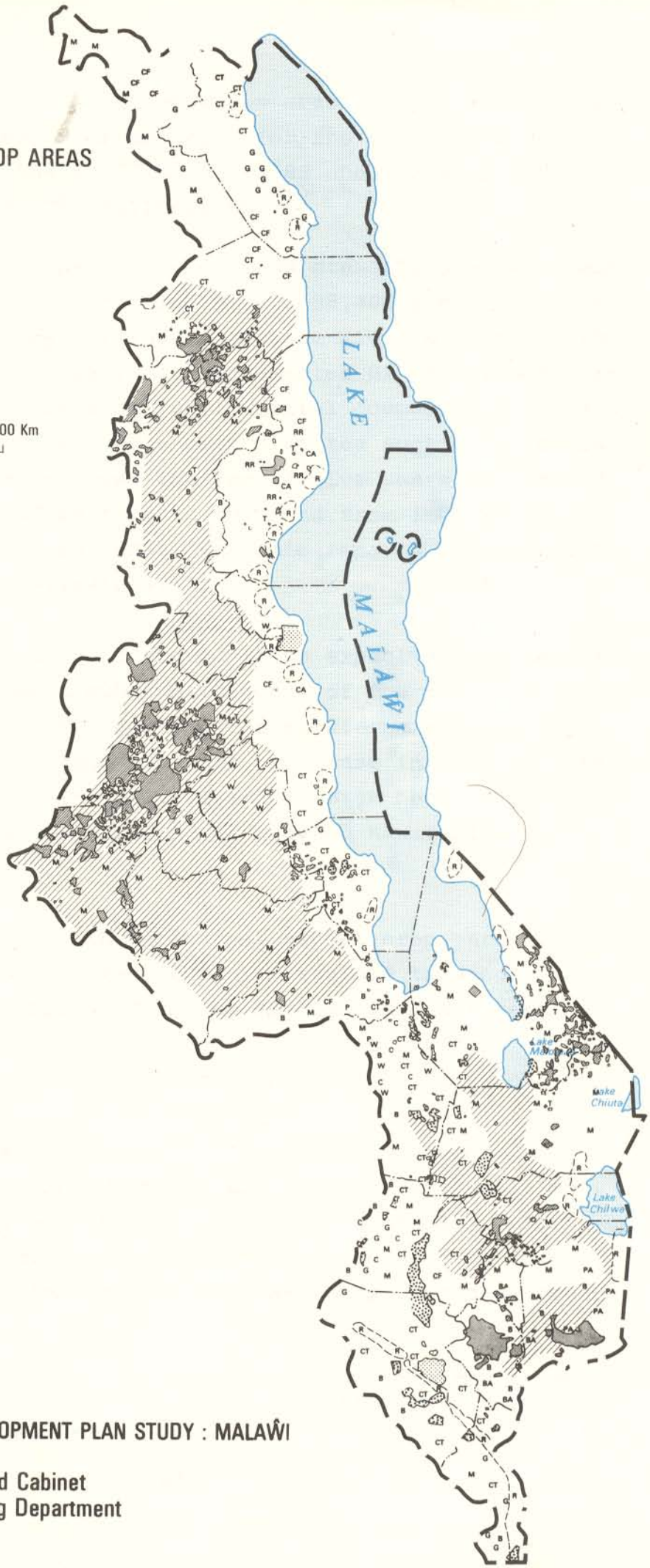
Table 3.2.1
Estate Crops: Labour-Hectarage Ratio

Estate Crop	Ratio of labourer per hectare
Tobacco (13 estates in the Districts of Mangochi Zomba, Kasungu and Mchinji)	One labourer per 0 .32 ha .
Tea (3 estates in the Districts of Thyolo and Mulanje)	One labourer per 0 .68 ha .
Sugar (2 estates: Sucoma and Dwangwa)	One labourer per 1 .54 ha .

PREDOMINANT CASH CROP AREAS

Map 3.2-1

Km 20 0 20 40 60 80 100 Km



Key

- Large Estates / Small Holdings — TOBACCO
- TEA
- SUGAR
- G — General Areas / Special Areas — GROUNDNUTS
- RICE
- CF — COFFEE
- GENERAL COTTON GROWING AREAS
- CT — SPECIFIC COTTON GROWING LOCATIONS
- M — MAIZE
- B — BEANS
- RR — RUBBER
- C — CITRUS FRUITS
- P — POTATOES
- BA — BANANAS
- PA — PINEAPPLES
- W — WHEAT
- CA — CASSAVA

NATIONAL PHYSICAL DEVELOPMENT PLAN STUDY : MALAWI

Office of The President and Cabinet
Town and Country Planning Department
UNCHS/UNDP Project

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and operations of growers, provides credit; pays established allowances, processes or arranges for the processing of the tea, and markets the product. In 1983 about 2347.6 hectares were planted by 4,806 smallholders.(1)

Tea production increased more or less steadily over the last ten years from 20,680 tons in 1972 to 38,480 tons in 1981 and its foreign currency earnings rose from K10.9 million in 1972 to K47.6 million in 1982. It represented 8% of all domestic exports or 19% of the total agricultural commodity exports (Economic Report 1983). The prices at tea auction sales in Limbe have also risen over the last twelve years from 54.99 t/kg in 1972 to 147.64 t/kg in 1977 and from 160.29 t/kg in 1983 to 298.39 t/kg in 1984. (Economic reports 1983 and 1985, Economic Planning Division).

From the prices indicated above, it is expected that tea will continue to provide a substantial part of the nation's foreign exchange earnings. However, as the estates are found in districts with high land pressure, increase in land hectarage will be difficult. The only district which has ample land for expansion is Nkhata Bay around Chombe and Kawalazi area.

Tobacco

Six kinds of tobacco, the principal export crop, are grown in Malawi; namely, flue-cured, burley - Western tobacco subdivided on the basis of curing methods into Northern Division dark-fired cured tobacco, Southern Division fire-cured tobacco, sun/air-cured and oriental tobacco.

The first two are grown on estates and smallholdings (Government established schemes and authorities) while the rest are grown by smallholder farmers on customary land. Tobacco is the smallholders' largest source of cash income. About 70,000 Malawian smallholders were registered as tobacco

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(1) Ministry of Agriculture: Guide to Agricultural production in Malawi. 1984-85

growers in 1983 though the number actually growing tobacco is probably higher. The crop is mainly grown in the Southern and Central Regions. Oriental and fire cured tobacco are grown in the Northern Region; that is the western part of Mzimba and Rumphi Districts and Chitipa District. The main areas in the Southern Region are the Districts of Machinga, Zomba, Blantyre and Chiradzulu. In the Central Region the main growing areas are Kasungu, Lilongwe, Mchinji, Dowa, Ntchisi and Dedza.

Sugar

Until 1970, Malawi was an importer of sugar. Following successful sugarcane trials in 1966-67 in the Shire Valley, Sucoma Estate was established in Chikwawa at Nchalo covering about 10,500 ha. A second sugar estate in the Dwangwa Delta (Nkhotakota District), started production in 1979. Total sugar production fell from 175 tons in 1983 to 150 in 1984, a decrease of 14.3%. Rail route problems affected sugar export(1).

These two estates produced 166,600 tons of sugar in 1981, of which two thirds were exported. Sugar exports amounted to K67 million, or one third of Malawi's total agricultural commodity exports (Economic Report 1983). In 1982 and 1983 the sugar industry, however, faced high transport costs, particularly, of sugar from Dwangwa, which costs K105 per ton to transport to Beira/Mozambique.

Cotton

Cotton is a traditional smallholder crop which is grown as a cash crop for export. About 100,000 smallholer farmers, especially in the Bwanje Valley and Lower Shire Valley, grew cotton on just over 64,000 ha. Salima, Mangochi, Chikwawa Districts and Balaka area were major cotton growing areas. Karonga, Nkhotakota, Mwanza, Blantyre, and Zomba Districts and

(1) A Guide to Agricultural Production, 1984-85. M.O.A.

Phalombe and the Henga Valley were also cotton growing areas. Smallholder cotton production sold to ADMARC in 1981 was 21,746 tons valued at K4,647,000, of which 67.5% was from the Southern Region, 30.5% from the Central Region and 2% from the Northern Region. ADMARC purchase of cotton in 1984 was 31,100 metric tons(1). Cotton is also grown on estates under special arrangements with David Whitehead and Sons Limited.

Groundnuts

Groundnuts covered 9.8 percent of the total area cultivated in 1981 in pure stands (improved and local sorts) and another 4.5% in mixed stands with maize. Basically, three types are grown: Chalimbana, the confectionery type; manipinter, the oil type; and malimba, an imported variety. The Chalimbana nut, an important export crop, contributed 16% of smallholders' foreign currency earnings and ranked fifth among Malawi's agricultural export commodities in terms of value (1977). Groundnuts are grown in all three regions, but a majority of the productive activities occur in the Central Region where groundnuts occupy 19.2% of the cultivated area. In the Northern Region, Mzimba, Karonga and Rumphi show significant productions.(2)

Rice

The production of rice, a minor crop in the 1960's expanded rapidly over the past decade owing to favourable domestic prices.

In 1981/82 rice occupied only 1.37% (33,152 ha) of the total area under cultivation. It was grown in the lakeshore Districts of Karonga, Nkhata Bay and Nkhotakota; and in the

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(1) Source : ADMARC

(2) M.O.A

marshes around Salima, Lake Chirwa and the Lower Shire Valley. In the District of Karonga where rice production was concentrated, rice fields occupied 33.2% of the cultivated land and was grown in the following areas under irrigated settlement schemes : Kaporo, Lufira, Wovwe and Hara.

Two improved rice varieties are grown in the country: faya and blue bonnet. Faya, which was mainly grown in Karonga District is a long season variety and therefore can not be double cropped under irrigation; and blue bonnet, a long grain rice of high quality type is grown under irrigation and can be cropped twice a year. About 80% of rice production in Malawi is rainfed. There are other local varieties for domestic consumption.

Coffee

Coffee is a minor crop grown by a few hundred smallholders on about 1,375 acres in mountainous area of the country: Misuku Hills (Chitipa District), Phoka and North Viphya (Rumphi District), south east Mzimba around Musese, area of Nkhata Bay, Dedza, Ntchisi, Thyolo and Thondwe/Njuli. It is also grown on estates in the Southern and Central Regions. There has been a steady decline in production over the past fifteen years. Production dropped from 154 tons of parchment in 1969 to 112 tons in 1982 with fluctuations over the years. With the establishment of the smallholder Coffee Authority, production is expected to increase in future.(1)

Maize

Maize, the principal staple crop in Malawi, is now considered as a foreign earner. ADMARC purchased 244,900 tons in 1983 and 296,400 tons in 1984, an increase of 21%. Maize contributed K49.3 million (11.7%) to domestic exports, putting it third place after tobacco and tea.(2) Maize is grown in all districts.

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(1) Source : A Guide to Agricultural Production, 1984-85 M.O.A.

(2) Source : Economic Report 1985 E.P.D., N.S.O., Treasury and Reserve Bank of Malawi.

Other Cash Crops

The following are also considered as cash crops, though not for the purpose of foreign exchange earnings:- cassava, banana, beans, pineapples, Irish potatoes,wheat, and citrus fruits. Bananas are mainly grown in three districts: Mulanje, Thyolo and Nkhata Bay; pineapples are grown in Mulanje and Thyolo; cassava and rubber in Nkhata Bay; Irish potatoes and wheat in Dedza and Ntcheu. Mention should also be made of citrus fruits. They are not grown on a large scale in the country, but the districts with the potential for the growing of these fruits are Mwanza and Ntchisi.

3.2.5 AGRICULTURAL/LAND POTENTIAL

The ability of Malawi to produce food, and the availability of arable land within the various districts for future smallholder agriculture depend on the following factors:

(a) land suitable for agriculture and land-carrying capacity.
(b) natural physical constraints
(c) future population growth and characteristics
(d) agricultural land use
(e) land use densities expressed in terms of persons per square kilometre of arable land;
(f) the proportion of non-farm or urban employment; and
(g) agricultural land management, farm practice and technology

This Section deals with (a) while other Sections deal with (b)-(f).

Land Suitability For Agriculture

Of a total land area of 94,274 Km^2 in the country, 29,278 Km^2 (31.0%) is classified as having a High Potential for agriculture; 13,559 Km^2 (14.4%) has Medium Potential; 9,019 Km^2 (9.6%) has Low Potential; and 42,418 Km^2 (45.0%) is marginal and unsuitable. Table 3.2.2 and Map 3.2.2 (See Appendix for classification methodology).

Table 3.2.2
Agricultural/Land Potential

District	Total Land Area Km²	High	Medium	Low	Marginal and Unsuitable
Chitipa	4,290	59	981	84	3,166
Karonga	3,355	780	166	127	2,282
Nkhata Bay	4,088	52	21	415	3,600
Rumphi	4,767	290	426	64	3,987
Mzimba	10,430	2,831	2,899	994	3,706
N. Region	**26,930**	**4,012**	**4,493**	**1,684**	**16,741**
Kasungu	7,878	370	3,251	573	3,684
Nkhotakota	4,259	207	643	732	2,677
Ntchisi	1,655	214	530	81	830
Dowa	2,998	1,232	368	636	762
Salima	2,239	1,189	-	480	570
Lilongwe	6,159	3,652	1,168	64	1,275
Mchinji	3,356	116	1,571	398	1,271
Dedza	3,624	1,497	119	16	1,992
Ntcheu	3,424	1,829	-	655	940
C. Region	**35,592**	**10,306**	**7,650**	**3,635**	**14,001**
Mangochi	6,272	2,925	610	191	2,546
Machinga	5,964	2,846	207	1,002	1,909
Zomba	2,580	1,805	-	170	605
Chiradzulu	767	713	-	-	54
Blantyre	2,012	660	88	617	647
Mwanza	2,295	1,053	211	357	674
Thyolo	1,715	332	-	586	797
Mulanje	3,450	2,173	-	327	950
Chikwawa	4,755	1,821	68	450	2,416
Nsanje	1,942	632	232	-	1,078
S. Region	**31,752**	**14,960**	**1,416**	**3,700**	**11,676**
Malawi	**94,274**	**29,278**	**13,559**	**9,019**	**42,418**

Of the 29,278 Km² of lands classified as having high potential for agriculture, the highest proportion is found in the Southern Region, 14,960 Km² (51%) particularly in the Districts of Mangochi, Machinga, Mulanje, Chikwawa, Zomba and Central Mwanza. The Central Region has 10,306 Km² (35%) predominantly in the Districts of Lilongwe, Ntcheu, Dedza, Dowa and Salima. The remaining land with high potential, 4,012 (14%) is found in the Northern region, mainly in the District of Mzimba.

Of the total land area of 13,559 Km^2 classIfied as having medium potential for agriculture, the highest proportion 7,650 Km^2, representing about 56%, is found in the Central Region, mainly in the Districts of Kasungu, Mchinji and Lilongwe. The Northern Region has 4,493 Km^2 (33%) mainly in the Districts of Mzimba and Chitipa; and the Southern Region has 1,416 Km^2 (11%) mainly in the Districts of Mangochi, Nsanje, Mwanza and Machinga.

Of the total land area of 9,010 Km^2 classified as having low potential for agriculture, the Southern Region has the highest proportion, 3,700 Km^2 (41%) mainly in Machinga District, followed by Central Region 3,635 Km^2 (40%) and Northern Region 1,684 Km^2 (19%).

The remaining land area of 42,418 Km^2 consist of land classified as natural forest and nature reserve unsuitable for agriculture; and marsh: dry-season grazing; in some areas with potential for rice cultivation of this amount 16,741 Km^2 (40%) is found in the Northern region, evenly distributed throughout the districts. The Central Region has 14,000 (33%) mainly in the Districts of Kasungu and Nkhotakota; and the Southern Region has 11,676 Km^2 (27%) mainly in the Districts of Mangochi and Chikwawa.

Land/Carrying Capacity And The Smallholder

Analysis of the population-carrying capacity of land indicates that the land can support a rural population of 11,906,276 persons. This number is more the projected rural population of 9,261,500 (Year 2000). See Table 3.2.3 and Table 2.4. in Section 2.5. No vacant lands will be available for by Year 2000 in the Districts of Thyolo,Mulanje, Zomba, Blantyre, Chiradzulu, Dedza, Ntchisi and Nkhata Bay. By contrast, large amounts of land will be available after the year 2000 in the Districts of Mzimba, Kasungu, Ntcheu, Mangochi, Mwanza, Chikwawa and Machinga.

The methodology employed in estimating the population carrying capacity of the land is described in Appendix 3.2.1

Table 3.2.3
Population Carrying Capacity of the Land, By District, Year:2000

District	Total Land Area Km² 1	High Agricultural Potential		Medium Agricultural Potential		Low Agricultural Potential		Marginal and Unsuitable Area Km² 8	Total Potential Population Rural 9
		Land Area Km² 2	Potential Population 3	Land Area Km² 4	Potential Population 5	Land Area Km² 6	Potential Population 7		
Chitipa	4,290	59	18,185	981	141,490	84	9,630	3,166	168,305
Karonga	3,355	780	240,411	166	23,942	127	13,048	2,282	277,401
Nkhata Bay	4,088	52	16,027	21	3,029	415	42,637	3,600	61,693
Rumphi	4,767	290	89,384	426	61,442	64	6,575	3,987	157,401
Mzimba	10,430	2,831	872,568	2,899	418,125	994	102,123	3,706	1,392,817
Northern R.	**26,930**	**4,012**	**1,236,575**	**4,493**	**648,029**	**1,684**	**173,014**	**16,741**	**2,057,618**
Kasungu	7,878	370	114,041	3,251	468,894	573	58,870	3,684	641,805
Nkhotakota	4,259	207	63,801	643	92,740	732	75,205	2,677	231,747
Ntchisi	1,655	214	65,959	530	76,442	81	8,322	830	150,723
Dowa	2,998	1,232	379,726	368	53,077	636	65,342	762	498,145
Salima	2,239	1,189	366,473	0	0	480	49,315	570	415,788
Lilongwe	6,159	3,652	1,125,616	1,168	168,462	64	6,575	1,275	1,300,653
Mchinji	3,356	116	35,753	1,571	226,587	398	40,890	1,271	303,230
Dedza	3,624	1,497	461,404	119	17,163	16	1,644	1,992	480,211
Ntcheu	3,424	1,829	563,733	0	0	655	67,295	940	631,027
Central R.	**35,592**	**10,306**	**3,176,507**	**7,650**	**1,103,365**	**3,635**	**373,459**	**14,001**	**4,653,331**
Mangochi	6,272	2,925	901,541	610	87,981	191	19,623	2,546	1,009,145
Machinga	5,964	2,846	887,192	207	29,856	1,002	102,945	1,909	1,009,993
Zomba	2,580	1,805	556,336	0	0	170	17,466	605	573,801
Chiradzulu	767	713	219,760	0	0	0	0	54	219,760
Blantyre	2,012	660	203,425	88	12,692	617	63,390	647	279,507
Mwanza	2,295	1,053	324,555	211	30,433	357	36,678	674	391,666
Thyolo	1,715	332	102,329	0	0	586	60,205	797	162,534
Mulanje	3,450	2,173	669,760	0	0	327	33,596	950	703,356
Chikwawa	4,755	1,821	561,267	68	9,808	450	46,233	2,416	617,308
Nsanje	1,942	632	194,795	232	33,462	0	0	1,078	228,256
Southern R.	**31,752**	**14,960**	**4,610,959**	**1,416**	**204,231**	**3,700**	**380,137**	**11,676**	**5,195,327**
Malawi	94,274	29,278	9,024,041	13,559	1,955,625	9,019	926,610	42,418	11,906,276

(1) Average plot size per family (4,5 persons) on high potential soils for subsistence food production (in ha) is 0.73
(2) Average plot size per family (4,5 persons) on medium potential soils for subsistence food production (in ha) is 1.66
(3) Average plot size per family (4,5 persons) on low potential soils for subsistence food production (in ha) is 2.19

3.2.6 CONCLUSIONS

In accordance with the Government's major development thrust, the agricultural sector will continue to be the backbone of the country's economy in terms of employment, food sufficiency and the generation of foreign currency. The following are the major constraints to the achievement of these goals, as far as physical planning in concerned:

- The shortage of arable land in some districts.(Discussed in Section 6.2)
- Population growth pressures and limited carrying capacity of land in other districts (See Sections 2 and 6)
- Scattered and isolated farm/gardens and the size distribution of the existing population, which make it difficult for a large number of the country's population to be provided with infrastructure and services, including agricultural extension (See Section 6).

Other land use and physical planning aspects of agricultural development are discussed in detail in Section 6. As mentioned in that part National and local-level physical development plans must be instruments for the preservation of the agricultural resources base -- land, particularly the best arable lands.

3.3 INDUSTRY

3.3.1 INTRODUCTION

Industrial development, among other things creates employment opportunities; generates population movements and other forms of traffic. It also affects the pattern of human settlements and the general land use structure. These are matters of interest to the National Physical Development Plan.

Thus, in the preparation of the NPDP, the nature of existing industrial activities and related issues must be understood. The main focus of this report is on manufacturing industries.

3.3.2 CONTRIBUTION OF INDUSTRY TO THE NATIONAL ECONOMY

Malawi's economy is primarily agricultural, but industry (manufacturing) makes a fair amount of contribution to the national economy as shown in Tables 3.3.1 and 3.3.2. In 1964, industry contributed £3.4 million or 6.4% of the total gross domestic product (GDP) of £53.3 million. In 1970, with the Government's policy to stimulate industrial output, industry's contribution to the GDP increased to K24.0 million or 9.3% of the total GDP of K258.4 million. By 1984, its contribution had risen to K101.5 million or 12.3% of the total GDP of K827.6 million. Industry's latest contribution to the GDP was fourth only to agriculture (37.3%), distribution (13.4%) and government (12.8%)[1].

In terms of formal employment, as depicted in Table 3.3.2 averaged 12.2% between 1968 and 1984. Its contribution of 49,552 jobs or 12.9% was third after that of agriculture which was 179,302 or 46.6 of the total employment of 384,437 in 1984.

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(1) Economic Report, 1985. Table 2.1

Table 3.3.1
Contribution of Industry to the Gross Domestic Product 1964—1984

Domestic Product	1964		1970		1980		1984	
	Amount (Million £)	%	Amount (Million K)	%	Amount (Million K)	%	Amount (Million K)	%
Gross Domestic Product	53.3		258.4		761		827.6	
Industry's Contribution To GDP	3.4	6.4	24.0	9.3	89.0	11.7	105.5	123

Source: Computed from Economic Report 1967-85, DEPD, OPC.

Table 3.3.2
Contribution of Industry to Formal Employment 1968—1984

Employment	1968		1970		1981		1984	
	Amount	%	Amount	%	Amount	%	Amount	%
Total Employment	134,472	100.0	159,500	100.0	384,437	100.0	284,437	100.0
Industry's Contribution	17,237	12.8	19,200	12.4	35,366	10.8	49,552	12.9

Source: Employment & Earnings Annual Report, 1970-84, National Statistics Office (NSO)

3.3.3 GOVERNMENT POLICIES FOR INDUSTRIAL DEVELOPMENT

The great stride in industry's contribution towards the national economy has been due greatly to the Government's policies for industrial development. The existing policies on industrial development are found in the Government's "Statement of Development Policies, 1971-1980": "The basic objectives of the policies, in relation to industry, are to implement the Government's programme in the natural resources sector by expanding the range of economic activities, providing additional income and employment opportunities and relieving pressure on the balance of payment caused by the need to increase imports of capital goods as the pace of development accelerates"(1).

Since independence, Malawi's industrial development policy has emphasized import substitution. It has been realized, however, that with a limited domestic market there is limited room for expansion in this direction. Therefore industrial development policy has been geared towards diversifying exports. Under SAL III there is a major drive towards achieving this policy objective through defining an export promotion strategy apart from revising the Industrial Development Act aimed at improving incentives for manufacturing for export. Policies are directed generally towards;

(a) the encouragement and promotion of private investments;
(b) the growth of export - oriented industrial base to counter the diminishing opportunities for import substitution;
(c) the development of a Malawian entrepreneurial class ; and
(d) balanced regional distribution of industries.

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(1) Statement of Development Policies, 1971-9180, DEPD, OPC, 1971

The last policy objective, namely, balanced regional distribution of industries, is of particular relevance to the preparation of the National Physical Development Plan.

3.3.4 INSTITUTIONAL FRAMEWORK.

The main Government institutions concerned with Government industrial policies are the Ministry of Trade, Industry and Tourism and the Department of Economic Planning and Development of the Office of the President and Cabinet.

There are also some parastatals engaged in the industrial sector. They include the Malawi Development Corporation (M.D.C.), the Agricultural Development and Marketing Corporation (ADMARC), Import and Export Company of Malawi (IMEXO), and the Investment and Development Bank of Malawi (INDEBANK).

Recognizing the need to promote small-scale enterprises, the Government has established Small-Scale Enterprises Development Organization of Malawi (SEDOM) to provide technical as well as financial assistance to Malawian Small-Scale enterpreneurs. SEDOM became operational in January 1983 and has established an industrial estate in Blantyre as a first phase of a nation wide programme for the development of small enterprises.

Finally, there is the Development of Malawi Traders Trust (DEMATT), also a parastatal which, in addition to assisting traders, help Small-Scale and rural manufacturers in management, project preparation and procurement of capital from local financial institutions.

3.3.5 EXISTING LOCAL RAW MATERIALS FOR INDUSTRY

There are also prospects for developing industries across the country on the basis of the following available raw materials;

Agricultural raw materials have been discussed in Section 3.2. They include tea, tobacco, sugarcane, groundnuts, coffee, cotton, pineapple etc.

The lakes provide fishery resources whose exploitation and processing can help spread industries in several districts along the lakeshore. The latest Estimates made in 1979 indicated the following annual fish landings (In metric tons): Lake Malawi, 22,416; Lake Malombe and Upper Shire River, 3,583; Lake Chiuta, 1,607; Lake Chilwa, 25,846; Lower Shire River System, 3,361; and the Middle Shire, other rivers and swamps, 3,000.

Extensive areas in the country are covered by gazetted forest reserves and other plantations (see Section 5). These can be found mainly in the Districts of Mzimba, Dedza, Ntcheu, Lilongwe, Nkhotakota, Blantyre, Mulanje, Mangochi, Zomba and Machinga. In spite of the extensive areas covered by forests there is a national deficit in sawn timber for industry. For example, in 1979/80, forest reserves and plantations supplied only 69% of sawn and panelwood required by the construction industry while 31% of the demand was imported. The full utilisation of the Viphya plantations for pulping, saw milling plywood veneers, chemical manufacturing and charcoal, and also the on-going reafforestation projects will close the gap in the supply of forestry raw materials. Map 3.3.1 shows mineral raw materials which are currently being exploited, under prospecting or believed to have some development potential.

MINERAL RESOURCES

MAP 3.3-1

Km 20 0 20 40 60 80 100 Km

SEDIMENTARY
- COAL
- DIATOMITE
- GLASS SAND
- LIMESTONE
- URANIUM

RESIDUAL
- BAUXITE
- BRICK CLAY
- KAOLIMITE

METAMORPHIC
- GRAPHITE
- IRON ORE
- KYANITE
- MARBLE
- PYRITES

Asb	Asbestos
Cor	Corundum
Fel	Feldspar
Talc	Talc
Mon	Monazite

ALLUVIAL/ELUVIAL
- CORUNDUM
- GLASS SAND
- GOLD
- PHOSPHATE
- TITANIUM

IGNEOUS METASOMATIC
- SOVITE
- FLOURITE
- MONAZITE
- NEPHELINE SYENITE
- NIOBIUM
- PHOSPHATE
- STRONTIANITE
- URANIUM
- VERMICULITE

Aga	Agate
Ba	Barites
Be	Beryl
Cr	Chromite
Cu	Copper
Mag	Magnesite
Mi	Mica
Mn	Manganese
Pb	Lead
Qu	Quartz
Soda	Sodalite
Zr	Zircon

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3.3.6 INDUSTRIAL STRUCTURE

Malawi's manufacturing sector has two distinct sub-sectors:

(a) Agro-industry for Export (AIE), and

(b) Manufacturing for Domestic Demand (MDD).

Agro-Industry for Export (AIE)

Although not as large as the agricultural sector, studies indicate the AIE makes important contribution to overall growth. AIE involves mainly tobacco, tea and sugar exports and is characterised by labour-intensive, well-managed industries with limited scope for significant technological change or local processing. It generates foreign capital and provides development momentum for the closely-linked agricultural sector.

Expansion in sugar production is very much subject to fluctuations in the world market while expansion of tea production is limited by the availability of suitable soils. Expansion of tobacco production is still possible especially in the Northern Region mainly in Mzimba District.

Manufacturing for Domestic Demand (MDD)

The second sub-sector MDD has developed from the Government's promotion of import-substitution goods and mainly dependent on local markets. It is dominated by firms which transform local agricultural commodities or imported semi-processed materials (e.g. sheet steel) for consumption or construction. Firms in this category tend to be small in size, are labour intensive, and more dependent on Government assistance.

A recent UNIDO report recommends that Government industrial development policy be directed toward this sector which provides greater opportunity for production diversification and improvement in efficiency.

Although of small scale, there are numerous rural, resource-based industries that offer considerable scope for expansion, particularly carpentry, brickmaking, rural construction and tailoring.

The following are some of the industries established in the country:- cement factory, grain milling, bakeries, mechanical works, assembly plants, iron and steel plants, chemical industries, tobacco industries, tea processing, textile and clothing, breweries, distillery, timber and saw milling confectionery, candle making, leather processing, publishing and printing, match making, food canning, ethanol plant, pottery, carpentry, weaving and brush making, rice milling and boat construction.

3.3.7 SPATIAL DISTRIBUTION OF INDUSTRIES

Past Trends in the Spatial Distribution of Industries

Prior to 1970, the manufacturing industries in the country were located mainly in the Southern Region, especially the Blantyre area as can be seen in Tables 3.3.3 and 3.3.4. Between 1964 and 1969, 101 industrial licences were issued. Out of this number, the Southern Region alone accounted for 97or 96%, while the remaining four licences were issued for the Central Region. There was no licence issued for the Northern Region (Table 3.3.4). Of the total, the Blantyre area alone accounted for 75 or 74.26%.

As a result of the overconcentration of industries in the Southern Region, the Government came out in 1970 with a new industrial location policy, which was directed towards the decentralisation of industries from Blantyre to Lilongwe. This policy had a considerable impact on the pattern of industrial location. Of the 35 new industrial licences issued in 1970, 11 were granted for establishments locating in Lilongwe. In each of the years 1968 and 1969, by comparison, no industrial licences was granted to a firm in Lilongwe (Table 3.3.3).

On the basis of the new industrial location policy industries started spreading gradually throughout the country. thus, between 1970 and 1976 even though the Southern Region was still dominant, its share of industrial licences, had been

Table 3.3.3
Distribution of Industrial Licences by Leading Locations, 1964—1984

Year	Number of Licences								
	Blantyre	Lilongwe	Thyolo	Liwonde	Zomba	Mzuzu	Dwangwa	Nchalo	Year Total
1964-67	62	4	15		1			1	83
1968	4								4
1969	9		2		3				14
1970	19	11	4		1				35
1971	1	2							3
1972	8	3							11
1973	8	2				1			11
1974	7		1		1				9
1975	2		1			2			5
1976	3	5	1	2			1		12
1977	6	3	4						13
1978	11	12				1			24
1979	10	2	1	1					14
1980	10	5				1			16
1981	12	3	1		1		1		18
1982	20	15	1						36
1983	69	29	5	1		2			106
1984	35	18	1	1		2			57
Total	**295**	**114**	**37**	**5**	**7**	**9**	**2**	**1**	**471**

Source: Derived from Information Supplied by MTIT

Note (1) 1977 urban employment computed from 1977 Population Census Report Vol. 2. The 1977 Population Census Report shows urban employment by worker's place of residence instead of place of work. This approach made rural non-agricultural workers, more than urban non-agricultural because of the NSO definition of "urban" which is different from the NPDP's definition (See B.S.R. on Urbanization). Another reason is for the large rural non-agricultural employment. The commuters from the rural areas, e.g. from Chiradzulu working in Blantyre. To determine urban employment by place of work all non-agricultural employment was reduced by $^1/_4$ to reflect the rural portion of the overall non-agricultural employment. This fraction was arrived at through successive calculations.

Table 3.3.4
Issuance of Industrial Licences by Region 1964—1984

Region	Industrial Licences							
	1964-69		1970-76		1977-84		1964-84	
	No.	%	No.	%	No.	%	No.	%
Northern	-	-	3	3.5	6	2.1	9	1.9
Central	4	4.0	24	27.9	88	31.0	116	24.6
Southern	97	96.0	59	68.6	190	66.9	346	73.5
Malawi	**101**	**100**	**86**	**100**	**284**	**100**	**471**	**100**

Source: NPDP

reduced from 96% for the period of 1964-69 to 68.6% for the period 1970-76. On the other hand, the Central Region's share had increased from a mere 4.0% to 27.9% between the two periods as shown 3.3.4. The Northern Region had 3 industrial licences issued during the second period 1970-76 as against none during the first period, 1964-69.

The third period 1977-84 saw further shifts in industrial distribution from the Southern Region to the Central and Northern Regions even though the Southern Region remained dominant. Of the total of 284 industrial licences issued during the period, the Southern Region accounted for 190 or 66.9% as against 88 or 31.0% for the Central Region and 6 or 2.1% for the Northern Region.

Of all the 471 industrial licences held between 1964 and 1984, 346 (73.5%) were for the Southern Region while 116 (24.6%) and 9 (1.9%) were for the Central and Northern Regions, respectively.

In addition to Blantyre and Lilongwe, other towns, because of their strategic locations or as centres of agro-resources for industry, are gradually becoming industrial centres. Examples of such towns are Liwonde and Mzuzu.

Liwonde is a fairly new industrial site. The town lies strategically at the intersection of three transport modes, namely, rail, road and water. The site is beside the Shire River which runs down from Lake Malawi through to the southern end of the country. The M3 road, which passes through Liwonde, is of first class bitumen standard and links Malawi's three large urban centres of Blantyre, Zomba and Lilongwe. Liwonde has also rail links to the port of Nacala and Beira in Mozambique. The development of the area as a commercial and industrial growth point started some few years ago. At present the town has both large and small-scale industries. The place is suitable for large-scale or medium scale industries, but it has been found that the soils in some parts of the area are not good for building purposes. Efforts are

being made to solve this problem and to improve the drainage system in the township to facilitate industrial development.

An attempt is also being made to promote industrial development in the Northern Region. Mzuzu, the regional capital is the main centre for industries.

In addition to the above-named industrial centres, industries, over the years have developed in other parts of the country, though on a limited scale. Most of these industries have been agro-based, for instance, tea processing plants in the tea zones of Mulanje, Thyolo and chombe in Nkhata Bay, fruit canning factory in Mulanje; coffee industries in the Misuku Hills in Chitipa; and sugar factories at Nchalo and Dwangwa.

Present Distribution Pattern

As can be seen from Tables 3.3.5 and 3.3.6 Map 3.3-2, in 1984 there were 376 manufacturing industries in the country. Of this number, the Southern Region alone accounted for 70.8% (266) while the shares for the Central and Northern Regions were 22.3% (84) and 6.9 (26), respectively. These regional shares still show a large concentration of industries in the Southern Region.

The corresponding regional disparities in the distribution of employment resulting from the unbalanced distribution of industrial establishments, can also be seen in Table 3.3.5. whereas the Southern Region alone had 44,761 or 90.9% of the total (manufacturing) industrial employment of 49,241, the Central and Northern regions had 3,923 (8.0%) and 557 (1.1%) of employment respectively.

Table 3.3.5
Distribution of Industrial Establishment and Employment by Region, 1984

Region	Establishment		Employment	
	No.	%	No.	%
Northern	26	6.9	557	1.1
Central	84	22.3	3,923	8.0
Southern	266	70.8	44,761	90.9
Malawi	**376**	**100.0**	**49,241**	**100.0**

Source: Computed from Employment and Earnings Annual Report, 1982-84. N.S.O.

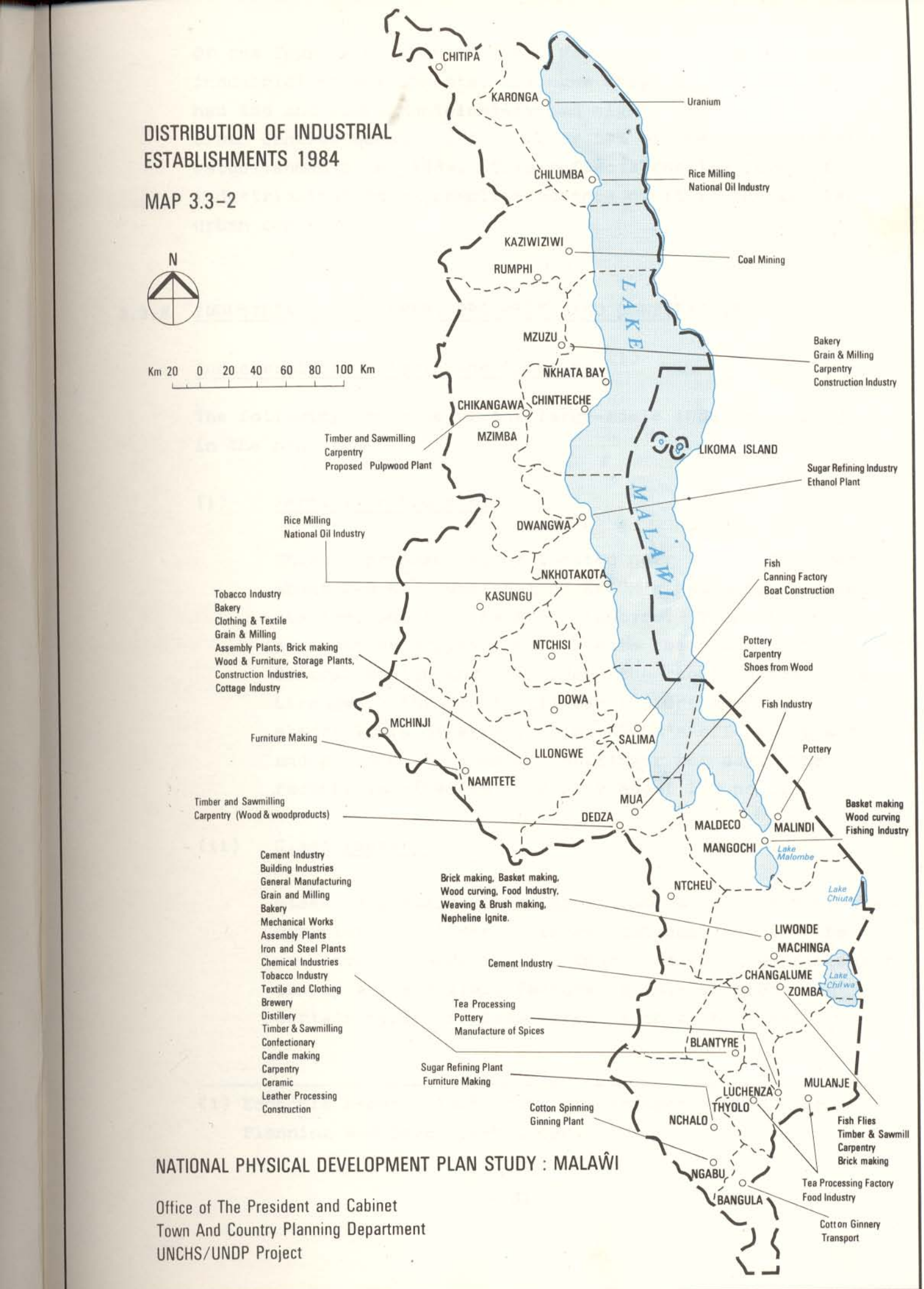
Table 3.3.6
Industrial Establishments by Region & District, 1984

Industrial Establishments								
Northern Region			Central Region			Southern Region		
Locality	No.	% of Nat. Total	Locality	No.	% of Nat. Total	Locality	No.	% of Nat. Total
Karonga	3	0.8	Kasungu	1	0.3	Mangochi	4	1.1
Nkhata Bay	1	0.3	Nkhotakota	2	0.5	Machinga	6	1.6
Rumphi	3	0.8	Ntchisi	2	0.5	Zomba	21	5.6
Mzimba	19	5.0	Dowa	3	0.8	Chiradzulu	5	1.3
			Salima	2	0.8	Blantyre	161	42.8
			Lilongwe	66	17.5	Thyolo	35	9.3
			Dedza	2	0.5	Mulanje	26	6.9
			Ntcheu	5	1.3	Chikwawa	4	1.1
						Nsanje	4	1.1
Total	**26**	**6.9**	**Total**	**84**	**22.3**	**Total**	**266**	**70.7**

Source: Annual Report: Employment & Earnings 1982-84 NSO.

DISTRIBUTION OF INDUSTRIAL ESTABLISHMENTS 1984

MAP 3.3-2



NATIONAL PHYSICAL DEVELOPMENT PLAN STUDY : MALAWI

Office of The President and Cabinet
Town And Country Planning Department
UNCHS/UNDP Project

Printed by the Department of Surveys, Blantyre 1987

Of the four main urban centres, Mzuzu Municipally had eleven industrial establishments, Lilongwe City had 47, Blantyre City had 156 and Zomba Municipality had eight. Thus, the four main urban centres accounted for 222 or 59% of the total industrial establishments in 1984. This reflects the low level of industrialization or complete absence of it in the smaller urban centres.

3.3.8 INDUSTRIAL DEVELOPMENT PROSPECTS AND CONSTRAINTS

Industrial Projects in the Pipeline [1]

The following are some of the large-scale industrial projects in the pipeline.

(i) Fertilizer Project:

This is proposed to be located near the Shire River at about 2-3 Km. Upstream of ESCOM's Nkula hydro-power station, about 50 Km from Blantyre. There is an alternative suggestion to locate the plant in the Central Region and to produce the required ammonia at Lirangwe. The plant will manufacture ammonia by electrolysis of water, using ESCOM's off-peak power, and produce 280 tons of fertilizer per day. The factory is expected to employ about 200 people.

(ii) Glass Factory:

Glass sand occurs in several 'dambos' in the Mchinji district. Preliminary investigations indicate the presence of sands in less than 0.2% Fe_2O_3 sufficient to supply a small glass factory capable of producing certain types of glass wares, such as bottles.

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(1) Economic Report, 1985, p.52, Department of Economic Planning and Development, OPC.

(iii) New cement Factory:

This is another industrial project in the pipeline. Low-magnesia marble bodies exist in sufficient quantities around Chikoa and Livwezi in Chamama area. There is a proposal to build a factory at Chamama, east of Kasungu. From the feasibility studies already undertaken, the factory can employ more than 200 workers.

(iv) Viphya Pulpwood Project:

The Viphya pulpwood mill project has been in the pipeline for a long time. It is to be sited at Chintheche in the Nkhata Bay District. The project is expected to employ more than 500 people.

Industrial Projets identified as Feasible for Implementation

The World Bank, the United Nations industrial development organisation (UNIDO) and other aid agencies have identified feasible industrial projects on the basis of their internal rate of returns (IRR) which are invariably 15% or more(1). Table 3.3.7 shows the types and proposed locations of the industries.

(1) 15% IRR is the cut-off point acceptable to the Ministry of Trade, Industry and Tourism for industrial projects in Malawi.

Table 3.3.7
Profile of Industrial Projects Demonstrating Potential for Future Development, 1983

Project	Estimated Investment (K)	Internal Rate of Return	Production Capacity	Proposed Location and Comments
1 . Fuel alcohol production	1,800,000	22%	8 .1 Million litres	Dwangwa and Sucoma
2 . Fish Production, processing and Marketing	3,200,000	22%	6,000 metric tons of fish plus other output	Maldeco, Mangochi, Salima
3 . Sawmilling	2,000	20%	460,000p^3 of sawn soft wood	Extension of Blantyre, Dedza, Chikangawa, and Zomba mills
4 . Honey and beeswax production processing and marketing	7,000	19%	250 metric tons of honey; 50 tons beeswax	Pilot processing project in Mzuzu in operation
5 . Charcoal Production	620,000	17%	10,950 metrict tons of charcoal	10 units required, Blantyre, Lilongwe and Mzuzu
6 . Leather and Leather products Production	1,200,000	48%	103,000 hides 73,000 skins 927,000^2 of fresh solits	Blantyre Lilongwe Mzuzu
7 . Particle board production	2,200,000	20%	3,700 metric tons	Lilongwe and Blantyre
8 . Pulp and paper production	80,000,000	Positive IRR	K11,400,000 extensive for local demand and export market	Chikangawa and Chintheche transportation postponed due to low level of export demand
9 . Recycling of used oil plant	75,000,000	20%	K1,030,000 home demand	Blantyre and Lilongwe
10 . Crop Estate project	70,000	Positive IRR	Essentially viable The existing Engineering and Foundry require licensing formalities	M .D .C . project Blantyre requires external technical partner
11 . Plywood production	3,500,000	36 .4%	8,000M^3 panels	Pilot I .G . Limbe Viphya - New site
12 . Additional Tea processing plant	4,000,000 units	Positive IRR	4 .4 million lbs . processed tea	Mzuzu factory
13 . Electric Cables wire insulated using imported grenules	100,000	Positive IRR	2,000,000 m	Pilot Eagle Investment
14 . Non-alcoholic fruit beverages	K100,000	Positive IRR	Extensive for local demand antimutritions foods, for workers, children,patients and students	Lilongwe current surveys made by a South African Company
15 . Polyester cotton project Utilization of waste cotton	K10,000,000	Positive IRR	Extension of D .W .S . operation	Blantyre feasibility studies completed

Source: World Bank, "Malawi: Industrial Development" 1983

Potential For Mineral-Based Industries

Table 3.3.8 shows mineral-based industries identified as feasible on the basis of the IRR of 15% and above. The proposed location of the industries provide some prospects for the decentralisation of industrial development in the country. The mineral-based industries are:

Table 3.3.8
Potential for Mineral - Based Industries in Malawi

	Project	Estimated Investment (K)	Internal Rate of Return	Location	Comments
1 .	Lime Production and processing	500,000	Positive IRR	Various operators Ntcheu, Balaka Lirangwe, Matope, Kholombidzo	Used for sugar production and cement mixing . Needs capital and improved production methods
2 .	Small-Scale ceramic Industries	50,000 - 1,500,000	Positive IRR	S .E . of Lilongwe, Ntcheu Mangolowe Hills	Supplying both domestic and Tourist market using local clay . Priliminary investigations are underway
3 .	Glass production	60,000,000	23%	Blantyre and /or Lilongwe	Extensive Mchinji Glass sand deposits to be utilised . Export possibilities are being studied .
4 .	Fertilizer	100,000,000	18%	Nkula Falls, on Shire River	Utilizes phosphates found in Mulanje District . Awaits further studies of ore quality
5 .	Coal extraction	100,000,000	Positive IRR	Ngana Karonga District	Large coal reserves found in the Northern Region . Limited immediate economic interest due to high production costs and hydro-electric alternative

Source: UNIDO "The Potential for Resource - Based Industrial Development in Least Developed countries No . 5, Malawi", 1983

Constraints to Industrial Development and Distribution

The variety of existing local resources for industry, as examined above, indicates the potential for further development in various parts of the country. There are, however, constraining factors which can be put into two categories: (1) Those factors which impose limits on further industrial expansion generally and thus indirectly affect branch industries moving into other parts of the country; and (2) those which directly affect the internal distribution of industries. The consequences of these two categories of constraints are real though they cannot be easily quantified. Nevertheless, they can be summarily evaluated.

There are currently constraints which impose limits on the expansion of large industries in the country and thus make it difficult and sometimes impossible for such industries to branch into the other parts of the country. Such constraints take the form of: (a) the smallness of the domestic market and (b) Malawi's geographical location.

Malawi's existing population and particularly income levels, make its market quite small and this imposes constraints on the development of efficient import substitution industries. However, this effect is to some extent counterbalanced by the extreme high transport costs of imports from overseas sources into Malawi, as they provide substantial "extra protection" for many Malawian industries.

The smallness of domestic market also results from the low purchasing power for the majority of the population in the country. The very low per capita income does not constitute an effective demand for large scale production.

As a result of its land-locked situation, the country incurs high transportation costs which make its products less competitive on the overseas markets and thus limit internal production. Added to these high transportation costs are also (temporary) costs due to problems experienced with transit

through the Mozambican ports of Beira and Nacala. These involve substantial delays, damage and theft.

In addition to constraints which impose limits on further industrial expansion generally, there are also geographical distribution of industries within the country even where industries have the potential for expansion. Such constraints take the form of inadequate infrastructural facilities in some areas, lack of rural purchasing power, lack of local enterpreneurship, industrial skills and capital as outlined below:

Infrastructural facilities, such as roads, power and water, which are critical to industry, are not adequately developed throughout the country. For example, Section 7.3 shows that of 2,659 Km of Main Roads existing in 1983, 878 Km (33%) were not bituminised. In the case of the 2,857 Km of Secondary Roads, 2,400 Km (90%) were not bituminised. Poor road linkages affect the development of industries as they increase cost of production, marketing and distribution.

Perhaps a basic constraint to industrial development seems to be the lack of purchasing power in the rural areas arising out of low rural incomes. Agro-economic data collected over a period of years for a number of districts indicate this.

In 1980/81 for instance rural cash income per household was 137 Kwacha[1]. Expenditure patterns in the year showed that 14.3% of the annual household expenditure was on farm activities, 8.6% on business, 22.7% on food, 2.3% on livestock and by-products, 25.3% on non-durables and miscellaneous, 19.0% on durables and semi-durables and 7.8% on transfers. Taking the non-durables and miscellaneous and durables and semi-durables as industrial products, the expenditure on these would add up to 44.3% or 137 Kwacha per year, which is quite low.

The key requirements for initiating manufacturing enterprise are enterpreneurship, technical skill and capital. A World Bank assessment concluded that "for local Malawian operating small-scale enterprises, there appears to be little in the way of entrepreneurial efforts applied to manufacturing. Efforts seem too much directed towards trading and not enough towards manufacturing"[2].

Lack of capital to initiate a new industrial venture or to expand an existing one outside the main urban centres is also a constraint. Problems of collateral securities, the gestation periods in manufacturing, and expenses involved in administering loans in outlying areas make traditional banks shy away from manufacturing activities outside the main urban centres.

Even though SEDOM is helping in the way of providing financial assistance to rural entreprises, their efforts cannot meet the excessive demand, considering SEDOM's limited funds.

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(1) National Sample Survey of Agriculture 1980/81 Vol.III, NSO, 1984

(2) IBRD, Agro-Industrial Develop. (Washington, D.C) P.62

3.3.9 IMPLICATIONS FOR THE PREPARATION OF THE PLAN

In formulating spatial strategies for productive activities, the NPDP project must take into consideration the following issues and existing conditions identified in this Section:

(a) the disparities in the spatial distribution of industries;
(b) industrial development projects in the 'pipeline' particularly those which have been identified as feasible; and
(c) the Government's decentralisation policy.

The Plan must also address those constraints to industrial development which fall within the scope of physical planning or spatial strategies.

3.4 TOURISM

3.4.1 INTRODUCTION

This part is based on information in the Malawi Tourism Development Plan, 1980-1990, which was prepared by the U.N.D.P. and W.T.O. Those sections which are of direct interest to the National Physical Development Plan have been reviewed and most of the information has been updated.

The UNDP/WTO study states that tourism in Malawi is largely undeveloped and an unexploited sector of the economy, and that Malawi possesses a wide range or marketable assets which offer definite attractions for potential tourism even though no single attraction is of outstanding international appeal. However, the pleasant climate, stable Government, friendly and hospitable people and a diversity of natural setting from the Lake to mountains and game parks are considered as significant potentially for the development of tourism in Malawi.

3.4.2 TOURISM TRENDS

Tourism throughout the world has grown at an unprecedented rate in the last three decades. According to UNDP/WTO statistics, tourism increased by over 800% between 1950 and 1977. This trend is predicted to continue through the 1980's, assuming that there will be stability in the supply and cost of world oil as well as economic recovery after the current world recession. Overcrowding in the world's leading tourist destinations has meant an increase demand for new and less popular holiday areas. Africa has increasingly benefited from this move away from traditional tourist resorts.

Tourist Traffic To Malawi

Tourist traffic to Malawi has been fairly static since 1976. The highest number of visitors, almost 60,000, was recorded in 1982. The largest number of tourists came from Zambia. During the late '70's, Zambia and Mozambique together

accounted for over half of all visitors. Current troubles in Mozambique have resulted in fewer tourists from that country, but visitors from South Africa have been increasing in number. Europeans especially from U.K., have accounted for almost 20% of all visitors during this period.

Purpose of Visit

Table 3.4.1 shows that in 1982 out of a total of 52,570 visitors, about 22,422 (43%) came for recreational purposes, 14,454 (28%) for business purposes; and the remainder, 15,693 (30%) to visit friends and relatives.

Mode of Transport

Between 50% and 60% of all visitors came to Malawi by car during the period 1976 and 1982, and the majority of the visitors were from the neighbouring countries of Zambia and Mozambique. For the other tourists, the aeroplane was the predominant mode of transport. Thus, airfares are an important factor determining tourist travel from countries not contiguous to Malawi. The difficulties in Mozambique, necessitating the closure of road links between Malawi and Zimbabwe, caused a decline in road travel from that country. The future re-opening of the road linking Zimbabwe with Malawi through Tete Province in Mozambique for passenger transport could have a large impact on Malawi's tourist trade.

Length of Stay

The average length of stay of all visitors to Malawi was 7.8 nights in 1978 and 8.0 nights in 1982. However, this average conceals wide variations regarding length of stay by purpose of visit as well as by country of origin. Table 3.4.2 shows that in 1978, 30% of all visitors stayed for over a week, particularly those on holiday and visiting friends, and relatives. As might also be expected,visitors from neighbouring countries stayed on average less than a week whereas those from distant countries stayed considerably

Table 3.4.1
Departing Visitors', Length of Stay, Average Expenditure and Purpose of Visit

Period	Number of Non-Resident Departures	Average Number of Nights spent	Average Expenditure per Person (Kwacha)	Mode of Departure		Purpose of visit		
				Air	Other	Holiday	Official/ Business	Visit Relatives and/or Friends
1976	50,127	7	60	22,012	28,115	18,924	21,803	9,400
1977	43,511	7	94	22,630	20,881	18,318	15,691	9,502
1978	48,378	8	103	25,550	22,828	20,302	18,658	9,418
1979	45,564	8	135	24,975	20,589	17,687	18,121	9,756
1980	47,216	8	161	23,547	23,669	19,389	16,095	11,732
1981	57,286	7	180	23,396	33,890	24,528	15,990	16,768
1982	52,570	8	219	22,475	30,095	22,422	14,455	15,693

Source: Tourism Report 1981 and 1982, National Statistical Office

Table 3.4.2
Tourists' Length of Stay Analysed by Purpose of Visit, 1978

Length of Stay (Nights)	Holiday	Business	Friends & Relatives	All Purpose
0	1,660	1,702	874	4,236
1-2	4,543	7,875	2,051	14,469
3-4	2,825	4,216	1,284	8,325
5-7	3,617	2,349	1,150	7,116
8-10	2,474	873	658	4,005
11-14	2,083	529	754	3,366
15-20	1,388	316	687	2,391
21 and over	1,712	798	1,960	4,470
Total Visitors	**20,302**	**18,658**	**9,418**	**48,378**
Total Nights	**169,002**	**93,167**	**113,738**	**375,907**
Average	**8.3**	**5.0**	**12.1**	**7.8**

Source: Malawi Tourism Development, UNDP/WTO, Plan 23

Table 3.4.3
Departing Visitors' Length of Stay by Purpose of Visit 1981 and 1982

Reason for Entry	1981			1982		
	No.	%	Average Length of Stay (Nights)	No.	%	Average Length of Stay (Nights)
Total	57,286	100 .0	6 .8	52,570	100 .0	7 .8
Holiday	24,528	42 .8	6 .3	22,422	42 .6	7 .3
Work/Business	15,990	27 .9	5 .8	14,455	27 .5	6 .4
Visit Relatives or Friends	16,768	29 .3	8 .6	15,693	29 .9	10 .0

Source: Malawi Tourism Report 1981 and 1982, National Statistical Office

longer. A comparison of Table 3.4.2 and 3.4.3 (which provides more recent data) indicates that the average length of stay (nights) by holiday visitors decreased slightly from 8.3 in 1978 to 7.3 in 1982, while the average length of stay by business visitors increased from 5.0 in 1978 to 6.4 in 1982.

Type of Accommodation Used

Of a total of 52,570 visitors in 1982, 32.1% stayed in private houses/flats; 25.4% stayed in hotels; 25.7 stayed in rest houses; 6.3% in different types of tourist accommodation including private flats; 2.4% camped in tents or stayed in caravans; and the remaining 8.1% stayed in accommodation other than any other specified or they were day visitors.

Economic Impact

Table 3.4.1 shows that in 1982 visitors spent an average of 219 Kwacha per night stayed in the country. Estimates for 1978 show that foreign visitors in Malawi spent a total of K4,961,383 or 0.6% of GDP. As shown in Table 3.4.4 tourism ranked fourth in 1978 in terms of foreign exchange earnings as compared to Malawi's other principal export commodities. The present proportion of GDP is not known but it did show an upward trend from K5.0 million or 0.6% to K10.7 million or 0.9% during the period 1978-1984. During the same period tobacco's contribution rose from 9.7% to 13.5%; tea from 3.2% to 6.7% and sugar from 1.2% to 1.7%.

Field work by the W.T.O team in 1980 also showed that some 1,861 persons were directly employed in hotels and Government resthouses and a further 13 in the Department of Tourism. Tourism can be expected to indirectly generate about 2,000 full-time job equivalents according to the developing countries' norm of one indirect job equivalent for every direct job. Tourism is also likely to contribute to the earnings of more than those numbers estimated above through ancillary services for tourists, such as the production of arts and crafts.

Table 3.4.4
Earnings from Tourism Compared with Other Export Earnings, 1978

Rank	Item	For Value of Export (Kwacha)
1	Tobacco	88,619,000
2	Tea	29,235,000
3	Sugar	11,358,000
4	Tourism	4,961,000
5	Groundnuts	4,673,000
	Total Physical Exports	**150,269,000**

Source: Malawi Tourism Development Plan, UNDP/WTO P . 34

3.4.3 EXISTING AND PROPOSED TOURIST ACCOMMODATION

At the end of 1985 there were 40 existing hotel/rest house units with 1083 rooms and 2160 beds available for tourists (see Table 3.4.5). Of these, however, only the Mount Soche Hotel in Blantyre, the Capital Hotel in Lilongwe, and Mzuzu Hotel met international standards. Of the others a few were adequate but a majority of the units did not meet international standards. However, because of the shortage of accommodation in some areas, they were used by international visitors travelling outside the main cities. Information on trend in hotel occupancy rates is rather dated, but a recent (1984) survey of room occupancy rates for the leading hotels indicates a rate ranging from 53% to 75%, with an average of 60%.

Table 3.4.5
Summary of Accommodation Available in Malawi 1985

Tourist Accommodation	Rooms	Beds	Room Occupancy Rate 1985
Blantyre			
Mount Soche Hotel	136	247	54%
Ryalls	65	112	60%
Blantyre Travellers Resthouse	72	96	-
Chisakalime	10	20	-
Shire Highlands	34	55	60%
Kudya Hotel	18	36	-
Limbe Travellers Resthouse	68	92	-
Lilongwe			
Capital Hotel	190	375	70%
Lilongwe Hotel	100	200	55%
Lingadzi Inn	36	72	75%
Zomba			
Ku Chawe Inn	17	34	53%
Government Hostel	42	84	-
Mzuzu			
Mzuzu Hotel	30	58	57%
Lakeshore			
Nkopola Lodge	28	68	53%
Club Makokola	39	88	-
Chintheche Inn	10	20	-
Cape Maclear	9 Chalets	18	-
Grand Beach Hotel(Salima)	33	91	-
National Parks, Game Reserves and Other Areas			
Chelinda Resthouse, Nyika	18	36	
Mulanje Forest Lodges*	-	-	
Lifupa Lodge	12 Chalets	36	
Tented Accommodation at Lifupa	6	18	
Forestry Rest Houses **			
Chikangawa (2 Resthouses) (1)	5	13	
(2)	10	28	
Ntchisi	4 (No Electricity)	8	
Dzalanyama	4	12	
Likhubula	2 (No Electricity)	4	
Mulanje Forest Reserve	6 Huts-Chambe	10	
	-Thuchila	16	
	-Lichenya	14	
	-Chinzama	12	
	-Sombani	8	
	-Madzeka	8	

Table 3.4.5 (continued)

Other Government Resthouses	Rooms	Beds
Ngabu	8	16
Ntcheu	2	5
Kasungu	4	12
Dedza	3	6
Kasungu Inn	20	40
Nkhotakota	2	4
Likoma Island	2	4
Mzimba	5	10
Nkhata Bay	6	14
Mzuzu	9	18
Rumphi	4	10
Karonga	4	12
Chitipa Inn	10	20
Total - All Accommodation	**1,083**	**2,160**

NOTES:

*Owned by the Synod of Blantyre, the unit has some 60 beds available for tourists but only when not needed by church personnel; therefore not included as part of the stock of tourist accommodation.

**Forestry Resthouses mainly provide accommodation for members of staff of the Forestry Department while on duty at the various forest reserves. They are, however made available (for renting) to the public when they are not being used by the forestry staff.

A qualified cook is available at every forestry resthouse to prepare meals for guests. Guests are required to bring their own food.

The Lakeshore units tended to be popular with both domestic and regional tourists and were fairly full for large periods of the year, espécially Club Makokola and Nkopola Lodge. These units were too small, however, to meet the demand by the most important West European tour wholesalers. Thus, a lack of suitable accommodation limits Malawi's tourism potential.

There are quite a number of lakeshore cottages owned by individuals and private companies, others belong to Government departments and statutory corporations. The total number existing in early 1984 was 165 broken down as follows: In the Salima area from Senga Bay to Chipoka, 32 cottages; Cape Maclear-Mangochi, 127 cottages, and other areas 6 cottages. Informally, some of the cottages are available to domestic and international tourists, but they are not advertised in tourist promotion brochures. A more detailed study of lakeshore tourist accommodation is part of the Lakeshore Development Plan Study being carried out by the N.P.D.P.

Renovations/Extensions

The Grand Beach Hotel at Salima is scheduled to be significantly renovated and upgraded to attract international tourists. The Government is presently negotiating with private developers to undertake the renovation and operation of the facility.

Extensions to certain hotels have taken place in the past three years. For example: Extension to the Capital Hotel in Lilongwe has just been completed (1985). The new wing has an additional 84 rooms and 163 beds. Renovations and extension are currently taking place at Club Makokola in Mangochi.

New Hotel Development

(a) A new Hotel - The Kambiri Point Hotel - is presently under construction in North Senga Bay of the Salima area. The Hotel is scheduled for completion in 1986 and will ultimately have 146 rooms and 25 cottages.

(b) New Hotel Complex - Golden Sands (Cape Maclear) MDC - is intending to establish a luxury hotel complex at Cape Maclear. The complex will have all the normal amenities associated with a luxury holiday resort, i.e boating, an airstrip, a small golf course, beach facilities, staff houses etc.

The design and general layout of the hotel complex is to be undertaken and financed by an International Consortium with specialist knowledge in the field, i.e. Sun International Hiltons.

Construction is likely to start in the next 2 years (1987). The complex will have about 100-150 rooms and 200-300 beds.

(c) New Hotel - Salima Lakeshore - Holiday Inn (a South African network) is proposing to build a hotel along the Salima Shoreline.

At present it is not yet known when actual construction will commence and how many rooms the hotel will have.

(d) New Motel - Area 13 in Lilongwe - is presently under construction at the City Centre. The motel is expected to be completed in 1986 and will have about 20 rooms.

3.4.4 OVERVIEW OF TOURIST ATTRACTIONS

Malawi's primary tourist attraction is Lake Malawi with its beautiful and unspoilt beaches. The country's varied topography is also of great scenic appeal. Wildlife is abundant in the National Parks; and birdlife, of which over 900 species have been recorded, is of particular interest. Tourist destinations, resources and facilities are shown in Map 3.4.1.

The Cities

Blantyre - Founded in 1895, Blantyre is the largest city in Malawi and remains the main commercial, industrial and communications centre. The city is surrounded by mountain terrain and retains an old-time charm. Limbe, its twin city, is full of numerous Asian shops (offering a wide variety of goods) in which it is as fun to buy as to browse. Despite the growth of Lilongwe, Blantyre remains a dynamic city, particularly as a destination of business travellers.

Lilongwe - The new capital of Malawi is a beautiful, well laid-out city, with the second largest population. Nearby visitors in Zambia take advantage of the city's shopping facilities and proximity to the Lakeshore at Salima for weekend trips. The new international airport which officially opened in 1983 will increase the tourist flow to Lilongwe. It has already attracted British Airways, U.T.A., K.L.M., and other international airlines.

Zomba - Once the capital of Malawi, Zomba's primary function now is as an educational centre. The city is located at the base of the Zomba Plateau, which offers spectacular panoramic views, streams and waterfalls, and a variety of birds, trees and wildflowers.

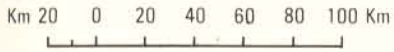
Mzuzu - the largest town in the sparsely populated North, Mzuzu is becoming an increasingly attractive tourist and business destination. Nestled in the Mzuzu hills it offers easy access to the Northern lakeshore areas, and national parks and forests.

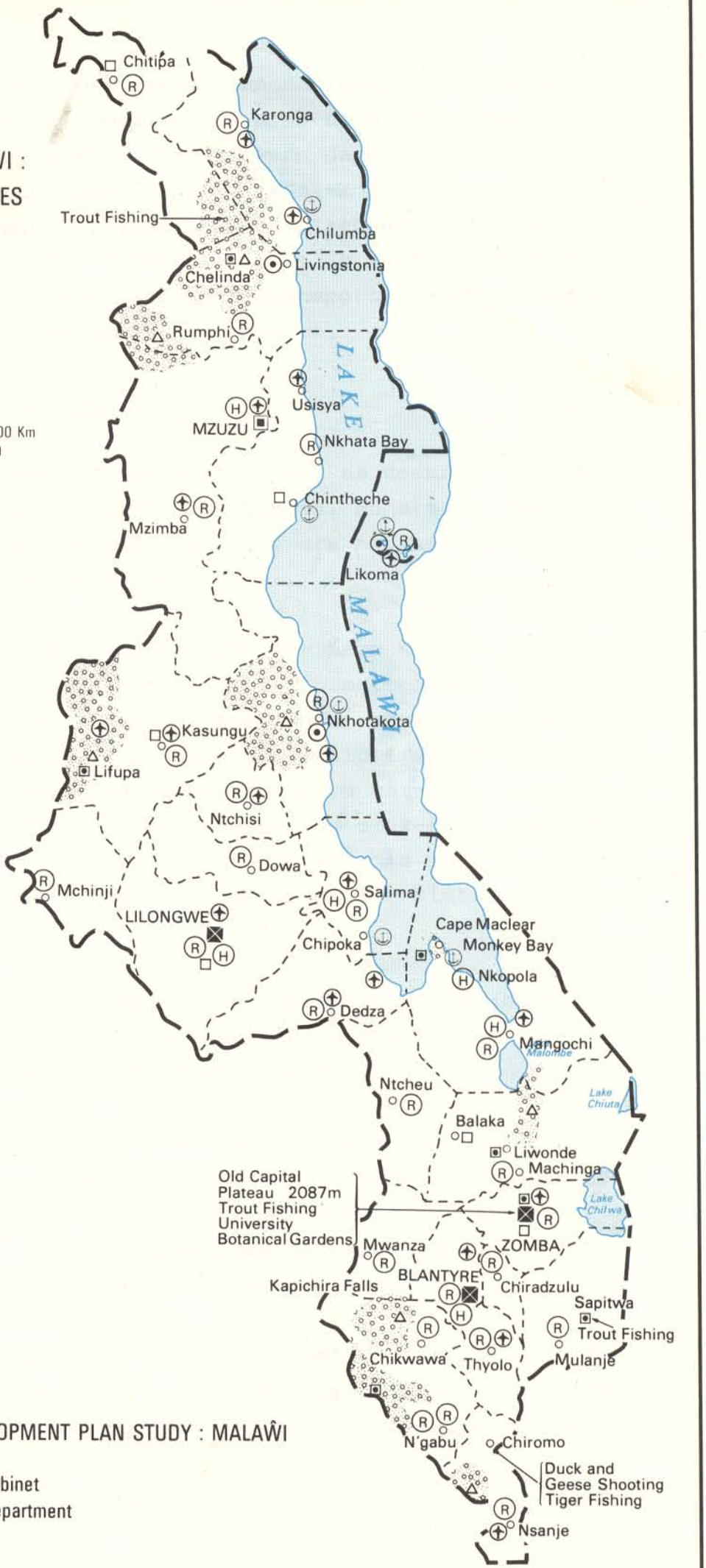
Lake Malawi

Lake Malawi is the third largest lake in Africa, 600 Km in length and up to 80 Km in width. Its crystal clear waters, abundant tropical fish, and fine deep sandy beaches make it a popular tourist attraction. The rising of the Lake's water level in recent years has reduced certain beach areas and

TOURIST MAP OF MALAWI : RESOURCES AND FACILITIES

Map 3.4-1





NATIONAL PARKS AND GAME RESERVES

(H) HOTEL(S)

LODGE

INN/MOTEL

(R) REST HOUSE

TENTED CAMPS

PORT

AIRPORT/AIRFIELD

HISTORIC SITES

NATIONAL CENTRE

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NATIONAL PHYSICAL DEVELOPMENT PLAN STUDY : MALAWI

Office of The President and Cabinet
Town And Country Planning Department
UNCHS/UNDP Project

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destroyed some of the Lakeshore accommodations. the Lake's immense scenic appeal and beauty can also be appreciated through the Lake cruise which takes seven days' roundtrip from Monkey Bay, passing through Chipoka, Nkhotakota, Likoma Island, Nkhata Bay and Chilumba. The cruiseboat, the Ilala, also offers limited berth facilities. It is near the end of its life. A study on lake passenger transport, which includes tourist requirements, is about to commence.

National Parks/Game reserves

Malawi has five designated National parks, as described below, and four Game Reserves - Vwaza, Nkhotakota, Majete and Mwabvi - where wildlife is protected, but they are neither easily accessible nor always open to visitors.

Nyika National Park - Situated in the Northern Region, Nyika National Park lies at an altitude of 2,300 metres and covers more than 3,000 sq. Km. Probably the finest park in Malawi, The Nyika Plateau has a large variety of wildlife. The park also offers trout fishing and some fine bird watching near Chelinda Game Camp. The rolling grasslands broken by deep valleys and evergreen forests are unique in this part of Africa and have inspired the description of the Plateau as the "Scotland in Africa".

Nyika's remoteness from principal population centres makes it relatively inaccessible but its beautiful and abundant wildlife give it tremendous tourist potential.

Kasungu Game Park - Situated 128.7 km to the North of Lilongwe, Kasungu Game Park offers the most extensive range of game to be seen in Malawi. The park attracts both day and overnight visitors. Kasungu Game Park is expected to play a significant part in future tourism development.

Liwonde National Park - Liwonde is the most accessible of all Malawi's parks. It features a wide variety of game; including elephants, hippopotamus, crocodiles, sable, impala, kudu, and

a great variety of birdlife. Overall, this park's location gives it significant tourism potential.

Lengwe National Park - At a short distance from Blantyre, Lengwe is an easy day trip and offers an opportunity to see the rare, shy nyala antelope as well as the blue or samango monkey and Livingstone's suni, in addition to other forms of wildlife.

Lake Malawi National Park - Certain areas covering the Lakeshore around the Nankumba peninsula, Nkhudzi, and offshore islands have been designated as a National Park. Cape Maclear and the Golden Sand Beach are located within the park.

Sporting Activities

Malawi offers plenty of opportunity for hiking and mountaineering-from pleasant day hikes to more challenging mountaineering on Mount Mulanje, the highest peak in Central Africa. Horseback riding is possible on Zomba Plateau and there is also potential for this activity on Nyika Plateau.

There are many opportunities for fishing in Malawi: trout fishing on Zomba Plateau and the Nyika, black bass near the dams below Mt. Mulanje; or carp, sawfish and electric catfish on the Lake. There is also great potential for water sports such as scuba, diving, skin diving, water skiing, surfing, yachting and boating.

Cultural and Historical Attractions

Malawians are a hospitable, colourful people with a culture marked by a wide range of dance forms performed at ceremonies, for entertainment, and as a spontaneous expression of inner feelings. A wide range of traditional and modern crafts can be found in Malawi which include ivory, wood, soap-stone and mats. Malawi's history can be experienced through the museums and historical sites such as Livingstonia Mission and old Bandawe Mission.

Summary Chart and Rating of Attractions

Table 3.4.6 summarises the main tourist attractions in Malawi.

Code

0 No attraction at all

1 Attration likely to be of only limited interest

2 An attraction which could add appeal to complement Class 3,4,and 5 attractions.

3 A feature which would add significantly to the overall attraction of the country and which could be developed as an important attraction for certain categories of tourists.

4 A feature which could be developed as a principal attraction, appealing to a wide range of future tourists.

5 An attraction which is unique to the country or exists in only very few other countries which is or could be, developed as a major attraction to all future categories of tourists.

Table 3.4.6
Rating of Attractions by Market

Attraction	Zambia	S. Africa	Mozambique	Other Africa	Western Europe	North America
Blantyre	2	1	3	2	1	1
Lilongwe	3	1	1	2	1	1
Zomba	3	2	2	2	2	2
The Lakeshore	3	3	2	2	3	3
Nyika N .P .	4	2	1	2	3	3
Kasungu N .P .	3	2	1	2	3	3
Liwonde N .P .	2	2	2	2	3	3
L . Malawi N .P .	3	4	1	2	3	3
Sporting Activities	3	3	1	1	2	2
Cultural	2	2	1	1	2	2

Source: Malawi Tourism Development Plan, UNDP/WTO, P .13

3.4.5 TOURISM POTENTIAL AND CONSTRAINTS

Market Appeal

Malawi's principal attractions are not those that are likely to appeal to the mass tourism market. The combinations, however, of a pleasant climate, unspoilt nature, friendly people, Lake Malawi and the National Parks in the context of an African setting, form a basis for tourism of some significance to the development of tourism in Malawi. An analysis by the World Tourism Organization shows that Malawi is likely to appeal to five different market segments:

a. Expatriate Europeans and their families who are working in Malawi or neighbouring Zambia.
b. South Africans interested in a Lake-side holiday.
c. Middle-aged European or American tourists attracted to Malawi as part of an "African Tour".
d. The special-interested market attracted by African flora and fauna and to a lesser extent those interested in trout fishing, wildlife photography and pony-trekking in Southern Africa.
e. The domestic tourist market in Malawi consisting of the middle-class, professionally trained and businessmen.

The summary Profile in Table 3.4.7 sets out the tourist potential of Malawi's various attractions.

Constraints to Development

The following are the major constraints to tourism development.

a. The relatively high cost of visiting
Air transport to Malawi is quite expensive and tourists travelling from Europe to North America can find more competitive fares to other African destinations. The opening of the International Airport and the introduction of APEX fares and charter services may help make Malawi

Table 3.4.7
Summary Profile-Characteristics of Malawi and Their Market Effects

Characteristics of Malawi	Market Effects
Geographical and Competitive Position	
Excellent climate outside rainy season	Permits tourism over a large part of the year as well as "sun, sand, lake" destination at Lake Malawi .
High altitudes (e .g . Nyika, Mulanje and Zomba Plateaus)	Offer cool, mountainous ares of considerable appeal to local and regional markets .
Distance from markets	Tends to narrow market . Market segments most likely to travel greater distances are upper-middle to higher income groups, usually more numerous among over-45 age groups
Competitive position in world tourism markets	Narrows market . Tourist to Malawi well-travelled, sophisticated, not on first trip abroad, generally upper income groups .
Geographical position at cross-roads of Southern Africa	Increases regional market potential .
Land-locked nature	Increases risks of reducing accessibility of land traffic at times of political unrest in neighbouring states .
Principle Attractions	
Lakeshore, beaches	Broad general appeal to all markets, particulary domestic and regional .
Beautiful countryside, unspoiled nature, clean air water	Broad general appeal but specific appeal to selected markets-educators researchers, ecologists, sportsmen .
Interesting fauna and flora	Widens market appeal to those interested in specific fauna and flora, particularly the mbuna of Lake Malawi .
National Parks	Broad general appeal if parks are well stocked .
Potential sporting attractions	Broad general appeal to selected markets .
Historical and Cultural Development	
History	Limited appeal but possible specific appeal to selected markets such as educators and researchers .
Livingstone	Specific appeal but potentially exploitable as part of "History of the Discovery of Africa" circuit .
Friendly and welcoming population	Widens appeal to all those who may have knowledge of unpleasant and unhelpful attitudes in some other developing countries .
Malawi Communities Overseas	Substantial numbers of Malawians work in both South Africa and in the United Kingdom-potential returning visitors .

Source: Malawi Tourism Development Plan, UNDP/WTO, P .39

more competitive with other neighbouring nations. Introducing charter flights and group tour fares could also address this problem. Hotel accommodation in the country, however, is competitively priced relative to that in other countries.

b. Road Transport Problems

The road link with Zimbabwe and South Africa across Tete Province (Mozambique) is not possible at present and has severely limited tourist travel by road from these countries.

c. Insufficient accommodation of acceptable international standards

Obtaining suitable accommodation in Malawi has been problematic, given the limited number of international standard hotels and the high ratio of weekday to weekend occupancy of the major hotels in Lilongwe and Blantyre. Thus, visitors have had difficulties obtaining confirmed reservations and have often had to settle for a lower standard of accommodation in the major cities.

The deterioration and loss of some hotels along the Lakeshore, both through rising water levels and insufficient maintenance, is a further deterrance to visitors. There is also a great demand for accommodation in the National parks, which cannot be properly handled due to limited facilities. However, recent and on-going upgrading/expansion of hotels in Blantyre and Lilongwe may mean an easing of the accommodation problem. The new international hotel in Mzuzu, the Lakeshore Inn at Chintheche and plans for, building/upgrading other Lakeshore hotels, (Salima, Mangochi and Cape Maclear) will help to increase Malawi's appeal.

D. Lack of Entertainment Facilities

There is a serious lack of entertainment facilities in Malawi, even in the major cities. Both domestic and foreign visitors have a limited range of evening entertainment. A few restaurants, movies and occasional nightclubs are the only entertainment options. A user survey never has been undertaken to determine the attitude of both visiting and local tourists towards (a) tourist facilities such as accommodation, shopping, restaurants, transportation, recreational parks, etc., (b) service, and (c) entertainment and night life in leading urban centres, including Lilongwe, Blantyre and Mzuzu.

3.4.6 PLANNING IMPLICATIONS

The fact that in 1982, 43% of tourists to Malawi came for the purpose of recreation has considerable implications for physical planning for tourism and the development of tourist resorts along the lakeshore and in national parks and game reserves. The lakeshore is one of the country's popular attractions and yet less than 12% of the total tourist accommodation is developed there.

Some of the vacation cottages on the lakeshore have created land use conflicts. The development of more cottages and new hotels without proper planning and due consideration for existing lakeshore villages and fish landing sites will be undesirable.

The Lakeshore Physical Development Plan which is being prepared as part of the NPDP will cover in more detail tourist facilities on the lakeshore. The NPDP will itself deal broadly with the physical planning aspects of tourism on the basis of the information presented in this study report.

The proposed relocation of Nkhata Bay District Boma to Chintheche would bring more business, and therefore a possible extension to Chintheche Inn.

The recent re-routing of imports/exports along the northern transportation corridor from and to the port of Dar-es-salaam will have a beneficial impact on the development of tourist accommodation (including motels for local travellers) along the corridor.

The existing conditions analysed in this part of the report will be taken into consideration in preparing a physical development plan for tourism as a component of the NPDP.

4.0 URBANIZATION

4.1 INTRODUCTION

The process of urbanization in Malawi started with (a) the initiation of the British Colonial Administration in 1891; (b) the arrival of European and Asians who were mostly interested in commercial and professional services; (c) church missionary activities; and (d) the introduction of the cash exchange system into the indigenous subsistence economy. Nucleated settlements developed around the colonial administrative centres and increasingly developed urban characteristics. The increased flow of goods and services also created markets and centres of transhipment, which evolved into urban cities. Urbanization is perhaps the most important phenomenon in economic growth and the delivery of service in most developed countries, including Malawi. The process of urbanization is closely related to the nation's pattern of human settlements, the size distribution of population, the population carrying capacity of arable land, the location of productive activities and resources, and general land use.

Urbanization is defined in this study report as the process whereby the functions of a rural settlement or village increasingly become oriented towards non-farm activities such as the production of goods, marketing, commercial and professional services, etc., with a concomitant increase in non-agricultural population. In order to formulate an urbanization strategy in relation to development and the delivery of service, it is important to have a clear understanding of the nature and extent of urbanization in Malawi including its past and future trends. That is the major thrust of this study.

The urban centres listed and discussed in this report were identified on the bases of (a) the definition of "urban" given above; and (b) a Central Place Survey which was carried out in all the twenty-four districts. The Hierarchy of the urban centres is based on a point system relating to the types and levels of basic services existing in the various urban places.

The services were rated on three levels-- high, medium and low and points were assigned three, two and one respectively. Thus the urban places have been ranked according to points (see Part 5).

4.2 URBAN POPULATION : 1977

Out of Malawi's total population of 5,547,460 persons in 1977, 559,000 persons, representing approximately 10% of the total population, lived in urban areas or urban places, of which there were 83. (Table 4.1) In terms of the hierarchy of service centres there were 3 national centres (with 61 percent of the urban population), 1 regional centre (4%), 5 subregional centres (6%), 16 district centres (17%), 11 main market centres (7%) and 47 rural market centres (5%). (Table 4.2). The distribution of the urban population per region and per District is shown in Table 4.3. Approximately 336,000 persons (60%) were located in the Southern Region's 37 urban places; 160,300 persons (29%) were located in the Central Region's 30 urban places; and 62,500 persons (11%) were located in the Northern Region's 16 urban places. Of the 4 districts of Rumphi, Karonga, Nsanje, Nkhotakota, each had an urban population above the national average of 10%, Rumphi being the highest with 14.3%. 5 districts, namely Chikwawa, Mangochi, Salima, Nkhata Bay and Chitipa, had urban populations ranging between 4.3 and 8.4%, each of the remaining 15 districts had less than 4% of the population being urban and three of them namely Ntcheu, Mulanje and Chiradzulu, had less than 2% (See Fig. 4.1)

4.3 URBAN POPULATION GROWTH TRENDS : 1966-2000

According to the 1966 Census Malawi's urban population was 260,000 people, representing only 5% of total population of 4,039,583. By 1977 the urban population, accordingly to this study report, had increased to 559,000, representing 10.3% of the total population of 5,547,460. This urban population figure is higher than the Census figure for 1977 because of the different interpretation of definition of the term "urban". (See Appendix 4 for explanation).

Table 4.1
Major Urban Areas and Hierarchy of Service Centres: 1981

National Centre	Regional Centre	Sub-Regional Centre	District/or Main Market Centre	Rural Market Centre
Northern Region				
	Mzuzu	Karonga Nkhata Bay	Rumphi Chitipa Mzimba Chilumba	Livingstonia Katumbi Bolero Chintheche Ekwendeni Euthini Chikangawa Embangweni Champhira
Central Region				
Lilongwe		Kasungu Salima	Nkhotakota Mponela Ntchisi Dowa Mchinji Dedza Ntcheu Namitete	Dwangwa Santhe Malomo Madisi Nambuma Mkanda Kapiri Kamwendo Kasiya Nsaru Lumbadzi Likuni Nathenje Sinyala Mitundu Chipoka Linthipe Mtakataka Lizulu
Southern Region				
Blantyre Zomba		Mangochi	Luchenza Thyolo Liwonde Ngabu Balaka Machinga Mwanza Chiradzulu Mulanje Chikwawa Nsanje Nchalo Phalombe Bangula Lunzu	Monkey Bay Malindi Namwera Chiripa Ulongwe Ntaja Nsanama Namwera T .O . Chingale Lirangwe Chileka Namadzi Bvumbwe Makwasa Thekerani Migowi Muloza Chapananga Mpasa

Table 4.2
Urban Service Hierarchies and Distribution of Urban Places and Population: 1977

Service Hierarchy	No.	Population	% of Total Urban Population	% of Total National Population
National Centres	3	341,900	61 .2	6 .2
Regional Centre	1	22,300	4 .0	0 .4
Sub Regional Centres	5	35,000	6 .3	0 .6
* District/Main Market Centres	27	95,300	17 .0	1 .7
Rural Market Centres	47	64,500	11 .5	1 .6
Total	**83**	**559,000**	**100.0**	**10.1**

* Consisting of 16 District Centres and 11 Main Market Centres

Table 4.3
Urban Population by District — 1977

DISTRICT	TOTAL POP.	URBAN POP.	% URBAN
Chitipa	72,316	3,100	4 .3
Karonga	106,923	14,500	13 .6
Nkhata Bay	105,803	4,500	4 .3
Rumphi	62,450	8,900	14 .3
Mzimba	301,361	31,500	10 .5
NORTHERN REGION	**648,853**	**62,500**	**9.6**
Kasungu	194,436	7,000	3 .6
Nkhotakota	94,370	11,000	11 .7
Ntchisi	87,437	2,900	3 .3
Dowa	247,603	9,400	3 .8
Salima	132,276	6,300	4 .8
Lilongwe	704,117	107,600	15 .3
Mchinji	158,833	4,600	2 .9
Dedza	298,190	7,600	2 .5
Ntcheu	226,454	3,900	1 .7
CENTRAL REGION	**2,143,716**	**160,300**	**7.5**
Mangochi	302,341	19,500	6 .4
Machinga	341,836	13,400	3 .9
Zomba	352,334	26,900	7 .2
Chiradzulu	176,184	1,200	0 .7
Blantyre	408,062	222,700	54 .6
Mwanza	71,405	2,400	3 .4
Thyolo	322,000	12,600	3 .9
Mulanje	477,546	7,700	1 .6
Chikwawa	194,425	16,300	8 .4
Nsanje	108,758	13,500	12 .4
SOUTHERN REGION	**2,754,891**	**336,200**	**12.2**
MALAWI	**5,547,460**	**559,000**	**10.1**

Even though the existing urban component of the population was relatively low, the urban growth rate between 1966 and 1977 has been substantial; that is, at a rate of 7.2% per annum, thus doubling within a decade. This relatively high growth rate of urbanization can be attributed to industrialization and general economic growth over this period which provided new jobs, particularly in the new Capital City of Lilongwe and in Blantyre.

Between 1966 and 1977 the urban population within the regions increased by 4.6% in the southern Region; 3.5% in the Northern Region; and 2.6.% in the Central Region. Comparison by District is not realistic as the urban centres identified in 1977 cannot be compared with the 1966 Census figures.

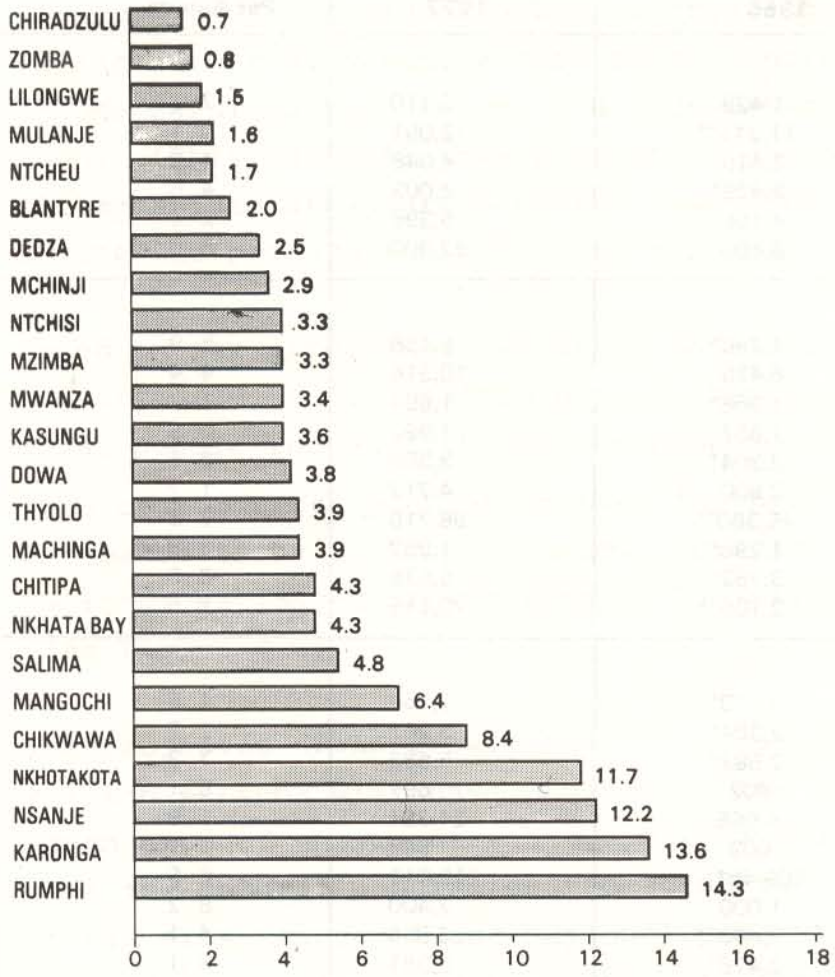

Figure 4-1: URBAN COMPONENTS OF DISTRICT POPULATION 1977

(Ranking excludes major urban centres of Blantyre, Lilongwe, Mzuzu and Zomba)

However, Table 4.4 shows the 1966-77 growth of selected major urban centres which were identified in the 1966 Census. (see Appendix 4.1).

The estimated growth of the various centres has been based on a combination of the following factors:

- General Government policy to promote development of lower-order urban centres
- Existing levels of services and catchment areas
- Size of population
- Past growth and comparison of the growth with that of the district

Table 4.4
Urban Population Growth of Selected Centres 1966-1977 (Adjusted Figures)

	Urban Population 1966	Urban Population 1977	Average Growth Per Annum
Northern Region			
Chitipa	1,429	3,110	7 .3
Karonga	11,241**	12,051	0 .1
Nkhata Bay	2,415	4,048	4 .8
Rumphi	2,429*	4,003	4 .6
Mzimba	4,156	5,396	2 .4
Mzuzu	8,490	22,300	6 .0
Central Region			
Kasungu	4,266*	6,488	3 .9
Nkhotakota	6,425	10,316	4 .4
Ntchisi	1,368*	1,654	1 .7
Dowa	1,857*	1,962	0 .5
Mponela	2,304*	3,359	3 .5
Salima	3,900	4,712	1 .7
Lilongwe	45,380**	98,718	7 .3
Mchinji	1,295*	1,957	3 .8
Dedza	3,762*	5,578	3 .6
Ntcheu	2,105**	3,115	3 .6
Southern Region			
Mangochi	4,770*	7,764	4 .5
Monkey Bay	2,394*	3,207	2 .7
Balaka	2,582*	5,632	7 .3
Machinga	402	697	5 .1
Zomba	19,666	24,234	1 .9
Chiradzulu	609	689	1 .1
Blantyre	109,461	219,011	6 .5
Mwanza	1,000	2,400	8 .2
Thyolo	2,480*	3,856	4 .1
Luchenza	2,416*	3,381	3 .1
Mulanje	2,221*	3,001	2 .8
Chikwawa	2,837*	3,636	2 .3
Nsanje	6,019*	6,400	0 .6

** Adjustment to the 1966 census figures are taken directly from GITEC studies which considered boundary changes in comparing population figures for 1966 and 1977 for selected towns .

* Adjustments to the 1966 census figures were made by comparing township boundary areas for 1966 and 1977 and making subsequent adjustments to reflect comparative areas and their population in those two census years . For further infomation on the adjustnets, See Methodology for Urban Population Adjustments, 1966, Town and Country Planning Department

Estimates of the future urban population have been based on the growth of individual urban centres including all existing Village Centres, assuming that these centres will eventually become Rural Market Centres and thus urban centres by the year 2000. (This estimate regarding the transformation of existing villages into urban areas by the year 2000 will be reviewed during the preparation of district plans).

Based on the preceding, the urban population for the year 2000 is estimated at 2.5 million people, representing 21% of the total population of 11.9 million people. The average growth rate of the urban population over the period 1977-2000 is estimated to be 6.7% per annum. This is well above the national estimated growth rate of 3.3% of the same period. (See Figure 4-2).

The projected urban growth rate of 6.7% implies that over 1.3 million persons will have moved from the rural areas to the urban area of the country between 1977 and 2000-- assuming that the natural population growth of the urban areas is within close range of the national population growth rate. (Fig. 4-3). A complete breakdown of urban growth 1977-2000 is given in Table 4.5 and the geographical distribution is shown in Map 4-1.

4.4 URBAN POPULATION DISTRIBUTION : 2000

The expected population distribution in the period 1977-2000, by district, is shown in Table 4.5. It is expected that by the year 2000, the City of Blantyre will have a population of 1.2 million persons compared with its 1977 population of 219,000 persons. This means that of the estimated 2.5 million persons who will be living in urban areas of the nation, about 48% will be residing in the metropolitan area of Blantyre.

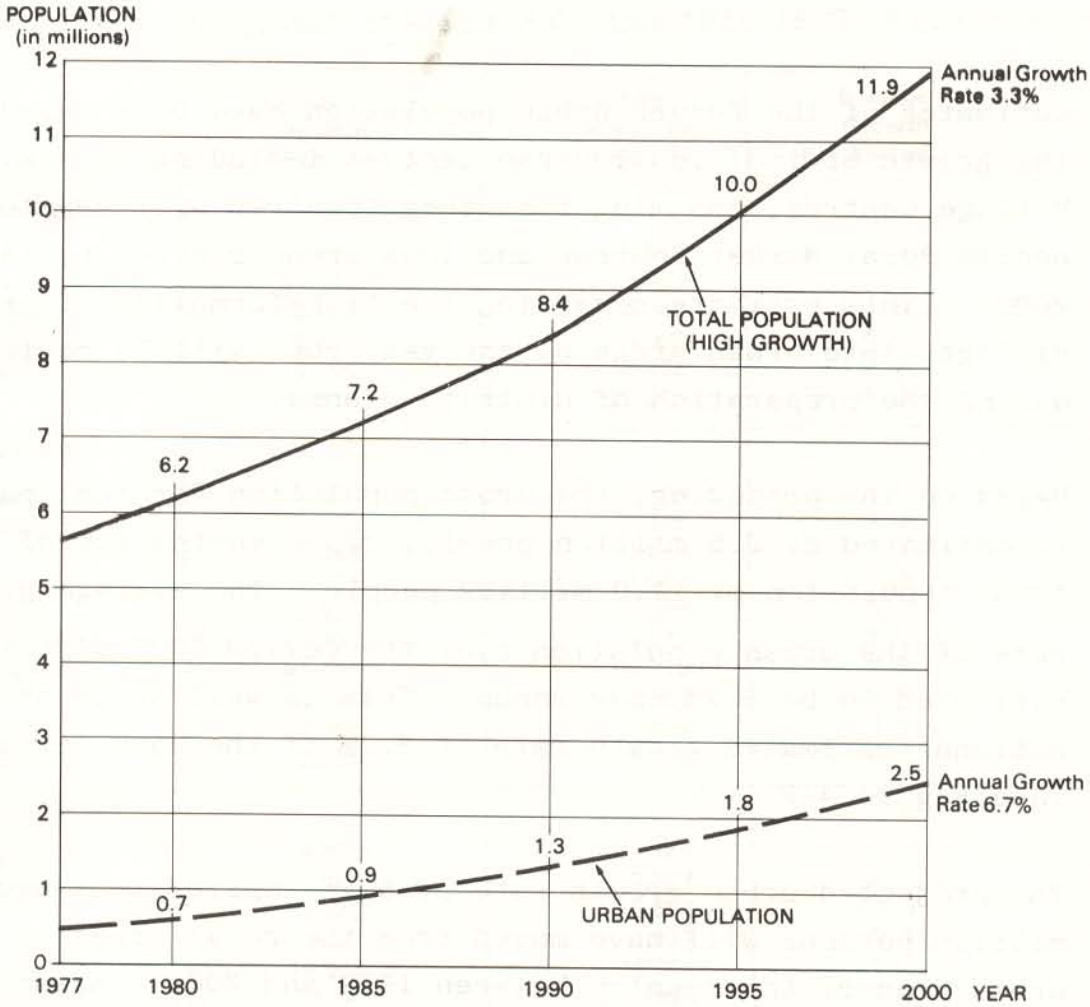

Figure 4-2: URBAN POPULATION GROWTH 1977-2000

Data Source: 1. "Working Paper on Population" NPDP 1983
2. 1977 Census of Malawi; NSO.

The Capital City of Lilongwe with approximately 98,000 persons in 1977 is expected to reach a population of 400,000 persons by year 2000 representing 16% of the national urban population. the population of two other leading urban centres, Zomba and Mzuzu, which was about 24,000 and 22,000 persons respectively in 1977, is expected to increase to 95,000 and 90,000 respectively by the year 2000.

In terms of future urban centres (Year 2000) there will be 3 National Centres (with 67% or the urban population); 3 Regional Centres (5%); 11 Sub-Regional Centres (7%); 13 District Centres (4%); 53 Main Market Centres (6%) and 185 Rural Market Centres (11%).

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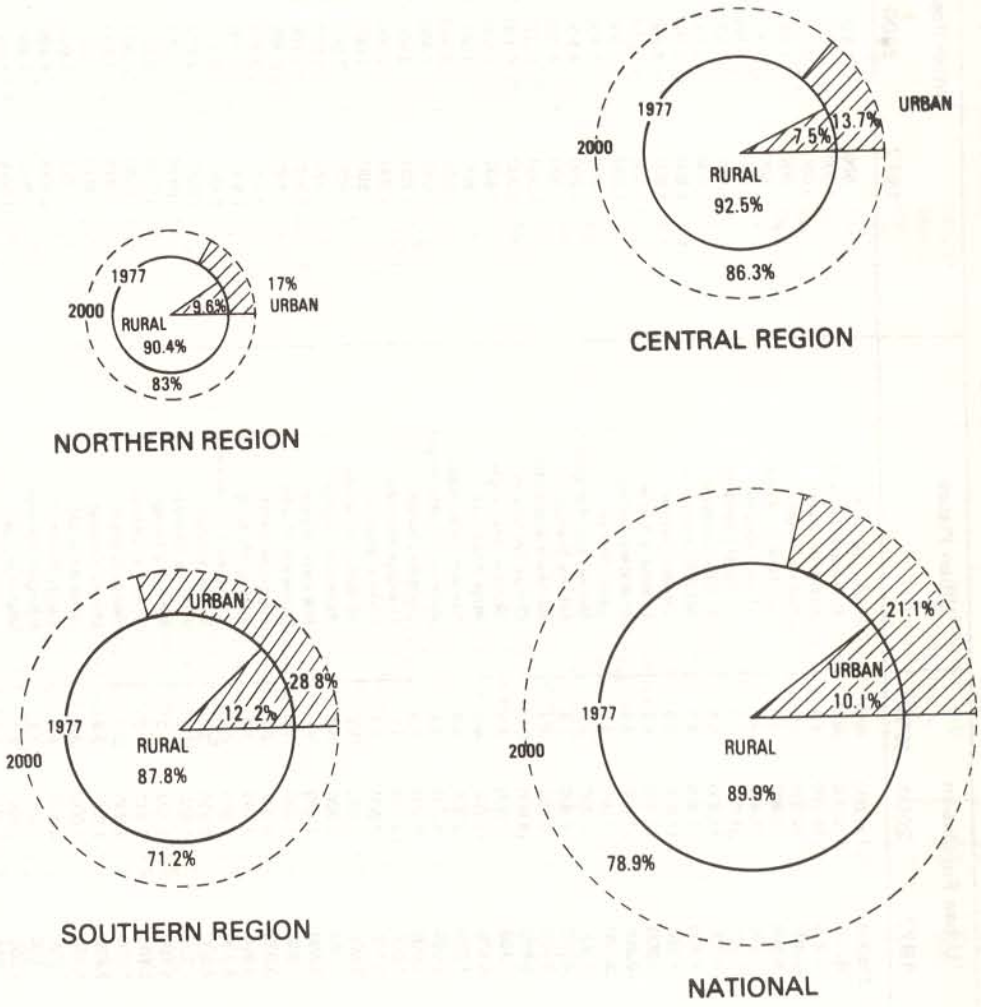

Figure 4-3: URBAN-RURAL COMPOSITION OF NATIONAL AND REGIONAL POPULATION 1977 AND 2000

Table 4.5
Urban Population Growth 1977-2000

Urban Places	Urban Population			Urban Places	Urban Population		
	1977	2000	% Yr.		1977	2000	% Yr.
Blantyre	219,000	1,181,000	7.6	Kapiri (Mchinji)	500	1,500	4.9
Lilongwe	98,700	400,000	6.3	Kamwendo (Mchinji)	1,000	3,000	4.9
Zomba	24,200	95,000	6.1	Kasiya (Lilongwe)	1,000	2,100	3.2
Mzuzu	22,300	90,000	6.3	Nsaru (Lilongwe)	500	1,000	3.2
Kasungu	6,500	17,900	4.5	Lumbadzi (Lilongwe)	500	1,000	3.2
Mangochi	7,800	21,400	4.5	Likuni (Lilongwe)	2,000	4,100	3.2
Karonga	12,000	31,000	4.2	Nathenje (Lilongwe)	1,000	2,100	3.2
Nkhata Bay	4,000	13,900	5.6	Sinyala (Lilongwe)	1,000	2,100	3.2
Salima	4,700	11,900	4.1	Mitundu (Lilongwe)	1,800	3,700	3.2
Rumphi	4,000	15,000	5.9	Chipoka (Salima)	1,600	4,000	4.1
Thyolo	3,900	11,100	4.7	Linthipe (Lilongwe)	500	1,000	3.1
Nkhotakota	10,300	27,800	4.4	Mtakataka (Dedza)	1,500	2,200	1.7
Luchenza (Thyolo)	3,400	7,600	3.6	Lizulu (Ntcheu)	800	1,700	3.3
Liwonde (Machinga)	3,800	11,200	4.8	Monkey Bay (Mangochi)	3,200	6,500	3.1
Ngabu (Chikwawa)	4,800	6,800	1.5	Malindi (Mangochi)	3,000	6,100	3.1
Mponela (Dowa)	3,400	9,500	4.6	Namwera (Mangochi)	2,500	5,000	3.1
Balaka (Machinga)	5,600	28,600	7.3	Chiripa (Mangochi)	3,000	6,100	3.1
Chitipa	3,100	7,800	4.1	Ulongwe (Machinga)	1,500	3,500	3.8
Mzimba	5,400	13,600	4.1	Ntaja (Machinga)	800	1,800	3.7
Ntchisi	1,700	3,300	2.9	Nsanama (Machinga)	1,000	2,300	3.7
Dowa	2,000	4,000	3.1	Namwera TO (Machinga)	1,000	1,400	1.5
Mchinji	2,000	5,300	4.3	Chingale (Zomba)	1,700	2,400	1.5
Dedza	5,600	14,100	4.1	Lirangwe (Blantyre)	1,200	2,000	2.2
Ntcheu	3,100	7,800	4.1	Chileka (Blantyre)	500	1,000	3.1
Lunzu	2,000	7,500	5.9	Namadzi (Chiradzulu)	500	1,000	3.1
Machinga	700	2,600	5.9	Bvumbwe (Thyolo)	500	1,000	3.1
Mwanza	2,400	7,400	5.0	Makwasa (Thyolo)	1,500	2,200	1.7
Chiradzulu	700	1,000	1.6	Thekerani (Thyolo)	3,300	5,600	2.3
Mulanje	3,000	6,200	3.2	Migowi (Mulanje)	2,000	2,800	1.5
Chikwawa	3,600	6,100	2.3	Muloza (Mulanje)	1,500	2,100	1.5
Nsanje	6,400	7,300	0.6	Chapananga (Chikwawa)	3,400	6,600	2.9
Nchalo (Chikwawa)	4,500	9,300	3.2	Mpasa (Nsanje)	2,000	2,800	1.4
Phalombe (Mulanje)	1,200	1,800	1.8	Kameme (Chitipa)	(800)	1,700	3.4
Bangula (Nsanje)	5,100	7,200	1.5	Nthalire (Chitipa)	(1,000)	2,200	3.4
Chilumba (Karonga)	2,500	6,400	4.2	Chisenga (Chitipa)	(700)	1,500	3.5
Namitete (Lilongwe)	1,100	2,500	3.6	Wenya (Chitipa)	(700)	1,500	3.4
Livingstonia (Rumphi)	2,500	5,900	3.8	Misuku (Chitipa)	(600)	1,300	3.4
Katumbi (Rumphi)	1,100	2,600	3.8	Uliwa (Karonga)	(700)	1,800	4.2
Bolero (Rumphi)	1,300	3,500	4.4	Kaporo (Karonga)	(2,500)	6,400	4.2
Chintheche (Nkhata Bay)	500	1,200	3.9	Nyungwe (Karonga)	(700)	1,800	4.2
Ekwendeni (Mzimba)	1,000	2,500	4.1	Mlali (Karonga)	(2,500)	6,400	4.2
Euthini (Mzimba)	800	2,000	4.1	Usisya (Nkhata Bay)	(1,200)	2,700	3.6
Chikangawa (Mzimba)	600	1,500	4.1	Likoma (Nkhata Bay)	(1,000)	2,300	3.6
Embangweni (Mzimba)	500	1,300	3.9	Chikwina (Nkhata Bay)	(600)	1,400	3.8
Champhira (Mzimba)	900	2,300	4.2	Mphompha (Rumphi)	(400)	1,900	4.4
Dwangwa (Nkhotakota)	700	1,500	3.4	Lura (Rumphi)	(500)	1,400	4.4
Santhe (Kasungu)	500	1,600	5.2	Muhuju (Rumphi)	(700)	1,900	4.4
Malomo (Ntchisi)	1,200	2,400	3.1	Engucwini (Mzimba)	(500)	1,300	4.1
Madisi (Dowa)	2,000	4,100	3.2	Emfeni (Mzimba)	(1,000)	3,800	4.1
Nambuma (Dowa)	2,000	4,100	3.2	Emcisweni (Mzimba)	(400)	1,000	4.1
Mkanda (Mchinji)	1,100	3,300	4.9				

Table 4.5 (continued)

Urban Places	Urban Population			Urban Places	Urban Population		
	1977	2000	% Yr.		1977	2000	% Yr.
Kafukule (Mzimba)	(800)	2,000	4.1	Lobi (Dedza)	(1,000)	2,300	3.7
Edingeni (Mzimba)	(500)	1,300	4.1	Mayani (Dedza)	(800)	1,400	2.5
Enukweni (Mzimba)	(1,000)	3,800	4.1	Golomoti (Dedza)	(1,200)	2,100	2.5
Bwengu (Mzimba)	(500)	1,300	4.1	Bilira (Ntcheu)	(500)	1,200	3.8
Kamchocho (Mzimba)	(500)	1,300	4.1	Bwanje (Ntcheu)	(2,000)	4,700	3.8
Eswazini (Mzimba)	(600)	1,500	4.1	Sharpevale (Ntcheu)	(2,000)	4,700	3.8
Mzalangwe (Mzimba)	(500)	1,300	4.1	Kasinje (Ntcheu)	(1,000)	2,400	3.8
Luzi (Mzimba)	(1,000)	3,800	4.1	Kandeu (Ntcheu)	(1,500)	3,600	3.8
Mbalachanda (Mzimba)	(500)	1,600	5.2	Tsangano (Ntcheu)	(500)	1,400	4.6
Chisemphere (Kasungu)	(1,000)	3,500	5.6	Mlangeni (Ntcheu)	(2,000)	4,700	3.8
Chulu(Kasungu)	(500)	1,800	5.6	Maldeco (Mangochi)	(1,400)	3,200	3.7
Mtunthama (Kasungu)	(500)	1,800	5.6	Ndinde (Mangochi)	(1,300)	3,000	3.7
Mkhota (Kasungu)	(400)	1,400	5.6	Makanjila (Mangochi)	(2,000)	4,600	3.7
Bua (Kasungu)	(700)	2,500	5.6	Nankumba (Mangochi)	(1,500)	3,500	3.7
Simulemba (Kasungu)	(600)	2,100	5.6	Mkungulu (Mangochi)	(1,300)	3,000	3.7
Mwanjombo (Nkhotakota)	(1,500)	3,800	4.1	Masuku (Mangochi)	(1,500)	3,500	3.7
Liwaladzi (Nkhotakota)	(1,000)	2,500	4.1	Jalasi (Mangochi)	(4,000)	9,300	3.7
Zidyana (Nkhotakota)	(600)	1,500	4.1	Ndumundu (Mangochi)	(2,000)	4,600	3.7
Benga (Nkhotakota)	(2,000)	5,000	4.1	Namalaka (Mangochi)	(3,000)	7,000	3.7
Kasitu (Nkhotakota)	(1,000)	2,500	4.1	Utale (Machinga)	(2,000)	4,600	3.7
Mpandajanga (Nkhotakota)	(1,000)	2,500	4.1	Phalula (Machinga)	(1,000)	2,300	3.7
Dwambazi (Nkhotakota)	(1,000)	2,500	4.1	Mpili (Machinga)	(1,000)	2,300	3.7
Kansonga (Ntchisi)	(700)	1,400	3.0	Jali (Zomba)	(1,000)	1,800	2.6
Mvera (Dowa)	(500)	1,000	3.2	Thondwe (Zomba)	(500)	1,000	2.6
Chisepo (Dowa)	(500)	1,000	3.2	Mayaka (Zomba)	(1,000)	1,800	2.6
Bowe (Dowa)	(500)	1,000	3.2	Kachulu (Zomba)	(1,000)	1,800	2.6
Khombedza (Salima)	(1,500)	3,800	4.1	Mbombwe (Chiradzulu)	(500)	1,000	2.6
Chitala (Salima)	(400)	1,000	4.1	Namitambo (Chiradzulu)	(1,300)	2,300	2.6
Chinguluwe (Salima)	(1,600)	4,000	4.1	Nkula (Blantyre)	(500)	1,000	3.1
Ngodzi (Salima)	(2,500)	6,300	4.1	Neno (Mwanza)	(900)	2,600	4.8
Lifidzi (Salima)	(800)	2,000	4.1	Mikolongwe (Thyolo)	(1,200)	2,100	2.6
Senga Bay (Salima)	(500)	1,000	3.2	Nkhonjeni (Thyolo)	(1,100)	2,000	2.6
Nkhoma (Lilongwe)	(500)	1,000	3.2	Masambanjati (Thyolo)	(500)	1,000	2.6
Kabudula (Lilongwe)	(1,200)	2,500	3.2	Thuchila (Mulanje)	(1,500)	2,600	2.5
Mpingu (Lilongwe)	(1,000)	2,100	3.2	Chiringa (Mulanje)	(2,000)	3,500	2.5
Mngwangwa (Lilongwe)	(2,000)	4,100	3.2	Dolo (Chikwawa)	(1,000)	2,200	3.4
Chimutu (Lilongwe)	(1,000)	2,100	3.2	Chiromo (Nsanje)	(2,500)	3,600	1.6
Mkoko (Lilongwe)	(500)	1,000	3.2	Marka (Nsanje)	(1,700)	2,500	1.6
Nkhwazi (Mchinji)	(700)	2,100	4.9	Muona (Nsanje)	(700)	1,000	1.6
Tembwe (Mchinji)	(900)	2,700	4.9	Masenjere (Nsanje)	(1,900)	2,700	1.6
Mikundi (Mchinji)	(400)	1,200	4.9	Sorgin (Nsanje)	(1,000)	1,400	1.6
Ludzi (Mchinji)	(500)	1,500	4.9	Phokera (Nsanje)	(1,500)	2,200	1.6
Kochilira (Mchinji)	(1,000)	3,000	4.9	Chididi (Nsanje)	(1,500)	2,200	1.6
Kalulu (Mchinji)	(1,000)	3,000	4.9	Ndamera (Nsanje)	(2,500)	3,600	1.6
Maonde (Dedza)	(2,100)	3,700	2.5				

The regional distribution of the year 2000 urban population is expected to be as follows: 259,900 persons (10%) will be located in the Northern Region, 664,000 (27%) in the Central Region and 1,574,100 (63%) in the Southern Region. The projected distribution indicates a slight increase in the Southern Region and slight decreases in the Northern and Central Regions. The distribution of the future urban population by district will be considered after the completion of the survey of inter-settlement functional links and after discussions have been held with Government Ministries on the future development potential of major towns and district. Meanwhile, however, Table 4.6 shows, without comments a tentative distribution of the future urban population by district.

4.5 URBAN EMPLOYMENT AND INCOMES

In 1977, of the 2.3 million economically active persons inclusive of agricultural subsistence employment, approximately 7% (156,000 persons) were employed in the urban areas of the country. The following is a regional breakdown of the total urban employment: 65% in the Southern Region; 28% in the Central Region ; and only 7% in the Northern Region. The Southern Region's urban employment comprised approximately 65% of the total urban employment in Malawi. This is an expected result of the level of urbanization in the Southern Region.

The existing urban land use structure in some parts of the country 'permits' a certain number of subsistence farming activities, but this will not be possible under highly dense urban conditions which are likely to prevail in the future. A substantial number of urban persons who are unable to find gainful employment in sectoral activities will therefore become unemployed dependent persons whose survival will depend more upon social (i.e. relatives and friends) and public assistance. Especially in the urban centres of Blantyre and Lilongwe, this problem of increased dependency may become a major issue in the very near future.

Table 4.6
Urban Population by District — 1977 & 2000

District	1977 Urban Population	2000 Urban Population	1977 — 2000 Urban Growth % per Annum
Chitipa	3,100	16,000	7 .4
Karonga	14,500	53,800	5 .7
Nkhata Bay	4,500	21,500	7 .0
Rumphi	8,900	31,400	5 .6
Mzimba	31,500	137,200	6 .6
Northern Region	**62,500**	**259,900**	**6.4**
Kasungu	7,000	32,600	6 .9
Nkhotakota	11,000	49,600	6 .8
Ntchisi	2,900	7,100	4 .0
Dowa	9,400	20,600	3 .5
Salima	6,300	35,000	7 .7
Lilongwe	107,600	435,000	6 .3
Mchinji	4,600	25,100	7 .7
Dedza	7,600	26,800	5 .6
Ntcheu	3,900	32,200	9 .6
Central Region	**160,300**	**664,000**	**6.4**
Mangochi	19,500	86,800	6 .7
Machinga	13,400	59,200	6 .7
Zomba	26,900	105,200	6 .1
Chiradzulu	1,200	5,300	6 .7
Blantyre	222,700	1,188,500	7 .5
Mwanza	2,400	10,000	6 .4
Thyolo	12,600	32,600	4 .2
Mulanje	7,700	19,000	4 .0
Chikwawa	16,300	31,000	2 .8
Nsanje	13,500	36,500	4 .4
Southern Region	**336,200**	**1,574,100**	**6.9**
Malawi	**559,000**	**2,498,000**	**6.7**

As stated in Section 3.1 of the background study report on Labour Force and Employment, 13.5% (668,000 persons) of the national employment force will be residing in the urban areas of the country by year 2000. Of this urban employment force, over 73% will be located in the Southern Region's urban areas, particularly in Blantyre. The Southern Region's urban employment force is estimated to increase four-fold, from 100,000 economically active persons in 1977 to 488,000 by 2000. In the Northern and Central Regions, the 1977 urban employment levels of 13,000 and 43,000 are expected to increase to 44,000 and 136,000 by year 2000 respectively.

In terms of urban area income the NSO 1981 data indicate that there were substantial differences in household income levels among the major urban centres of Blantyre, Lilongwe, Zomba and Mzuzu. (While the average annual household income in Mzuzu was K81.00, it was more than twice that in Blantyre). Section 3.1 and 3.4 of the background studies give more details on "Labour Force and Employment" and "Levels of Income and Income distribution" respectively.

4.6 PHYSICAL PLANNING IMPLICATIONS

It is apparent that development in a predominantly agricultural country, such as Malawi, will partly depend on the spatial relationships between urban and rural settlements because a spatially balanced hierarchy of settlements does stimulate development. In particular it facilitates an efficient distribution of goods and the delivery of service especially to the lower-order settlements, most of which are predominantly rural in character.

Within the hierarchy of urban places, the rural market centres are the basic economic activity 'nodes' at which rural inhabitants sell their agricultural products and by the goods and service they need[1]. Also, the rural market centre is the most effective place for the downward movement of goods and services required for rural consumption. Consequently rural market centres should be given special consideration in strategies that are directed towards the development of rural centres.

The goals of increased agro-productivity and equity in income distribution cannot be attained effectively without an integration of urban and rural areas in a national physical development plan that facilitates the functional links between villages, market towns, intermediate cities and large cities in the country.

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(1) Some village centres also perform similar functions, but they are not considered as urban places in this report.

The opportunities to convert any accumulated cash resulting from increased agricultural and agro-industrial production into needed goods and services and, generally, the economic development of the country, partly depends on a spatially balanced pattern of settlements consisting of: (a) an appropriate number of large cities and intermediate cities or large towns to produce the goods and services needed by lower-order urban settlements; and (b) an appropriate number of lower-order or urban places in a suitable spatial organisation that will maximize the provision of goods and services to rural settlements, and serve as market centres for transferring the surplus agro-productions to higher-order urban centres for consumption and processing.

The preceding paragraphs imply :

(a) the development of a network of roads and communications to facilitate or maximize functional links between rural and urban areas;

(b) the promotion of growth and development of a number of large towns and intermediate cities in addition to Blantyre and Lilongwe; and

(c) the promotion of rural market centres and selected rural growth centres.

Several official documents have stated that the country should strive for spatially balanced development, not only in terms of its regional components but also in terms of its urban-rural composition. An "urbanization policy" emphasizing the diffusion of urbanization to rural areas has in a way been in effect since the mid-sixties, with the establishment of the National Rural Development Programme and National Rural Growth Project. The Development of Lilongwe, itself an urbanization strategy, was a step towards the decentralization of economic opportunities and rural-urban intergration in the central part of the country.

It is widely accepted that for a spatially balanced socio-economic development, urbanization should occur in a developing country. One of the crucial issues, however, is the nature, the extent and the direction of urbanization that has to occur, and how it should occur without increasing the problem associated with large urban centres and the undesirable effects of rural-urban migration. The National Physical development Plan and Policy Document will attempt to address these issues.

5 SERVICE CENTRES

5.1 INTRODUCTION

National physical planning extensively deals with spatial issues and thus the analysis of the nation's human settlement system is a rather prominent task in the preparation of the NPDP. While the pattern of settlements and its distribution has been dealt with in Sections 2.2 and 6.4. This Section analyses the quantitative, qualitative and spatial dimensions of the provision of private and public service for the various levels of settlements throughout the country.

Firstly, this Section elaborates on some major issues concerning the provision of service and the distribution of "Service Centres". Its purpose is to substantiate the notion of concentrating service in focal points and to describe the mechanisms of interaction between urban and rural areas. Secondly, the historically developed hierarchical structure and distribution of centres is analysed by way of a point system which was established for Malawi in the early seventies. The analysis include a critical review of the spatial distribution of centres and points out the shortcomings of the structure in terms of both the lack of area coverage and the overlapping of service areas. Thirdly, following the analysis of the aggregated overall structure of service provision, a closer look is taken at selected individual services and their distribution at district level. In assessing deficiencies and disparities in service provision, extensive use is made of empirical work carried out by the N.P.D.P. Project, which focused on catchment areas for individual service and typical intersettlement linkages. Fourthly, from this and other sources, assessment criteria are derived and applied to review the situation by district.The results are presented in district profiles and in a summary of the existing spatial and functional deficiencies.

As the issue of centre-oriented service provision is not a new subject in Malawi's Government policy, there are already established programmes for the improvement of the situation in

various centres. Therefore, finally, the "Secondary Centres Programme" and the "National RuralCentre Development Programme" are briefly highlighted, and the role of the N.P.D.P. is described.

The concluding sub-section includes summary observations and implications for the preparation of the N.P.D.P.

5.2 THE ROLE OF SERVICE CENTRES IN THE URBAN/RURAL CONTEXT

The economy which has evolved from pure subsistence into a higher stage of development needs public and private services. It becomes part of a spatial system with functional linkages among sectors, farmers, traders, producers, consumers, etc.(1).

In brief, the most important types of linkages and corresponding facilities are as shown in Table 5.1.

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(1) A comprehensive description of the linkage structure in Malawi is given in: TCPD/GITEC: Development of District Centres Feasibility Study. Volume 1, Part 1, Dusseldolf, Lilongwe 1980 pp 103-107.

Table 5.1
Linkages and Related Facilities

Types of Linkages	Elements	Facilities
1 . Physical Linkages	Transport on -Roads -Railways -Waterways -Airways	Networks, Intra and Inter-system Connections (Nodal Points); e .g . Interlace between Primary, Secondary and Tertiary Roads; Ports, Stations, Airports, etc .
2 . Economic Linkages	-Goods Distribution	-Commercial Centres -Produce and Consumer Goods, Markets
	-Production Linkages	-Input Delivery (Raw Materials, Intemediate Goods, Machinery, Tools)
	-Forward and Backward Linkages	-Export Outlets -Import Agencies
	-Capital Flows	-Banking
3 . Technological Linkages	-Diffusion of Technology: Skills, Machinery, Tools	-Production Input Delivery (see also Economic Linkages) -Vocational Training (see also Service Delivery Linkages) -Extension Services (Agric ., Crafts
4 . Service Delivery Linkages	-Social Services	-Health Facilities -Educational Facilities (General Education, Vocational Training)
	-Communication Services	-Postal Services -Telecommunication Facilities -Mass Media (Newspaper, Radio) -Transportation Services (Public and Private Transportation of Passengers and Goods) -Accommodation Facilities
	-Technical Services	-Maintenance/Repair Workshops -Extension Services (Agriculture, Crafts, Industry, Trading) -Energy Supply -Water Supply, Public Utilities

Table 5.1
Linkages and Related Facilities (cont'd)

Types of Linkages	Elements	Facilities
5 . Population Movement Linkages	-Migration Patterns (Permanent, Temporary) -Commuting Patterns	not applicable
6 . Social Interaction Linkages	-Social Communication	-Community Halls
	-Recreation	-Sports Facilities -Cinemas -Restaurants, etc .
	-Religion	-Places of Worship
7 . Political and Administrative Linkages	-Governmental Decision Chains	-Sub-National Authorities and Agencies (Administration, Maintenance, Implementation)
	-Jurisdiction	-Courts
	-Executive Functions	-Police
	-National Security	-Military Installations
	-Political Organisations	-Political Party Units

Source: TCPD/GITEC 1980, p . 113 and own supplements .

The more effectively the above linkages are functioning, the more efficiently the socio-economic system will work. For instance, the public health standard can be raised to a desired standard only if people have access to the necessary medical facilities. Equally, farmers can only enter into the cash economy if they can sell their produce; i.e., if marketing and storage facilities are available. Communication among people both in their social and economic roles takes place only if postal facilities, telephone, broadcasting services, distribution of newspapers, bus services, etc., exist and are accessible to all people.

Of course, the importance of individual linkages is not uniform in all countries. It depends primarily on the economic structure as to what extent, for instance , an agricultural marketing system has to be provided throughout the country or possibly only in some regions with agriculture as a priority region. Section 3 of this Report and various other documents dealing with the current and future economic structure of Malawi confirm that agriculture will be the dominant economic sector within the next 15-20 years.

Section 4 of this Report emphasizes the fact that Malawi's urban population is likely to grow at an average rate of about 7% up to the year 2000, reaching a total of 2.5 million people in towns and cities as against 0.9 million in 1985. This kind of urban population growth will require the creation of a substantial number of jobs in the (urban based) secondary sector (see Section 3). The expansion of domestic demand, however, is an important driving force for the development of secondary sector activities, but domestic demand for manufactured goods can grow only if incomes of the population grow in the agriculture-based hinterland. Hence, it is mainly the performance of the agricultural sector which determines prospects of the manufacturing industry in the urban environment.

Former studies have emphasized that specific import substitution and export promotion policies can have only a limited impact if domestic demand stagnates(1).

Therefore it is argued that the functioning of linkages in the rural areas is of primary importance. If service facilities were to be provided on an inappropriate scale, this would hamper agricultural development and, consequently, the economic development of the entire country.

To ensure proper functioning of the above mentioned linkages, three preconditions must be fulfilled:

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(1) See T.C.P.D./GITEC Ibid.

- In principle, all required functional linkages must have a corresponding (physical) service facility within reasonable reach;

- Service facilities should not be scattered over the country, but concentrated in "Service Centres" in order to realize agglomeration effects for the user; i.e., allowing for multipurpose visits instead of single-purpose trips to scattered service facilities.

- Service facilities with catchment areas of similar size have to be provided in Service Centres of the hierarchical level in order to achieve appropriate area coverage for all linkages.

Given these three preconditions it is clear that the pattern of service provision must have the characteristics of "decentralized concentration". This means that while the decentralization of service/facilities is desired they should not be scattered but concentrated in selected service centres for the benefit of the population in the rural hinterland.

The TCPD/GITEC study on this matter in Malawi summarizes the effects of decentralized concentration as follows:-

"(a) The creation (or completion) of a hierarchical system of towns will considerably raise the efficiency of existing spatial linkages since they serve - each town according to its hierarchical level for a determined hinterland - as nodes for various types of linkages.

(b) higher efficiency and better distribution of linkages leads to better absorption and better utilization of growth incentives originating from elsewhere in the secondary or primary sector.

(c) Improvement of spatial links and better utilization of growth incentives leads to accelerated interrelation of secondary and primary sector activities, which is recognized to be indispensable for accelerated growth both in the primary and secondary sector."

Fortunately, the concept of strengthening Service Centres at different hierarchical levels in predominantly rural environments fits very well into Malawi's overall development focus on agriculture. Service Centres add the necessary urban functions to the rural economy and, in this way, help to accelerate rural development. The transfer of the nation's capital to Lilongwe in the early seventies was the Government's first explicit step to decentralize development and improve development prospects of rural areas in the country through the provision of urban functions in proximity to unserved areas. In 1977 the Rural Growth Centre Project followed, which, on a pilot basis, provided central services at a low hierarchical level as a complementary tool to the National Rural Development Programme (N.R.D.P.). A few years later, the Government started to investigate the promotion of centres at an intermediate hierarchical level. These studies resulted in the implementation of a Secondary Centre Development Programme, which started in 1984.

In earlier years administrative services have been distributed throughout the country (i.e., in the District Centres). Most of then have later been gradually complemented by some social and economic services.

Therefore, the country's rural and urban settlement system has received considerable attention which, by and large, has led to a fairly articulated spatial system of various Service Centres. In the following section, the existing hierarchical pattern of Service Centres and the corresponding area coverage has been analysed in order to detect its strength and deficiencies.

5.3 EXISTING HIERARCHY OF SERVICE CENTRES

Empirical Background and Methodology

In 1982 the N.P.D.P. conducted a comprehensive central place survey which covered all economic, social, cultural services and community facilities throughout the country in any place which, in the opinion of local leaders showed some signs of centrality; that is, a certain number of shops, a public or private health service, or postal agency or the like. In this way, more than 250 places were identified for examination during the survey.

Through field surveys and interviews with local leaders, such as DC's, Chiefs, Subchiefs and other authorities, the exact number and qualitative level of each service obtained. The basis for the quantitative in-field assessment has been taken from a list of services which was selected in 1971 for the assessment of central services in the Lilongwe Region. The complete list is given in Table 5.2, including the corresponding weights.

On the basis of the weights assigned to each service a total index was derived for each centre by aggregating the individual service scores. The aggregated scores by centre were then used to obtain the hierarchical level of each centre. The following breakdown of score ranges was applied to obtain the corresponding designation:

7-11	Village Centre
12-19	Rural Market Centre
20-35	District and/or Main Market Centres
36-45	Sub-Regional or Regional or National Centres

The nomenclature for the different hierarchical levels of Service Centres was agreed upon at a coordination meeting held at the T.C.P.D. in 1983.

Examined places with less than 7 points have been disregarded as Service Centres. Therefore, the original number of more than 250 places was reduced to 187 qualified centres.

Table 5.2
Point System for Service Centres

Service	Highest Level (3 Points	Intermediate Level (2 Points)	Lowest Level (1 Point)
1 . Adminstration	District Council plus District Commissioner plus Town Council	District Council plus District Commissioner	District Council Office
2 . Health	Hospital with Resident Medical Practitioner	Hospital without Resident Medical Practitioner	Health Unit or Dispensary
3 . Education	Post Secondary Plus Secondary Plus Primary Schools	Secondary Plus Primary	Primary School
4 . Protection	Police Station	Police Sub-Station	Police Post
5 . Justice	Senior Resident Magistrate or Resident Magistrate	1st . 2nd . or 3rd . Magistrate	Trad . Court
6 . Postal	Post Office with one or more Executive Officers	Post Office with no executive Officers	Postal Agency
7 . Retail	40 + points*	20-39*	10-19 points*
8 . Banking	Permanent Bank	Static Agency	Mobile Agency
9 . Public Transport	Bus Service Plus Railway	Bus Service Plus Airfield	Dry-Season or all-weather Bus Service only
10 Water and Electricity	Piped Water plus reticulated Electricity	Piped Water or reticulated Electricity	Borehole or well
11 Petrol and Repair Facilities	More than one Petrol Company plus Repair Facilities	More than one Petrol Company	One Petrol Company only
12 ADMARC	Main Depot	Permanent Market	Bush Market
13 Hotel and Resthouses	Hotel	Government Resthouse	Distr . Council Resthouse
14 Community Centre	Library and Film facilities	Library or Film facilities	Hall only (No facilities)
15 Agricultural Extension Service	District Field Officer	Area Supervisor	Field Assistant

* Points were derived according to the prevailing number and kind of shops.

The score ranges applied in the above breakdown were defined on an arbitrary basis but against the background of experience gained with sub-national hierarchical urban systems in the country. To a certain extent, experience gained on similar analyses in Kenya and Tanzania has been taken into account as well. However, notwithstanding the centres of lower categories, it was felt that for the top level centres (i.e. Sub-regional, Regional and National Centres) a differentiation solely based on the applied point system was not possible. Therefore, in order to distinguish among these types of centres, the following criteria have been applied for assessment.

(a) the accumulated service level points
(b) the extent of the sphere of influence
(c) the nature of the urban service and
(d) population size of the urban centres and its catchment area.

Ranking and Designation of Centres

The results of the Central Place Survey in 1982 and the assessment by means of the above described methodology are presented in Table 5.3. In addition to accumulated score levels and the corresponding ranking of the centres, resulting designations are shown. At the top of the Service Centre Hierarchy there are three National Centres; namely, Blantyre Lilongwe and Zomba. National Centre means a settlement with a high level of service/facilities which exert a sphere of influence over the whole country. Lilongwe houses most of the national level administrative functions (though recently catching up to a certain extent in industry and commerce as well), whereas Blantyre is still clearly the leading national industrial and commercial centre of the country. Zomba, the former capital, serves some important national political and administrative functions which, however, are likely eventually to be shifted to Lilongwe. Nevertheless, Zomba will retain important national cultural facilities such as the University and related entities.

Table 5.3
Existing Service Centre Hierarchy

Centre	Score	Rank
National Centres		
Blantyre	45	1
Lilongwe	45	1
Zomba	42	3
Regional Centre		
Mzuzu	40	4
Sub-Regional Centre		
Kasungu	40	5
Mangochi	40	5
Karonga	38	7
Salima	36	8
Nkhotakota	36	9
District and/or Main Market Centre		
Dedza	34	10
Mulanje	34	10
Chikwawa	34	10
Nsanje	34	10
Mzimba	33	14
Balaka	32	15
Chitipa	31	16
Rumphi	31	16
Thyolo	31	16
Ntchisi	31	16
Mchinji	30	20
Nkhata Bay	30	20
Dowa	27	22
Ntcheu	26	23
Mwanza	26	23
Mponela	25	25
Phalombe	24	26
Liwonde	24	26
Nchalo	22	28
Luchenza	22	28
Ngabu	22	28
Bangula	20	31
Chilumba	20	31
Namitete	20	31
Rural Market Centres		
Chiradzulu	19	34
Machinga	19	34

Centre	Score	Rank
Rural Market Centres (cont'd)		
Lunzu	19	34
Namwera TO	17	37
Ulongwe	17	37
Mtakataka	17	37
Mitundu	17	37
Bvumbwe	17	37
Embangweni	16	42
Monkey Bay	16	42
Namwera		
Chingale	16	42
Ekwendeni	16	42
Chintheche	15	47
Euthini	15	47
Madisi	15	47
Livingstonia	15	47
Nsanama	14	51
Makwasa	14	51
Malindi	14	51
Ntaja	14	51
Dwangwa	13	55
Santhe	13	55
Nambuma	13	55
Kamwendo	13	55
Likuni	13	55
Nathenje	13	55
Chipoka	13	55
Lizulu	13	55
Namadzi	13	55
Muloza	13	55
Mpatsa	13	55
Kasija	13	55
Lumbadzi	13	55
Katumbi	13	55
Chikangawa	12	69
Champhira	12	69
Malomo	12	69
Mkanda	12	69
Kapiri	12	69
Nsaru	12	69
Sinyala	12	69
Linthipe	12	69
Chiripa	12	69
Lirangwe	12	69
Chileka	12	69
Thekerani	12	69
Chapananga	12	69
Migowi	12	69
Bolero	12	69

Table 5.3
Existing Service Centre Hierarchy (cont'd)

Centre	Score	Rank	Centre	Score	Rank
Village Centres			**Village Centres (cont'd)**		
Emcisweni	11	84	Mikolongwe	9	118
Kafukule	11	84	Thondwe	9	118
Edingeni	11	84	Nkula	9	118
Khombedza	11	84	Uliwa	8	139
Senga Bay	11	84	Nyungwe	8	139
Kabudula	11	84	Mbombwe	8	139
Golomoti	11	84	Engucwini	8	139
Tsangano	11	84	Mtunthama	8	139
Thuchila	11	84	Kasitu	8	139
Muona	11	84	Mphondagaga	8	139
Makhanga/Ch.	11	84	Dwambadzi	8	139
Nthalire	10	95	Chisapo	8	139
Usisya	10	95	Chitala	8	139
Likoma	10	95	Mkoko	8	139
Lura	10	95	Mikundi	8	139
Emfeni	10	95	Nkwazi	8	139
Bwengu	10	95	Bilira	8	139
Mbalachanda	10	95	Sharpvale	8	139
Chisemphere	10	95	Namkumba	8	139
Mwansambo	10	95	Misuku	8	139
Mvera	10	95	Jalasi	8	139
Nkhoma	10	95	Ndundundu	8	139
Mpingu	10	95	Namalaka	8	139
Mngwangwa	10	95	Mphiri	8	139
Kasinje	10	95	Kachulu	8	139
Mlangeni	10	95	Chisenga	8	139
Ndinde	10	95	Wenyu	8	139
Phalula	10	95	Marka	8	139
Jali	10	95	Masenjere	8	139
Mayaka	10	95	Sorgin	8	139
Namitambo	10	95	Ndamera	8	139
Neno	10	95	Mphompha	8	139
Chiringa	10	95	Kaporo	7	168
Misuku	10	95	Mlali	7	168
Enukweni	9	118	Mhuju	7	168
Kamchocho	9	118	Mzalangwe	7	168
Eswazini	9	118	Simulemba	7	168
Luzi	9	118	Zidyana	7	168
Chula	9	118	Bowe	7	168
Mkhota	9	118	Changuluwe	7	168
Bua	9	118	Lifidzi	7	168
Liwaladzi	9	118	Ludzi	7	168
Benga	9	118	Kochilira	7	168
Kansonga	9	118	Kalulu	7	168
Ngodzi	9	118	Maonde	7	168
Chimutu	9	118	Kandeu	7	168
Tembwe	9	118	Utale	7	168
Mayani	9	118	Masambanjati	7	168
Bwanje	9	118	Dolo	7	168
MALDECO	9	118	Phokera	7	168
Makanjila	9	118	Chididi	7	168
Mkungulu	9	118	Kameme	7	168

At the Regional Centres level, Mzuzu is the only urban centre which exclusively serves that function. Mzuzu's function is clearly below the level of Blantyre's and Lilongwe's and it does not have any significant national level facilities. Its influence area is clearly limited to the Northern region. In 1985, Mzuzu was granted City status which will possibly attract more regional level functions especially in the cultural, industrial and commercial sectors where the present level of provision is not yet satisfactory for a full-grown regional centre.

In the regional context, the central and southern parts of the country are well served by the Cities of Lilongwe and Blantyre, respectively. These two centres - besides performing national centre functions - provide all necessary functions at the regional level as well.

At the Sub-regional Centres' level, the applied point system identified five urban places: Kasungu Mangochi Karonga, Salima and Nkhota Kota. All are District Centres and thus serve important administrative functions. In addition, a number of complementary social, commercial and industrial functions have developed to a significant level. In other cases, District Centres did not enjoy such complementary development and have thus fallen behind these leading centres.

There are 14 District Centres classified in the category of District and/or Main Market Centres. 10 other centres which are not District Centres qualify at this level as well, due to their fairly well developed commercial functions.

Two District Centres (Machinga and Chiradzulu) do not even score the necessary points to qualify at the level of district and/or Main Market Centre due to the existence of other strong centres in their general area. Machinga is dominated by the centres of Balaka and Liwonde whereas Chiradzulu is situated in the immediate catchment area of Blantyre. As a result, commercial functions developed only at a relatively low level and, therefore, the centres could be classified only as Rural market Centres. In the same category there are 47 other centres which have qualified according to central functions other than administration.

At the level of Village Centres a total of 104 places qualified according to the criteria applied. Generally speaking, a centre of this kind must have at least 5-7 different central functions out of the total 15 functions examined. In most cases the existing functions are some trading facilities, a primary school, some kind of health facility, a borehole, an agricultural field assistant, a Postal Agency, a temporary ADMARC market, and occassionally, a mobile bank agency.

Village Centres are generally not very stable in their functions. They can easily lose one or the other facility simply through staffing problems or due to inadequate communication with other centres at higher levels. In the same way, some village clusters can easily grow into the village centre level, if one or the other minimum service is provided by the Government. The listing of centres at this level is therefore to be taken in a more indicative sense,especially with regard to those which are in the last ranking category.

5.4 EXISTING DISTRIBUTION OF SERVICES AND DISPARITIES

Spatial Distribution of Service Centres

A system of Service Centres is complete only if all service levels (i.e. national, regional, sub-regional, etc.) adequately cover the entire country. Due to the nature of the analysis by means of the point system it is not possible to make a fully appropriate statement on the distribution and area coverage of the centres. Nevertheless, mapping of the location of centres already shows major gaps at each level or a certain oversupply through overlaps.

Map 5-1 shows that the National Centres also functioning as Regional Centres together with Mzuzu cover reasonably well the entire area of the three administrative regions. Basically, there is one Regional Centre available for each administrative region, which appears to be adequate.

At the sub-regional level a statement on area coverage is more difficult if the size of the influence area is unknown. Full coverage by the existing sub-regional centres would require fairly large catchment areas of about 4 hours or more maximum access time using public bus services. However, even then it appears that there is a service gap in the east near the Zambian border and in the south (Nsanje, Chikwawa). Also, the area between Kasungu and Mzuzu, especially along the Western boader, does not appear to be fully covered.

This is also reflected in Table 5.4, which illustrates the distribution of Service Centres by District. Almost all Sub-regional Centres (with the exception of Kasungu) are located along the lakeshore, with one centre in the North, three centres in the Central Region and one centre in the South.

Table 5.4
Distribution of Service Centres by District

District	National Centre	Regional Centre	Sub-regional Centre	District/ Main Market Centre	Rural Market Centre	Village Centre
Chitipa	-	-	-	1	-	5
Karonga	-	-	1	1	-	4
Nkhata Bay	-	-	-	1	1	3
Rumphi	-	-	-	1	3	3
Mzimba	-	1	-	1	5	12
Northern Region	-	**1**	**1**	**5**	**9**	**27**
Kasungu	-	-	1	-	1	5
Nkhotakota	-	-	1	-	1	7
Ntchisi	-	-	-	1	1	1
Dowa	-	-	-	2	1	3
Salima	-	-	1	-	1	6
Lilongwe	1	-	-	1	7	6
Mchinji	-	-	-	1	3	6
Dedza	-	-	-	1	2	3
Ntcheu	-	-	-	1	1	7
Central Region	**1**	-	**3**	**7**	**18**	**44**
Mangochi	-	-	1	-	6	8
Machinga	-	-	-	2	3	3
Zomba	1	-	-	-	2	4
Chiradzulu	-	-	-	-	2	2
Blantyre	1	-	-	-	3	1
Mwanza	-	-	-	1	-	1
Thyolo	-	-	-	2	3	3
Mulanje	-	-	-	2	2	2
Chikwawa	-	-	-	3	1	1
Nsanje	-	-	-	2	1	8
Southern Region	**2**	-	**1**	**12**	**23**	**33**
All Malawi	**3**	**1**	**5**	**24**	**50**	**104**

Following the established notions on the distribution of centres one expects a full area coverage to be provided also at the Rural Centre level (of course, only in inhabited areas). It can be clearly seen on the map that this is not the case. Only the Southern Region has a fair number of Rural Centres which cover most of the inhabited areas. Some significant gaps, however, exist north of Mwanza, northeast of Liwonde and along the eastern lakeshore.

The Central region has only a few Rural Centres. Considerable gaps in area coverage occur along the lakeshore, south and northeast of Lilongwe and around Kasungu. A similar situation is found in the North. Large areas appear to be without provision of central services at this level. Considerable gaps also occur northwest of Mzuzu, and in the entire area of Chilumba.

This situation is largely influenced by the fact that population densities are much higher in the south than in the north. Although area coverage may not be ideal, the argument of a minimum or threshold population has to be observed.

A diagnosis of the spatial distribution and appropriate area coverage of Village Centres has not been made for reasons given in Section 5.3.2.

Catchment Areas of Service Centres

The following is a brief summary of comprehensive investigations made into the size of the catchment area of different service facilities as well as the average and maximum trip length travelled to obtain goods for daily consumption and durable items[1].

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(1) For details on methodology and survey results see: N.P.D.P: Survey of Settlements. Report No. 1 Catchment Area Analysis.

A total of 14 functions have been empirically tested in order to determine their influence area. The 14 functions were as follows: purchase of groceries, clothes and bicycles; visits to District or Town Council Market, ADMARC, Post Office, Under-five Clinic, Dispensary, Hospital, Primary and Secondary School, places of worship, maize mill and travel to work. Apart from obtaining maximum and average distance ranges for the services and goods, the investigations also included questions about the mode of transport.

People travel only a relatively short distance for the purchase of groceries. More than 96% of all respondents obtain these goods within a distance of 9 km or less. Only 2% travel between 10 and 14 km. The actual influence area of a (well stocked) grocery can therefore be regarded as 9 km. Almost 95% of the persons purchasing groceries went on foot and 4% used a bicycle.

Obviously, the purchase of clothing warrants a longer travel time. Still 12% of the respondents travelled between 20 and 50 km which, however, appears to be the threshold distance for this kind of purchase. The travel mode is also different in the case of the purchase of groceries. While about 65% walked, 7% used a bicycle about 22% used a bus. A similar pattern is found when looking a the purchase of bicycles. About 23% of the respondents reported that they travelled between 20 and 50 km to buy a bicycle. 8% even travelled up 99 Km. The travel mode used when purchasing a bicycle was similar to that for the purchase of clothing.

When a District/Town Council Market was to be visited, customers travelled up to 50 km. However, the number of visitors from a distance between 20 and 50 km is rather insignificant. The true influence area for this type of facility may therefore be regarded as 20 km. The travel

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(1) For details on methodology and survey results see: N.P.D.P.: Survey of Settlement. Report No. 1 Catchment area Analysis.

mode was mostly on foot with some use of bicycles and local bus (8% of total, each).

ADMARC markets have a rather small influence area of less than 9 km, with about 93% of the respondents coming from within this range. Only about 4% travelled between 10 and 14 km and larger are distances even more insignificant. Due to the transport of goods involved, the travel mode is somewhat different from that for other services. Here ox-carts play a significant role. Nevertheless, about 66% of the respondents have reported travelling on foot.

Post Offices have an influence area of about 20 km. About 94% of the customers came from that distance. Obviously, owing to significant gaps in the area coverage, still about 6% of all respondents travelled more than 20 km. The predominant travel mode was on foot (74%) followed by bicycles (13%) and by bus (8%).

The influence area of Dispensaries and Under-five clinics is about the same, with about 92% and 96% respectively of the users coming from a distance less than 15 km. Travel mode was "on foot" for more than 80% of the persons seeking the service. The travel mode to Hospitals changes significantly with a considerable number of visitors (39%) coming by bus or car/pick up/lorry. Only 35% actually walked. Naturally the influence area of hospitals is significantly large. About 93% of all respondents came from distances of up to 50 km. 6.5% even covered distances of up to 99 km, the maximum distances being mostly not more than about 70 km.

The typical Primary School influence area is not more than 9 km radius, whereas Secondary Schools have a catchment area of about 100 km. Only 5% of the users came from places with a distance between 100 and 199 km. Consequently, the travel modes are different as well. For primary Schools travel on foot is common whereas a surprisingly high number of students at Secondary Schools (77%) use the bus to get to school.

Churches and other places of worship have a very small influence area of less than 10 km. The predominant travel mode (97%) was on foot.

Maizemills have about the same size of influence area as places of worship, with only about 3% of the customers travelling from a distance of 10 or more kilometres. The majority of customers (%) travelled up to 4 km to a maizemill.

About 85% of all respondents have a travel distance to work of less than 4 km.

In summary, the survey revealed that out of the 14 examined functions and services only 6 had influence areas with a radius greater than 15 km (i.e, the purchase of clothing and bicycles, visiting a produce market, going to a Post Office, attending Secondary Schools and going to Hospital).

In fact, with the exception of Hospitals, the survey has not considered higher level services and functions such as specialized banking services, specialized wholesale and retailing (except clothing), etc. In order to get more information about higher level services and their catchment areas an N.P.D.P. team carried out an additional survey in December, 1985.

During this survey, the first interest was in typical functions and services found at the District and/or Main Market Centre Level and at the Sub-Regional Centre level. Besides the question on what influence area specific services might have, it was a main function of the survey to establish whether there really exist two different centre levels (with significantly different sizes of influence areas).

As public services have already been covered by other information categories, this survey focused on economic function i.e. specialized retailing, wholesaling, banking, specialized repair shops etc. the survey was carried out in

four centres rated as Sub-regional centres (Kasungu, Nkhotakota, Salima, and Mangochi) and in anumber of centres throughout the country which are rated as District and/or Main Market Centres.

It was found that purchases of specialized goods such as shoes are made within a range of about 30-50 km. The specialized shops of this kind (mostly BATA subsidiaries) are fairly well spread over the country, and found at centres that are basically rated as Main Market Centres. The same applies to wholesaling shops which offer only day to day goods; for example groceries, etc. Their influence area was found to be 30-50 km as well. The relatively small influence area of these wholesaling shops is mainly due to the fact that the retailer's transport mode is often bicycle. As this does not allow "bulk" transport in the usual sense, trip frequency is relatively high hence, the trip length tends to be relatively short.

As the mentioned types of facilities refer to the typical "highest level services" at the corresponding centres, (which means that there might well exist additional lower level services at these centres as well which would have smaller influence areas), it can be safely assumed that the overall influence area of a Village Centre is about 8-10 Km (which is less than 2 hours' walking distance), whereas a typical Rural Market Centre has an influence area of not more than 3-4 hours walking distance, or about 15Km.

The next level of centres is mainly characterized by the fact that the travel mode used to visit its highest level services (i.e. wholesalers for day-to-day articles, hospital, purchase of specilized goods, etc.) is either a local bus or a bicycle. The corresponding influence area is therefore at least three times as large as the next lower centre's intake area. Therefore an approximate physical distance of up to 50 Km appears to be the adequate influence area for the District and/or Main Market Centre level which is obviously accepted by the population and by business operations alike.

During the N.P.D.P.'s survey it was clearly found that there exists another level, between the District and/or Main Market Centre and the Regional Centre, which typically possesses services and facilities with influence area significantly larger than the ones of a District and/or Main Market Centre. For instance, specilized wholesaling (i.e. high class clothing, spare parts for household appliances, radio, watches etc.) does not exist at the District and/or Main Market Centre level. Where it is available, its maximum intake area is significantly larger than the one of wholesalers for day-to-day articles; i.e. about 80-100 Km on a tarred road. Another outstanding facility at this level is a bank branch (not to be confused with a temporary or what is known as static bank agency which is typically found at a District and/or main market Centre. The difference between and agency and a branch is for instance, that the former cannot process any loans or other higher level bank operations; a bank branch, on the other hand, will handle all types of banking services. Its influence area is very similar to that of the specialized wholesaling sector, about 80-100 Km (bank agencies have an influence area of only about 40-50 Km). It is, therefore firstly deduced from the results of N.P.D.P.'s recent survey that there exists the Sub-regional Centre level between District and/or Main Market level and the Regional level. This fact has now been clearly verified empirically. Secondly, it is further deduced that the correspondingly available highest level service at that level (i.e. in banking, specialized wholesaling, specialized retailing, etc) have an accepted (and commercially viable) influence area of about 80-100 Km on tarred roads. Of course, the acceptance in terms of distance will be somewhat less if the available roads are in gravel or earth standard.

The empirically derived size of the influence area for Sub-regional Centres and District and/or Main Market Centres differs from the (not empirically untested) assumptions which have been made in former studies (see for the basis notions on this issue: TCPD/GITEC: 1980 p.135) and which used a 3-hour influence area on roads for Sub-regional Centres and a 3-hour

on-foot-influence area (i.e. about 15 Km radius) for District and/or main Market centres.

The identified influence area of typical functions and facilities at all levels or centres (except for National and Regional Centres, where the specialized functions are more obvious) can now be used to determine the typical influence areas of the centres in the present situation and for the future.

Inter Settlement Linkages

A number of centres in the disticts of Machinga , Mangochi, Thyolo, Chikwawa, Kasungu, Mchinji, Mzimba and Karonga have been examined to determine their inter-settlement linkages. In other words, "actors" (i.e. mostly businessmen) were asked in the centres whether and in which other centres they demand services or functions. In this was it was possible to find out the wholesaler's trade links with retailers throughout a study area. Other examined functions were banking, obtaining fuel and car servicing.

In the following a brief description of the findings in each area is given. It has to be emphasized, however, that the results do not allow for a consistent interpretation of which centres are actually to be placed at which hierarchical level (i.e. whether it is a Regional, Sub-regional, Main market or Rural Market or Village Centre). The examined wholesale function covered only the provision of groceries and ordinary clothing and some hardware. This type of mechandise is typically supplied at Village and Rural Centre levels. Consequently, the corresponding wholesalers can be found at the next higher hierarchical level; i.e., in Main Market Centres.

A similar situation was found with the examined banking facilities, as no distinction has been made between bank branches and other types of subsidiaries. Therefore, there is no distinction possible among higher level centres; i.e., for instance, between Sub-regional Centres and Main Market

Centres. The same applied to another examined function; i.e., obtaining fuel. Service stations were typically found in Main Market Centres and occasionally in Rural Market Centres, depending on their location.

Car repairs are obviously a function which, in Malawi is still performed at a fairly high hierarchical urban level. While at the Regional level all centres had such facilities private car repairs were found only occasionally in lower level centres.

From the above it is deduced that the empirical results obtained are suitable to identify interrelationships (or linkages) between Main Market Centres and lower order centres. Additional survey as described in the previous Section served for the identification of interrelationships among higher level centres.

In Machinga District the dominant centres (which perform Main Market Centre functions) are Balaka and Ntaja. The two centres have influence areas of up to 40 Km. To a large extent Zomba and Blantyre also perform functions at this level. In terms of commercial functions, Liwonde is almost insignificant. Its influence area in wholesaling is only about 10 Km to the south, west and north. Even Ulongwe has a larger service radius both to the north and to the south of approximately 15Km. The centre of Machinga District, where the Boma is located, is totally insignificant in commercial terms. It is doubtful that Liwonde's importance as a commercial centre will significantly increase, if the District Boma is moved from Machinga to Liwonde.

The two most significant centres in Mangochi District's Tourism and Fishing Area are Mangochi and Monkey Bay. Other centres outside the district such as Ulongwe, Zomba and Blantyre are obviously insignificant for the business level in question. Only if the required merchandise is not obtained from the usual sources in Mangochi and Monkey Bay do retailers switch mostly to Blantyre and Zomba. The fact that banking, obtaining fuel and car servicing are done mainly in Mangochi Town makes that centre clearly the most important in the

district. This is also reflected by the size of the centres' influence areas. Monkey Bay's catchment area extends to a maximum of 25 Km, whereas Mangochi Town's influence is as far as 40 Km to the northwest.

In Thyolo District the extent of catchment areas of local centres is strongly influenced by the proximity of Blantyre. The most significant centres in the area are Thyolo Town and Luchenza, though each has an influence area extending to only about 15-20 Km. About one third of the merchandise in demand by retailers is purchased from Blsntyre.

In Chikwawa Sugar Estate Area the purchase of merchandise is still strongly influenced by the relative proximity to Blantyre. About 30% of the supplies made by retailers of groceries and clothing are taken from there. Only Chikwawa Town supplies more retailers, predominantly from the direction towards Bangula. The centre's influence area in this direction is more than 40 Km. Nchalo and Ngabu have surprisingly small influence areas of about 15 Km in radius. For the banking function and for obtaining fuel, the dominance of Chikwawa Town is not as significant as in wholesaling. The three centres of Chikwawa, Nchalo and Ngabu are of equal importance.

Business in the area of Kasungu Tobacco Estates is very much centred in one place; i.e. Kasungu Town. Its influence area extends considerably into all directions (up to 50 Km), except to the thinly populated north. All examined functions, i.e. wholesaling, banking, obtaining fuel and car servicing, are predominantly performed in Kasungu. Santhe is of some importance in terms of wholesaling; and an alternative purchasing place, if suppliers are scarce, is Lilongwe.

In Mchinji District the major place of wholesale trading is Kamwendo. None of the retail businessmen reported purchasing merchandise at Mchinji Town. On the other hand, about 15% of the traders from the district purchase directly from Lilongwe. Also other functions apart from wholesale trading are mainly

performed in Lilongwe, including banking obtaining fuel and car servicing.

The Mzimba Study Area has three relatively significant trading centres with wholesale functions (apart from Mzuzu, which was not included in the study area): Mzimba, Euthini and Kafukule. Influence areas have a radius of about 30 Km. Edingeni and Embangweni have some importance, too, but only for the southern-most part of the district. Banking is not a very common function in the area, mainly due to the remoteness of the places. Car servicing and the purchase of fuel are done exclusively in Mzuzu. Apart from wholesaling , obviously none of the centres performs full Main Market Centre functions.

The wholesale function in the Karonga Rice Scheme Area is performed exclusively in Karonga town. None of the other smaller centres as Kaporo and Iponga, have wholesale facilities. Consequenctly, the influence area of Karonga comprises the entire Rice Scheme Area; i.e., about 30 Km to the north and 15 Km to the south. this is true not only for wholesaling but also for the other examined functions.

District Profiles on Service Provision and Major Spatial and Functional Deficiencies

To describe the type and level of services in the districts, two criteria have been used; namely, a Representation Index and a Point System Index.

The Representation Index shows the ratio of facilities per population unit (or other related units such as total number of cattle, where applicable). For instance, in the health sector the number of hospital beds per 1000 inhabitants has been taken to indicate the relative quantity of the service sectors in each district.

The Point System Index, on the other hand, describes the distribution of a particular type of service facility over the district. A Point System Index of 1.13 for Chitipa District in the health sector means that all surveyed centres in the district have at least one health facility available (i.e., a health sub-centre, a dispensary or a maternity clinic).

The overall quality level in the district is better than the minimum facility. An index of less than 1 would point to the fact that not all centres have a health facility. The combination of a high representation index and a low point system index, for instance, would then indicate that service provision is highly centralized; e.g., all available hospital beds are concentrated in one facility instead of their being distributed in several smaller facilities at different places.

Table 5.5 presents the Representation Indices (absolute and relative) for all Districts and eight fields of public service i.e., Health, Education, Protection, Post and Telecommunication, Agricultural Marketing, Produce Markets, Community Development, and Veterinary.

Table 5.6 presents the Point System Indices by district. It shows all 15 service categories which were used to compile the overall central-place scores.

It is not intended to give a comprehensive and detailed picture of all public service categories. this is done for most services in other sections of this Background Report. Rather, the indices are only used to identify major discrepancies among districts. Whenever the index shows a significant deviation form the average, a more detailed analysis should be made by the relevant sectoral Ministry; for example, Ministry of Health, Ministry of Agriculture, etc.

In the following, the existing provision of service is described for each district and major deficiencies are pointed out.

Table 5.5
Absolute and Relative Service Provision Index by District

	Population 1977 (1)	Hospital Beds per 1000 inh (2)		Classrooms per 1000 inh (3)		Police Units per 1000 inh (4)		Postal Service Facilities per 1000 inh (5)		ADMARC Markets per 1000 inh (6)		Produce Markets per 1000 inh (7)		Homecraft Centres per 1000 inh (8)		Diptank per 1000 heads of cattles (9)	
		abs.	rel.	abs.	rel.	abs.	rel.	abs.	rel.	abs.	rel.	abs.	rel.	abs.	rel.	abs.	rel.
Chitipa	72.316	1,19	80	4,07	182	0,10	308	0,11	206	0,57	292	0,10	113	0,14	166	0,73	110
Karonga	106.923	1,71	115	3,76	169	0,04	123	0,08	150	0,37	190	0,13	147	0,11	130	n.a	n.a
Nkhata Bay	105.803	1,60	107	3,22	144	0,04	123	0,11	206	0,33	169	0,09	102	0,04	47	n.a	n.a
Rumphi	62.450	4,42	296	4,63	208	0,03	92	0,18	338	0,43	221	0,14	159	0,14	166	n.a	n.a
Mzimba	301.361	1,82	122	4,24	190	0,03	92	0,06	113	0,18	92	0,04	45	0,05	59	0,41	62
Kasungu	194.436	1,10	74	2,70	121	0,04	123	0,04	75	0,20	103	0,07	79	0,06	71	0,31	47
Nkhotakota	94.370	1,78	119	2,49	112	0,02	62	0,07	131	0,47	241	0,08	91	0,16	190	1,50	227
Ntchisi	87.437	0,57	38	1,60	72	0,02	62	0,02	38	0,23	118	0,02	23	0,13	154	n.a	n.a
Dowa	247.703	1,12	75	1,82	82	0,01	31	0,04	75	0,14	72	0,04	45	0,10	119	n.a	n.a
Salima	132.276	0,39	26	1,53	69	0,02	62	0,05	94	0,15	77	0,09	102	0,11	130	0,25	38
Lilongwe	705.117	1,63	109	1,37	61	0,01	31	0,03	56	0,11	56	0,03	34	0,05	59	0,10	15
Mchinji	155.833	1,13	76	1,89	85	0,03	92	0,03	56	0,19	97	0,08	91	0,12	142	0,27	41
Dedza	298.190	1,05	70	1,17	52	0,02	62	0,02	38	0,06	31	0,06	68	0,06	71	0,40	60
Ntcheu	226.454	0,66	44	2,23	100	0,03	92	0,05	94	0,19	97	0,11	125	0,07	83	0,48	72
Mangochi	302.341	1,49	100	1,46	65	0,03	92	0,04	75	0,16	82	0,13	147	0,06	71	2,96	447
Machinga	341.836	0,80	54	1,49	67	0,01	31	0,02	38	0,09	46	0,07	79	0,08	95	n.a	n.a
Zomba	372.334	2,05	137	1,70	76	0,02	62	0,03	56	0,12	62	0,11	125	0,05	59	0,33	50
Chiradzulu	176.184	1,35	91	2,11	95	0,02	62	0,05	94	0,12	62	0,12	136	0,06	71	0,64	97
Blantyre	408.062	1,86	125	1,84	82	0,01	31	0,02	38	0,01	5	0,03	34	n.a	n.a	0,28	42
Mwanza	71.405	2,56	172	1,88	84	0,10	308	0,06	113	0,32	164	0,06	68	0,13	154	0,17	26
Thyolo	322.000	1,10	74	1,97	88	0,02	62	0,04	75	0,06	31	0,19	215	0,07	83	1,52	230
Mulanje	477.546	0,58	39	1,78	80	0,02	62	0,04	75	0,01	5	0,16	181	0,08	95	0,24	36
Chikwawa	194.425	0,91	61	1,75	78	0,05	154	0,03	56	0,09	46	0,08	91	0,06	71	n.a	n.a
Nsanje	108.750	2,93	196	0,84	38	0,06	185	0,06	113	0,08	41	n.a	n.a	0,01	12	n.a	n.a
Total/Average	**5.565.552**	**1,49**	**100**	**2,23**	**100**	**0,03**	**100**	**0,05**	**100**	**0,19**	**100**	**0,09**	**100**	**0,08**	**100**	**0,66**	**100**

(1) 1977 Census Population
(2) Beds in maternity clinics not included. Source: MOH, Medical Facilities in Malawi by District. 1983
(3) Source: NPDP Education Facilities Background Study Report. 1984
(4) Source: NPDP Central Place Survey 1982/83.
(5) Includes Post Offices and Postal Agencies. Source: NPDP Central Place Survey 1982/83.
(6) Includes ADMARC Sheds and Bush Markets. Source: NPDP Central Place Survey 1982/83.
(7) Includes all official produce markets run by District and Town Councils. Source: NPDP Central Place Survey 1982/83.
(8) Homecraft Centres with at least on Homecraft Worker. Source: NPDP Central Place Survey 1982/83.
(9) Source cattle population: NPDP Consultation with District/Regional Veterinary Offices.
Source no. of dip tanks: NPDP Central Place Survey 1982/83.

Table 5.6
Point System Index by District

	Administration	Health	Education	Police	Justice	Post and Telecommunication	Retail Trading	Bank Services	Public Transport	Water and Electricity	Petrol and Repair	ADMARC Markets	Hotels and Rest-houses	Community Centre	Agriculture
Chitipa	0,38	1,13	1,00	1,13	0,63	1,25	1,13	0,38	0,25	0,50	0,13	1,13	0,38	0,25	0,75
Karonga	0,44	0,88	1,22	0,67	0,33	1,11	1,22	0,78	0,56	0,67	0,44	0,88	0,22	0,44	1,00
Nkhata Bay	0,27	1,07	1,07	0,53	0,67	0,87	0,87	0,13	0,47	0,13	0,07	0,40	0,27	0,13	0,60
Rumphi	0,25	1,25	1,25	0,33	0,67	0,92	1,08	0,33	0,33	0,83	0,17	0,58	0,50	0,33	1,08
Mzimba	0,24	1,08	1,24	0,56	0,32	1,20	1,00	0,40	1,00	1,60	0,20	0,52	0,76	0,72	0,66
Kasungu	0,14	0,76	0,76	0,38	0,48	0,57	0,48	0,19	0,57	0,86	0,24	0,66	0,24	0,33	0,71
Nkhotakota	0,25	0,92	1,08	0,25	0,67	0,75	1,17	0,17	1,08	0,79	0,25	1,33	0,25	0,17	1,17
Ntchisi	0,42	1,00	1,00	0,57	0,86	0,71	0,71	0,14	0,57	0,86	0,29	1,00	0,29	0,29	1,29
Dowa	0,30	1,20	1,10	0,70	0,20	1,60	1,30	0,70	0,50	1,30	0,20	1,40	0,50	0,40	1,30
Salima	0,46	1,18	1,09	0,36	0,27	0,82	0,82	0,18	0,91	1,36	0,27	0,73	0,46	0,18	1,55
Lilongwe	0,21	1,64	1,50	0,71	0,36	1,79	1,07	0,36	1,00	1,50	0,49	1,57	0,49	0,21	1,79
Mchinji	0,27	1,09	0,91	0,64	0,18	0,82	1,09	0,27	1,00	1,27	0,18	1,08	0,46	0,18	1,27
Dedza	0,33	0,88	1,11	0,56	0,67	1,56	1,22	0,33	0,67	1,11	0,22	1,00	0,44	0,56	1,11
Ntcheu	0,21	1,07	0,86	0,71	0,41	1,00	0,57	0,29	0,64	1,14	0,14	0,64	0,49	0,29	0,49
Mangochi	0,21	1,21	1,14	0,71	0,79	0,92	1,00	0,50	1,14	1,57	0,36	1,07	0,36	0,50	1,00
Machinga	0,31	1,23	1,08	0,54	0,69	1,31	1,77	0,54	0,92	0,77	0,46	1,23	0,69	0,08	1,31
Zomba	0,38	1,13	1,38	0,75	0,75	1,75	1,75	0,38	1,25	1,63	0,75	1,00	0,75	0,50	0,88
Chiradzulu	0,29	0,86	1,00	0,86	0,43	1,14	0,71	0,00	0,00	1,71	0,29	0,43	0,57	0,29	0,43
Blantyre	0,21	0,86	1,07	0,57	0,29	0,86	0,79	0,21	0,57	1,64	0,57	0,36	0,36	0,36	0,50
Mwanza	0,67	1,33	1,33	0,50	0,50	0,83	0,33	0,00	0,33	0,67	0,17	0,67	0,33	0,33	0,33
Thyolo	0,38	1,38	1,38	1,25	0,67	1,75	1,25	0,63	1,38	1,75	0,38	1,00	0,50	0,75	0,63
Mulanje	0,63	1,13	1,25	1,00	0,88	1,38	1,38	0,63	0,88	2,00	0,63	0,50	0,75	0,38	1,00
Chikwawa	0,21	1,21	0,86	0,43	0,50	0,57	0,79	0,43	0,79	1,00	0,36	1,21	0,21	0,29	0,43
Nsanje	0,25	1,08	0,92	0,92	0,58	1,00	0,67	0,25	1,50	1,25	0,33	1,42	0,25	0,25	1,25
Total/Average	**0,32**	**1,11**	**1,11**	**0,65**	**0,52**	**1,10**	**1,01**	**0,34**	**0,76**	**1,16**	**0,32**	**0,91**	**0,44**	**0,34**	**0,94**

Source: NPDP Central Place Survey 1982/83.

CHITIPA DISTRICT

In the Health sector Chitipa's position is around average with the number of hospital beds slightly below the national average. Obviously, the beds are spread over several facilities so that there is reasonable accessibility. Education: With over 4 classrooms/1000 inhabitants in Chitipa District this index is well above the national average (2.23). Due to the long international border, the number of Police units is high here than elsewhere in the country (with the exception of Mwanza), and hence well above average. Postal Services are well spread over the district and the representation index shows a figure considerably above average. Also ADMARC Markets seem to be fairly well spread over the district and the number of markets/1000 inhabitants is more than twice the national average. Public Produce Markets have not developed to the extent experienced in other districts. Homecraft Centres are about average. Dip Tanks are provided at a slightly higher rate than average. In summary, overall service provision in terms of quantity per population and in terms of spatial distribution seems to be well above average.

KARONGA DISTRICT

Both in Health and Education the representation indices are well above average. Distribution of schools appears to be good, but health facilities are, to a large extent, concentrated in Karonga town. Police Service is represented at an average scale with a good distribution over the district. Postal services are slightly above average, as are ADMARC markets. The ratio per 1000 inhabitants for this index is the fourth-highest in the country. Representation of Public Produce Markets is average, being 0.13 markets per 1000 inhabitants. The availability of Homecraft Centres is slightly below average. In summary, apart from excellent service provision in health and education, all other services are provided at an average level. Given the remoteness of the district, this is a satisfactory achievement.

NKHATA BAY DISTRICT

Health facility provision is slightly above average. Education facility provision is about 44% above average in terms of classrooms. Police Posts as well as Post and Telecommunication are represented well in total quantitative terms. However, distibution among the lower order centres for both types of services is obviously not satisfactory. ADMARC Markets are provided at a fairly high scale (69% above average). Public Produce Markets have developed up to the average level in the country. Homecraft Centres on the other hand, are poorly developed; reaching only about 47% of the average provision in the district is outstandingly high in the education sector. All other service sectors are around average.

RUMPHI DISTRICT

The district's Health and Education indices both show the highest figure in the country, with 196% above average level in health and 108% above average level in education. Also Postal Services are extremely highly developed, with 238% above average level. ADMARC's market provision is 121% higher than on average. The other services, namely Police, Public Produce Markets, and Homecraft Centres are around average. Rumphi District has probably the best service delivery in the country, especially in the two most important social services and in marketing and communication.

MZIMBA DISTRICT

Similar to the other districts in the Northern Region, Mzimba service provision level in Health and Education is well above the country's average. However, important services such as ADMARC, Public Produce Markets, Homecraft Centres and Diptanks are well below average. Postal Services and Police facilities are provided on a normal scale. The overall picture of service provision in Mzimba District is not satisfactory throughout. The existing deficiencies are, however, quite serious as they primarily concern economic functions which cannot perform properly if there are too few of them.

KASUNGU DISTRICT

Although Kasungu is one of the most economically promising district, service provision is considerably lacking. With the expection of Education, and Police Facilities, where the level of provision is somewhat above the national average, all other services i.e. Health, Post and Telecommunication, ADMARC, Public Produce Markets, Homecraft Centres and Diptanks, are provided at levels well below the average. In addition, for all service categories the Point System Index shows values below 1.0, which indicates that the few services are concentrated in few locations although the district is fairly large. The service accessibility may therefore be a serious problem in Kasungu District.

NKHOTAKOTA DISTRICT

Both in Health (1.78) and Education (2.49) the representation indices are slightly above the national average of 1.49 and 2.23, respectively. Police Service are below the national average. There is a need for more police units in the district. Postal Service Facilities are slightly above average and the ratio per 1000 inhabitants for this index is the fifth-highest in the country. The representation index for ADMARC Markets is also above the national average, but that of Produce Markets (0.08) is below the country's average of 0.09. Homecraft Centres and Diptanks indices are well over average. By and large, the quality of service facility provision in Nkhotakota district appears to be around average.

NTCHISI DISTRICT

With the exception of Homecraft Centres, where the level of provision is the same as the national average, all other services, i.e. Health, Education, Post and Telecommunication ADMARC Produce Market and Diptanks, are provided below national average. The point system index reveals that few services are fairly well spread throughout the district. The index of 0.57 for public transport, however, shows that access

to the service may not be all that easy, due to the fact that few places are served by buses.

Provision of services in the district is very low compared to that in other districts and the national average. There is need for improvement.

DOWA DISTRICT

Similar to Ntchisi's, Dowa's service provision level is far below the country's average. For example, Hospital Beds per 1000 inhabitants and Police Units per 1000 inhabitants are both below the national average by 25% and 69%, respectively. Nevertheless, with the exception of Justice as well as Petrol/Repairs, both with a point system index of 0.2 only, the rest of the services have a point system index close to or above 1.0. This indicates that a few services are well spread within the district. Quantitative improvements are necessary in almost all areas of service.

SALIMA DISTRICT

Health facilities provision is very far extremely below average. Education and Police Units are both 31% and 38% below average per 1000 inhabitants. Just as in the three sectors cited above, for Postal Services, ADMARC Markets,Homecraft Centres and Diptanks the level of provision is significantly below the national average. Public Produce Market's index shows that the level of provision is adequate. The point system index of health and education is above 1.0, which indicates that the few services are fairly well distributed in the district.

LILONGWE DISTRICT

In the Health Sector Lilongwe's position is around average with the number of hospital beds slightly above the national level. For the rest of the services, i.e., Education, Police-Units, Postal Services, ADMARC Markets, Public Produce

Markets, Homecraft Centres, and Diptanks, the level of provision is below average. However, the point system index for key services such as Health, Education, Post and Telecommunication, Public Transport, Water and Electricity is close to or above 1.0. The services for each sector are fairly spread over the area so that accessibility is relatively reasonable.

MCHINJI DISTRICT

The service representation index shows that the level of provision for Health, Education, ADMARC Markets, Public Produce Markets, Homecraft Centres and Diptanks is considerably below national average. On the other hand, Police Units per 1000 inhabitants are around average, while the level of provision in Postal Service Facility is very low. the postal services are concentrated in few centres, especially at the Boma. On the whole, the service facility provision in Mchinji is below average but still relatively satisfactory, considering the remoteness of some parts of the district.

Dedza DISTRICT:

As in other districts in the Central Region, Dedza's service provision level in all sectors is slightly below average. However, the point system index for important services such as Health, Education, Post and Telecommunication, Water and Electricity and ADMARC Markets is close to or about 1.0. This indicates that the few services are fairly distributed in the district and easily accessible. In conclusion, from the figures of the service representation index, it can be deduced that there is need for extra provision of service in all sectors to supplement the existing level.

NTCHEU DISTRICT:

Health facilities are below average. A point system index of 1.07 indicates that hospital beds are spread over several facilities. Education facility provision is about average in terms of classrooms. Police Post, Post and Telecommunication as well as ADMARC Markets are represented well in total quanti- tative terms and distribution. Produce Markets are provided at a fairly high scale (25% above average). The level of provision for both homecraft centres and diptanks is well below national average. In total Ntcheu has a fairly good level and distribution of services. High level services are mostly concentrated at the Boma.

MANGOCHI DISTRICT:

The representation index for Health is just equal to the national average, while for Education it is slightly below that level. Distribution of both appears to be good according to the point system indices. Police is represented at an average scale. Postal Services and ADMARC Markets are provided slightly below national level. Public Produce Markets representation index is well above the average (with a relative service representation of 47% above the average). The availability of Homecraft Centres is below average. Diptanks, with a representation index of 2.96, are well above

the national figure. In the Southern Region, Mangochi is considered as one of the districts with a good distribution of services, despite short-falls in some sectors.

MACHINGA DISTRICT

According to Table 5.3, the level of service provision is very low indeed in Machinga. All sectors reveal a service ratio per 1000 inhabitants of less than the national average. However, the point system index indicates that the few services are spread throughout the district. Access to these facilities appears to be easy, but people obviously have to travel long distances. In any case, service provision in sectors is well below national average. To cover the gap there is need for many improvements in the district.

ZOMBA DISTRICT

Since Zomba is the former Capital of Malawi, one would expect a high level of service provision in the district, but this is not the case. With the exception of Health, where the level of provision is well above the national average (by 37%), all other services, i.e. Education, Post and Telecommunication, ADMARC Markets and Public Produce Markets, Homecraft Centres and Diptanks, are provided at levels well below average. Nevertheless, for some key services such as Health, Education, Post and Telecommunication as well as Water and Electricity, the point system index shows values above 1.0, which indicates that services are not concentrated in a few locations. Due to the small size of the district, service accessibility may not be much of a problem, though quantitative improvements appear to be necessary.

CHIRADZULU DISTRICT

Chiradzulu is the smallest district in the country, but has one of the highest population densities. The overall picture on service provision in Chiradzulu is average. Health and Education representation (1.35 and 2.11) are close to the

average. The same applies to Police and Postal Services. ADMARC Markets provision per 1000 inhabitants is well below the national average. Public Produce Markets are highly developed, at 36% above average level. Homecraft Centres and Diptanks are around average.

It must be considered in this context that the people of Chiradzulu have access to some services of the city of Blantyre. The overall situation in service provision may therefore be rather satisfactory.

BLANTYRE DISTRICT:

In the Health Sector Blantyre's position is well above average by 25%. But a point system index of less than 1.0 (0.86) indicates that facilities are concentrated in a few locations; i.e. in the City of Blantyre and Lunzu. all other services, namely Education, Police, Postal service, ADMARC Markets and Diptanks, are provided at levels below the national average. In summary, Blantyre's rural hinterland is not well served by services, most of which are concentrated in Blantyre City, but service accessibility is easy due to good public transport to the city.

MWANZA DISTRICT

The service representation and point system indices show that Health facilities provision in Mwanza district is above the national average. Moreover, they are evenly distributed. Education service provision is slightly below the national average; like Health services, it is spread throughout the district. Police, Postal Services, ADMARC Markets, Homecraft Centres, and Diptanks are all provided at an average level.

In summary, the service facility provision in the district is outstandingly high in Health, protection, and agricultural marketing. All other service sectors are around average. This is a highly satisfactory situation, considering the remoteness of the district.

THYOLO DISTRICT:

Although the district is relatively important in terms of producing tea for export and is densely populated, the level of service is not very outstanding. With the exception of Public Produce Markets and Diptanks, which are above national average by 115% and 130% respectively, all other services are well below the national average. The point system index for most services is above 1.0, which shows that the service are not concentrated at one place. Most of the services are provided by estates. In conclusion, though the level of service facility in the district is below the national average, service accessibility is good. Quantitative improvements are absolutely necessary.

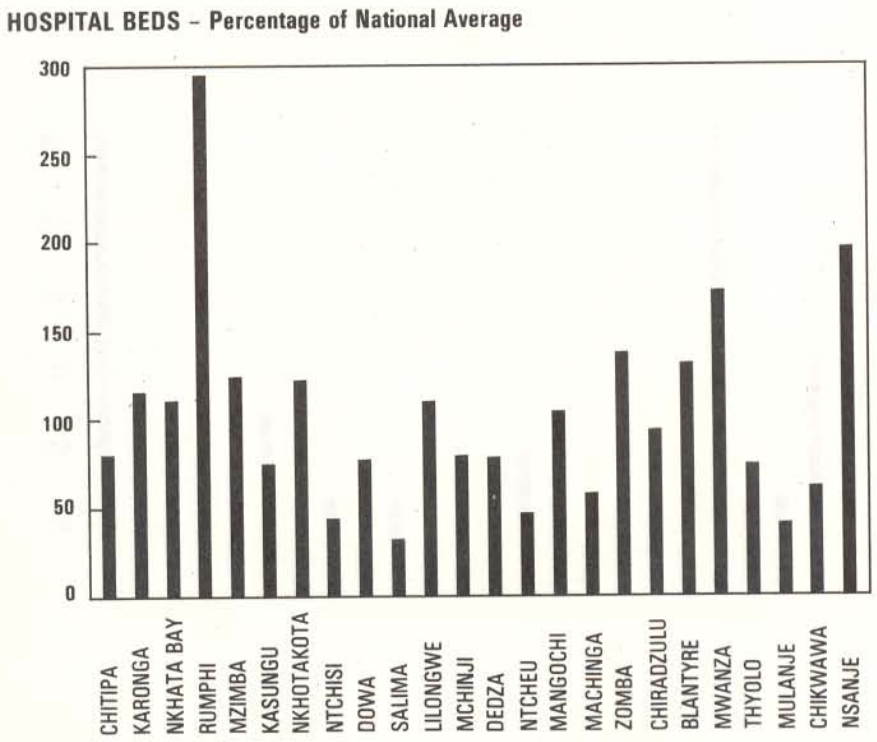
MULANJE DISTRICT:

As in Thyolo, Mulanje's service representation index indicates very low levels of service provision. Health, Education, Police, Postal Service, Homecraft Centres, Diptanks are all provided below the national level. Only Public Produce Markets seem to be provided at a fairly high quantitative level as indicated by the relative service representation index of 181%. The point system index for all services shows figures above 1 or close to 1. Hence facilities are not concentrated at one centre but evenly spread over the district. It appears that, in quantitative terms, improvements are very necessary.

CHIKWAWA DISTRICT

Both Health and Education representation indices show that the level of service provision is slightly below average. The point system index for Health shows that the service is spread over several facilities, whereas education facilities seem to be concentrated within fewer locations. The provision of Police units is well above the country's average by 54%. The rest of the services, i.e., Post and Telecommunication, ADMARC Markets, Homecraft Centres as well as Produce Markets and

Figure 5.1: RELATIVE REPRESENTATION INDICES FOR HEALTH AND EDUCATION



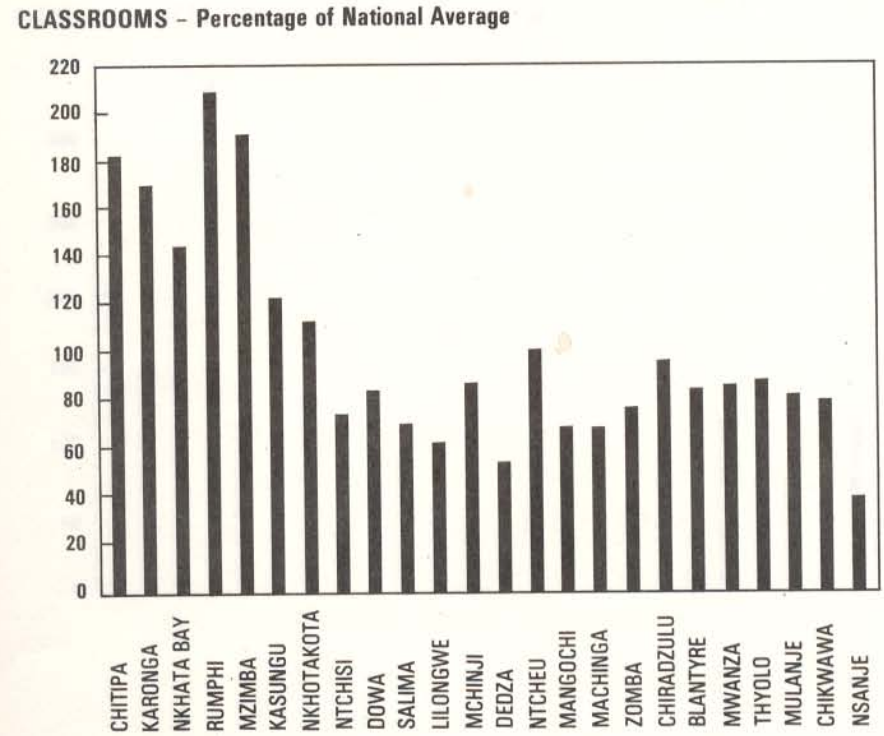
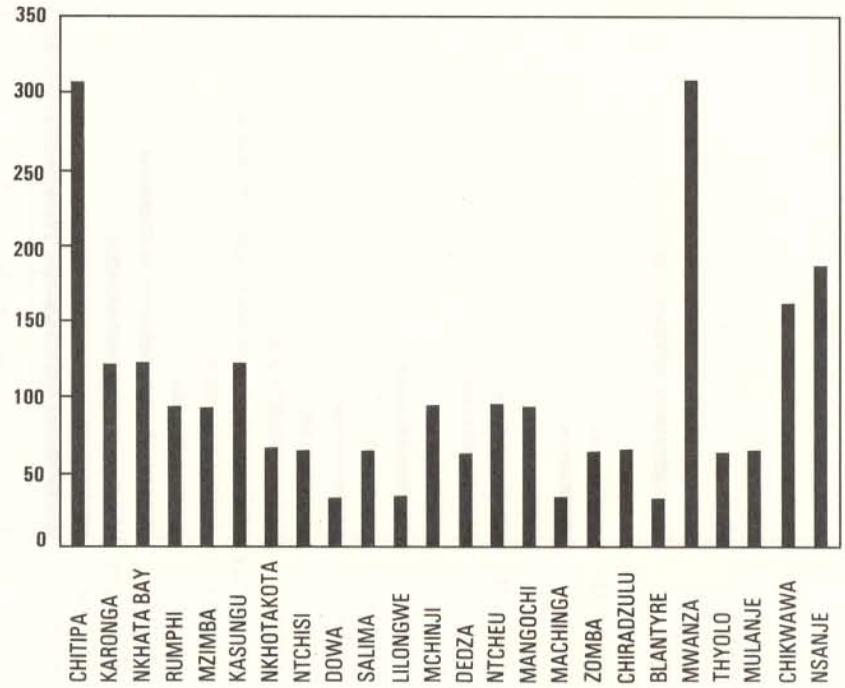


Figure 5.2: RELATIVE REPRESENTATION INDICES FOR PROTECTION AND POSTAL SERVICES

POLICE UNITS – Percentage of National Average



POSTAL SERVICES – Percentage of National Average

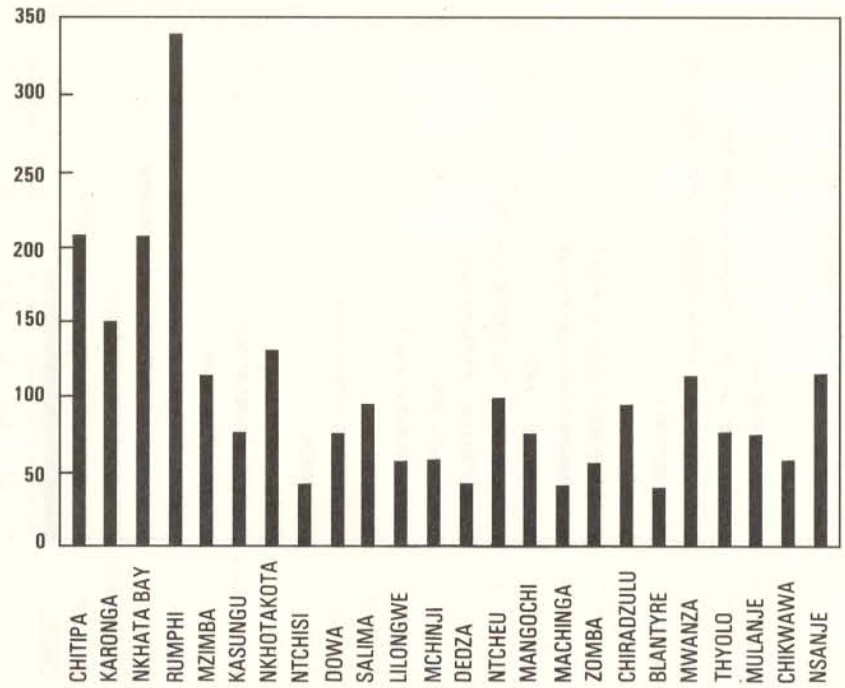


Figure 5.3: RELATIVE REPRESENTATION INDICES FOR ADMARC MARKETS AND PRODUCE MARKETS

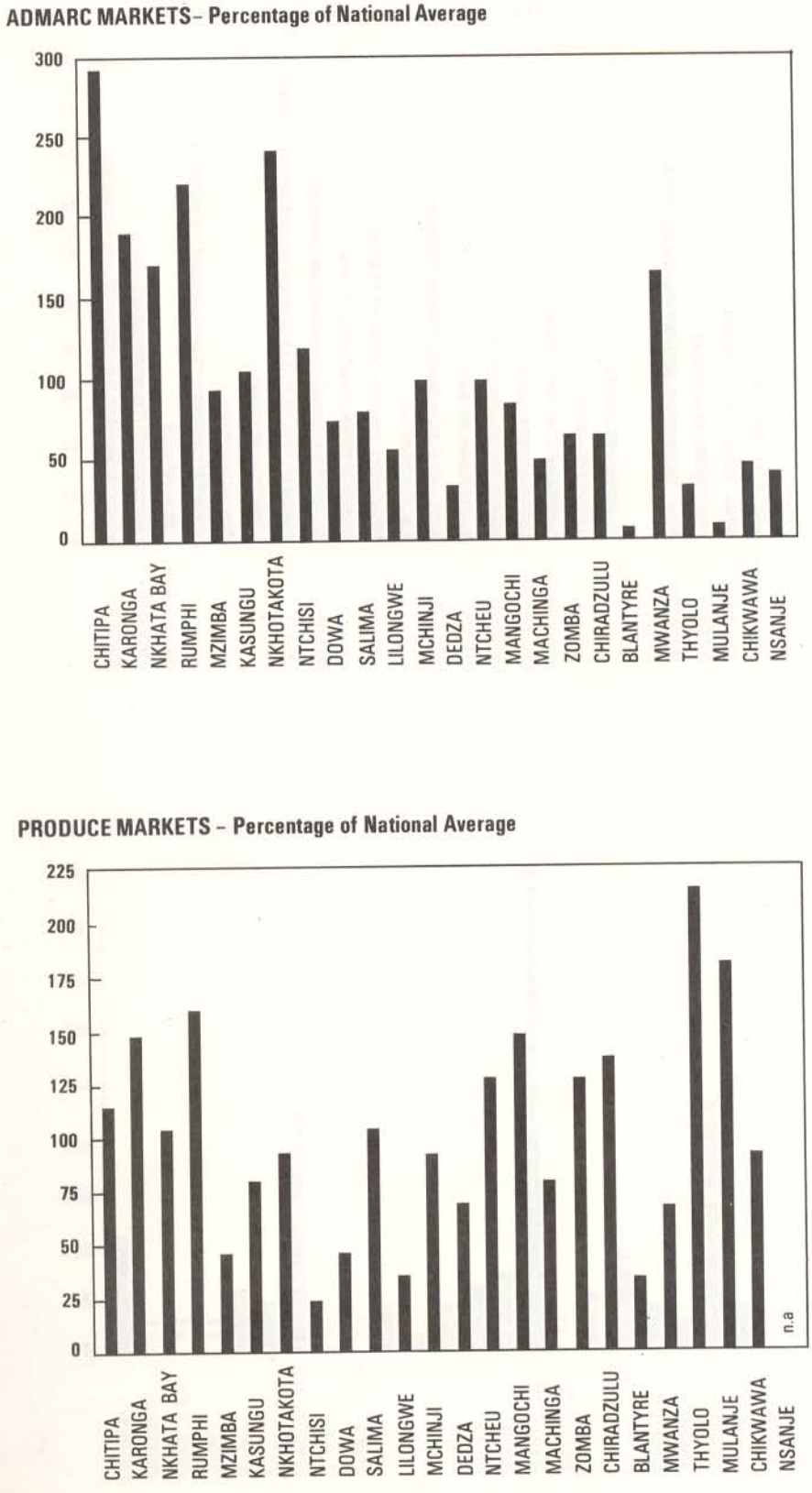
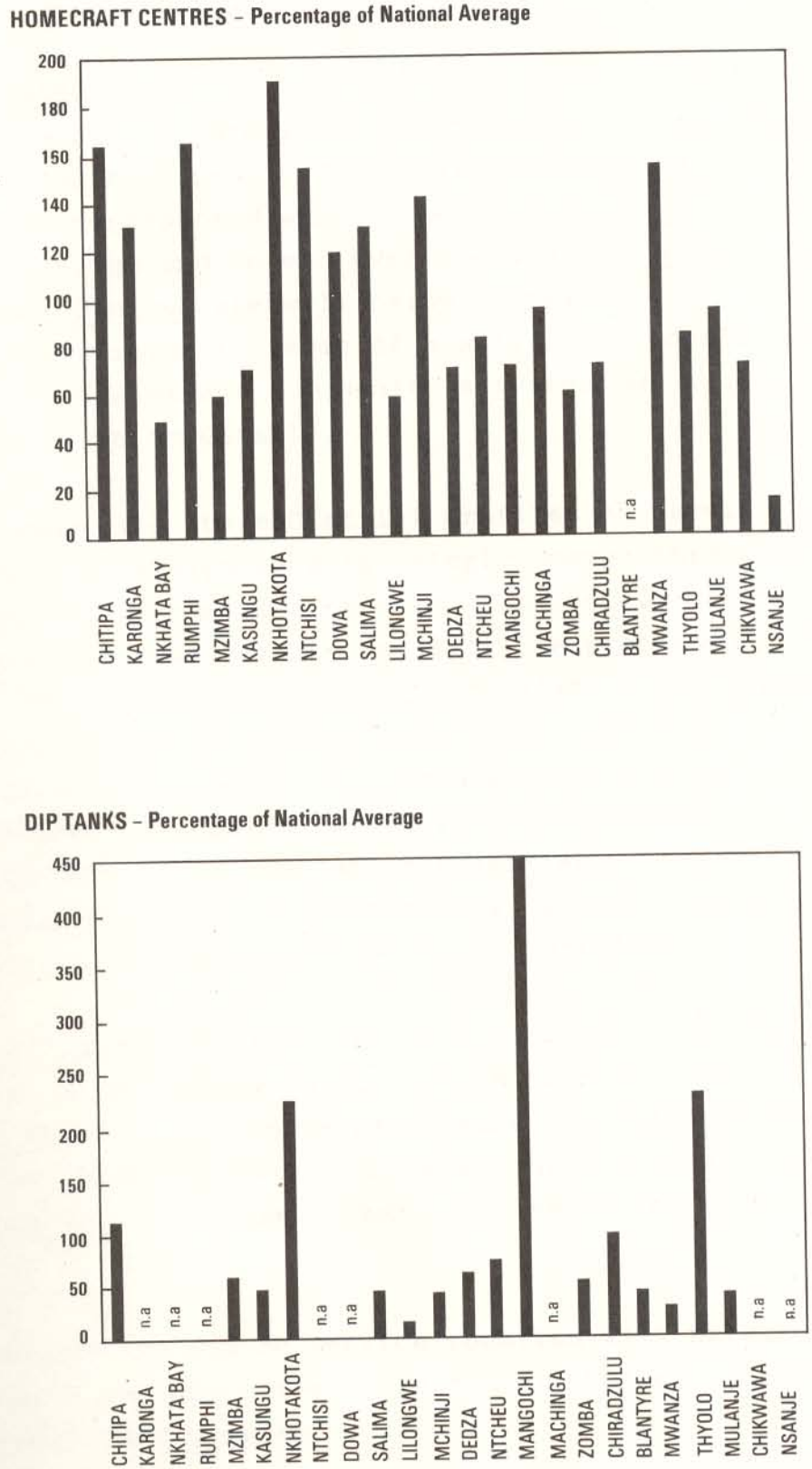


Figure 5.4: RELATIVE REPRESENTATION INDICES FOR HOMECRAFT CENTRES AND DIP TANKS



Diptanks, are provided at levels considerably below national average. In total, the level of service facility provision in Chikwawa is very low compared to national average figures. The few services available are concentrated in few locations only, which makes service accessibility to the available service very difficult.

NSANJE DISTRICT:

Health facilities provision is above average by 96% in terms of hospital beds per 1000 inhabitants. Education facilities are under-represented whilst Police and Postal Services are around average and spread over the district. ADMARC Markets and Homecraft Centres are well below normal levels. Overall service provision in terms of quantity per population is well below average except for Health services but the situation appears to be acceptable.

In summary, the above District profiles on service/facilities show that provision is surprisingly uneven throughout the country. This can also be seen from the corresponding graphics for each service facility, as presented in Figures 5-1 - 5-4. In terms of service facilities per capita, the Northern Region is considerably better off than the Central and Southern Regions. To some degree it may be justifable to have higher per capita ratios in the north because of considerably lower population densities. Nevertheless, the occurring differences which partly extend to as much as almost 200% (e.g. in education) cannot be justified.

The per capita figures also show globally that the Southern Region is relatively better served than the Central Region. The situation of service provisions in Districts such as Ntchisi, Dowa and Salima and even rural Lilongwe is very unsatisfactory in comparison to those in the rest of the country.

Guidelines for future service location will have to emphasize much more the objective of fair distribution of service throughout the country.

5.5 EXISTING PROGRAMMES FOR THE IMPROVEMENT OF SELECTED SERVICE CENTRES

The Secondary Centres Programme

In the late seventies, the Malawi Government realized the need for the improvement of service provision at the regional and sub-regional levels. The Town and Country Planning Department, with the assistance of GITEC, conducted a comprehensive national study to identify priorities for the promotion of Secondary Centres.(1)

In addition, a Pilot Scheme was to be planned for immediate implementation. The scheme covered the centres of Mzuzu, Kasungu, Ntcheu and Luchenza.

In essence, the study emphasized the following points:

(1) The key to satisfactory urban development, in terms of creating a sufficiently strong basis for the urban economy, is the successful performance of the agricultural sector in the hinterland.
(2) This requires a decentralized urban development strategy in order to provide proper access to all services and facilities.
(3) The influence area of Regional Centres has been determined by using a 5-hour travel time (a combination of travel on foot and by express bus). For Sub-regional Centres it was assumed that the influence area can be determined through a maximum travel time of 3 hours (a combination of travel on foot and by local bus).

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(1) The term "Secondary Centre" is not part of the nomenclature of the hierarchy of Service Centres, but part of the name of a programme.

(4) Priorities for development have been set up by using additional potential indices for the hinterland and for the current outfit of candidate towns.

As a result, it was found that two out of the four 'candidate' towns of the pilot scheme fully fit into the overall hierarchy at the desired levels; i.e., Mzuzu as a Regional Centre and Kasungu as a Sub-regional Centre. Luchenza was found feasible for promotion due to its specific advantages for the location of industries. Ntcheu did not qualify due to its low development potential and its location within the influence area of another Sub-regional Centre; i.e., Liwonde.

In 1984 the overall promotion programme started for Mzuzu and Kasungu (and flood protection measures in Karonga). In order to establish a long-term financing source for this type of centre a "Secondary Centres Development Fund" has been created which, in the future, will provide loans for townships, municipalities and cities. the measures to be financed through the fund range from residential area development to commercial area development, constructed of markets, urban roads, water reticulation, etc.

N.P.D.P. fully agrees with the general approach that has been adopted in the study and which is pursued now in the implementation stage; i.e., the promotion of service provision of secondary centres. However, it has to be determined whether the priorities spelled out in this study for future financing (i.e., first priority for Salima, Bangula, Mchinji, Karonga, Zomba, Liwonde and Luchenza; second priority for Dwangwa, Mangochi and Euthini) are in line with other physical planning priorities.

In addition, although a thorough analysis has been carried out on all aspects of urbanization in the study, there is a lack of empirical evidence for the assumed size of influence areas of Regional and Sub-regional Centres. Therefore, prior to formulating the future development strategy in this field,

N.P.D.P. will use information on this issue compiled from its field surveys and its empirical tests in order to verify the accessibility assumptions. On this basis N.P.D.P. will have to formulate criteria for future spatial development priorities for Secondary Centres.

The National Rural Centre Programme

Malawi's primary emphasis on rural development caused the Government, in the early seventies, to set up a Pilot Programme for the development of Rural Growth Centres under the direct authority of OPC. The programme was seen as a complementary measure to the overall N.R.D.P. Programme which, at the time, covered only about one third of Malawi's total land area. N.R.D.P. favoured an integrated development approach with a considerable amount of socio-economic service provision within the individual project area, though with a strong backbone in agricultural sector improvements.

In the initial pilot phase of the Rural Growth Centre Project it was thought that, to a certain extent, the creation of a centre with a package of social and commercial services would bring forth self-sustained growth in the immediate hinterland. Therefore, the location of the pilot centres was explicitly selected on the basis that no NRDP activities were taking place in the area. The initially selected centres were Bolero, Mbalachanda, Nkhota, Tsangano, Thekerani, Makanjila, Chikwina as well as Likoma, Lobi and Neno. The first seven centres have been completed up to now and the others are under construction.

With growing experience during the pilot phase it became obvious that the provision of services alone would not bring about the necessary growth effects, if the potential in the centre's hinterland is poorly developed. First thoughts on creating a National Rural Centre Programme after completion of the Pilot Phase were conceptualized in early 1980 and a general agreement followed between the Government of Malawi and the Federal Republic of Germany on financing the initial planning and implementation phase.

The priority areas for locating Rural Growth Centres in the National Programme were then selected emphasizing development potential and giving preference also to existing NRDP areas. The selected planning regions (within which the location of one or more Rural Growth Centres should be selected at a later stage) were as follows (see: Maps Illustrating Development Projects 1983/84-1985/86):

(1) Karonga - Chitipa (NRDP project area)
(2) Nkhata Bay Lakeshore Area
(3) Mzimba West (planned NRDP project area)
(4) Mchinji (Kasungu/Mchinji RDP area)
(5) Ntchisi (NRDP project area)
(6) Dowa East
(7) Kawinga (part of NRDP project area)
(8) Zomba West
(9) Phalombe (NRDP project area)
(10) Lower Shire (NRDP project area)

More recent thoughts about the selection of priority areas for the location of Rural Growth Centres emphasize even more the necessity of development potential in the area. In addition, it is required that a proposed development be implemented in the very near future under ongoing programmes such as NRDP. Livestock Development Programme, Rice schemes or the like. On the other hand it is also pointed out that the selection has to be in line with existing political criteria, especially the distribution among regions. In detail the criteria for the selection of prioritiy area are as follows:

(a) Political Criteria
Balanced distribution of priority areas among the regions and districts.

(b) Physical Criteria
Proposed development pattern of the NPDP:
- Problem/potential areas
- Hierarchical urban systems

(c) Proposed agricultural development areas of NRDP:

- Existing project areas
- areas in implementation stage
- Proposals for the location of EPA-Centres
- Existing NPDP District Plans
- Proposed sectoral development patterns by Ministries
- Priority list of facilities
- Lack of facilities

For the areas selected in this way the implementation agency of the NRCP will then elaborate "Subject/Special Plans". Within these plans, detailed investigations will be made as to the location of future Rural Centres to be promoted. The criteria used for the site selection of centres are as follows:

- Existing economic potential in the area
- Inadequate Central Place Function
- Lack of services and facilities
- Existing concentration of interlinked economic function (i.e. combination with EPA centres, Sub-Boma facilities, ADMARC sheds, etc.).
- Sufficient user potential within catchment area
- Availability of water
- Availability of suitable building land
- Enviromental stability

A key analytical tool within the elaboration of the Subject/Special Plans is a microcomputer aided Accessibility/ Centrality Analysis. With this system the area coverage of existing and optional future service locations can be analysed in detail and an optimal solution can be found.

The planning responsibility of the NPDP with respect to the selection of Rural Centres to be promoted within the NRCP can be deduced from the above description of the planning framework.

(a) NPDP provides information on priority development areas throughout the country.

(b) NPDP spells out the deficits in area coverage at all levels of the hierarchical system of service centres; hence, NPDP will give a rough guide as to the needs of additional or improved centres at the Rural Centre level as well.

(c) NPDP gives detailed recommendations on additional service provision at the Rural Centre level in its Pilot District Plans.

5.6 CONCLUSIONS AND PLANNING IMPLICATIONS

(1) Given the agricultural-based economic structure of the country there is no doubt that the development of urban places must take place in a decentralized pattern and hierarchical structure in order to provide the necessary social and economic functions to support agriculture and rural development throughout the country.

(2) A principal requirement for the functioning of a hierarchically structured urban system is full area or territorial coverage of services at all levels.

With the empirical data currently available it is not possible to make judgement about deficiencies, because the typical size of influence areas at the level of Sub-regional Centres in unknown. At the regional level the corresponding catchment areas are fairly obvious (i.e., the existing Northern, Central and Southern Regions). At the district Main Market Centre level, as well as at the Rural Centre level, NPDP investigations have provided very significant information which has to be used for planning purposes in the future.

(3) The NPDP investigations have identified the size of influence areas of a number of service facilities as follows:

(a) Small business centre (groceries) 9 Km radius

(b) Business centre with supply of specialized goods (clothing and bicycles) 50 Km radius

(c) District/Town Council Market 20 Km radius

(d) ADMARC Markets 9 Km radius

(e) Post Office 20 Km radius

(f) Under-five clinic 15 Km radius

(g) Dispensary 15 Km radius

(h) Hospital 50 Km radius

(i) Primary School 9 Km radius

(j) Secondary School 100 Km radius

(k) Places of Worship less than 10 Km radius

(l) Maize Mills less than 9 Km radius

The indicated maximum distances are travelled by a significant number of users. They determine the average maximum influence areas at present. Whether these maximum distances will be desirable in the long run has to be discussed when planning the future area coverage for each service. It is also stated in the survey results that user frequencies clearly decrease with distance to the service. Overlapping of service influence areas or reduction of maximum distances to the service can

therefore be desirable, if the threshold number of users is reached for all facilities. These two factors, i.e. maximum tolerable influence area and threshold capacity, have to be taken into consideration when planning new service locations at the District level (i.e., in the District Development Plans).

The uneven distribution of services in the country calls for a strategy for the provision of future services which, besides being tight closely linked to the future hierarchical pattern of service centres, should also be in accordance with the national goal of balanced development.

(4) Fortunately, the Government has already recognized the need for the improvement of the hierarchical settlement structure. The corresponding ongoing projects are the "secondary Centres Development Project" and the "National Rural Centre Programme".

While the latter is clearly restricted to improving the Rural Centres level in the hierarchy, the former project in principle includes Regional, Sub-regional and district and/or Main Market Centres. While work has already started at the regional and sub-regional levels, the settlements at the level of District and/or Main Market Centres has so far not received any particular attention. The National Physical Development Plan will have to indicate whether this 'structure' of priorities should be allowed to continue or whether the emphasis of either the National Rural Centre Programme or the Secondary Centre Development should be in the direction of District and/or Main Market Centres.

6.0 GENERAL LAND USE AND NATURAL PHYSICAL CONSTRAINTS

6.1 INTRODUCTION

One of the most important pre-requisites for the preparation of the National Physical Development Plan is a good knowledge and understanding of the existing land use structure, trends in the major land uses, natural/physical constraints to developments, usable vacant land, the rate at which the vacant land is utilized or becomes part of the man-made physical environment and land for future uses. For the purpose of this study the existing major land uses and natural physical constraints are categorised as follows:

Human Settlements:

(a) Nucleated Urban Areas and Village Clusters including housing, social and physical infrastructure, commercial, industrial and other productive areas; and

(b) Scattered settlements

Agriculture:

Estates, Smallholdings and Gardens
National Parks and Game Reserves
Forest Reserves
Vacant Land:

Natural Physical Constraints:

Dambos, swamps and floodplains; rugged country with steep slopes with a minimum gradient of 12% and rock outcrops.

The study mentions only briefly the environmental effects of land use because the subject is covered under a separate study by FAO Consultants.

6.2 EXISTING MAJOR LAND USES: 1983

TABLES 6.1, 6.2 AND MAP 6-1 (Map 6-1 in back cover)

Land use calculations made in 1983 indicates that of Malawi's total land area of 94,274 square kilometres approximately 20,143 Km^2 (21.37%) were devoted to agriculture uses and 18,151 Km^2 (19.25%) were designated for forest reserves, national parks and game reserves. Nucleated human settlements occupied 885 Km^2 (0.94%) and infrastructure covered 556 Km^2 (0.6%) leaving 54,538 Km^2 (57.84%) as vacant arable/habitable land including swamps, floodplains, 'dambos' and steep slopes. See Table 6.1

Summary Table 6.1
Existing Major Land Uses

Land Use and Natural Physical Constraints	Area Km^2	Percentage
Agriculture including on-farm Scattered Human Settlements	20,144	21 .37
Nucleated Human Settlements	885	0 .94
Nature Consurvation/Reservation (Forest reserves, national parks and game reserves)	18,151	19 .25
Major Infrastructure	556	0 .60
Vacant Land and Natural Physical Constraints (Swamps, Steep slopes etc .)	54,538	57 .84
Total Land Area	**94,274**	**100.00%**

The following is a detailed description of the various land uses. The natural physical constraints to development and vacant land for future uses are discussed in Section 6.3 and 6.7 respectively.

TABLE 6.2

EXISTING MAJOR LAND USES AND NATURAL PHYSICAL CONSTRAINTS 1983 (AREAS IN KM^2)

District	Total Land Area	Agriculture: Estates	Agriculture: Smallholdings: Smallholder Agriculture Projects	Agriculture: Smallholdings: Scattered Settlement Gardens	Agriculture: Smallholdings: Nucleated Settlement Gardens	Nucleated Human Settlement	Infra-structure	National Parks and Game Reserves	Forest Reserves	Vacant Land Comprising unutilised arable/buildable land and steep slopes, swamps floodplains and 'dambos'
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Chitipa	4,290	23	4	71	62	11	16	786	219	3,098
Karonga	3,355	3	–	52	150	14	12	399	90	2,635
Nkhata Bay	4,088	98	1	106	163	15	12	–	1,304	2,389
Rumphi	4,767	301	4	70	96	9	14	2,545	6	1,722
Mzimba	10,430	824	1	441	407	40	62	404	438	7,813
Northern Region	26,930	1,249	10	740	878	89	116	4,134	2,057	17,657
Kasungu	7,878	1,609	265	400	405	20	29	2,316	–	2,834
Nkhotakota	4,259	329	7	67	139	13	17	1,802	–	1,886
Ntchisi	1,655	65	–	296	114	8	10	–	97	1,065
Dowa	2,988	172	–	620	425	27	27	–	43	1,727
Salima	2,239	235	–	157	143	18	22	–	340	1,281
Lilongwe	6,159	214	–	804	1,090	126	49	–	1,161	2,714
Mchinji	3,356	663	–	332	366	20	22	–	192	1,761
Dedza	3,624	152	–	275	532	50	36	–	300	2,279
Ntcheu	3,424	83	–	91	521	49	33	–	138	2,508
Central Region	35,592	3,522	272	3,042	3,735	331	245	4,118	2,272	18,055
Mangochi	6,272	433	–	257	446	44	34	94	1,412	3,552
Machinga	5,964	385	–	152	565	66	35	548	295	3,917
Zomba	2,580	103	–	326	379	50	15	–	146	1,561
Chiradzulu	767	38	–	136	165	25	8	–	11	384
Blantyre	2,012	39	–	70	232	118	23	–	64	1,466
Mwanza	2,295	55	–	42	73	13	13	245	82	1,772
Thyolo	1,715	163	6	225	291	41	14	–	59	916
Mulanje	3,450	42	17	324	493	64	15	–	578	1,917
Chikwawa	4,755	280	–	187	432	27	22	1,426	–	2,381
Nsanje	1,942	–	–	108	230	17	16	348	262	961
Southern Region	31,752	1,539	23	1,827	3,306	465	195	2,661	2,909	18,827
Malawi	94,274	6,310	305	5,609	7,919	885	556	10,913	7,238	54,539

Notes (2) Total Land area does not include total areas of Lakes Malawi, Malombe, Chiuta and Chilwa

(11) & (12) The figures for steep slopes and dambos do not include those within national parks, game reserves. See Appendix 5.0.

Nucleated Human Settlements:
(Urban Areas and Village Clusters)

Nucleated human settlements which consist of urban areas and village clusters[1] occupied 885 Km^2, representing approximately 1% of the total land area of Malawi. As this study deals with existing land use, estimates of the urban hectarage are based on the built-up urban area or the man-made physical environment within a village, town or city and excludes vacant land within the city, municipal or local authority's boundaries. Of the 885 Km^2 80.5% (712 Km^2) was occupied by village clusters and the remaining 19.5% (173 Km^2) was urban.

The Southern Region had 61.4% of the total urban land in the country while the Central and Northern Regions had 33.3% and 5.3% respectively. In terms of land occupied by village clusters, the Southern Region had 50.4% and the Central and Northern Regions 38.3% and 11.3% respectively.

With respect to distribution by district, 45% of the total urban land was located in the District of Blantyre and 24% in the District of Lilongwe. The Districts of Zomba, Mangochi, Chikwawa and Dedza had 4.5%, 2.6%, 2.5% and 2% respectively.

Lilongwe District had the largest proportion (12%) of the total land area occupied by nucleated village settlements, followed by the District of Mulanje (9%), Machinga (8.7%), Ntcheu (6.7%), Dedza (6.5%) and Zomba (6%)

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(1) The term 'village cluster' is used to distinguish between nucleated villages and scattered rural settlements. A village cluster is an agglomerated or nucleated village. Unlike a scattered settlement, it has a clearly identifiable community, a social organization and a physical form.

Scattered Human Settlements

Scattered human settlements consist of sporadic individual household dwelling units which are built on, or situated near, farms/gardens. This type of land use is discussed under "Scattered Settlement Gardens" (Part 6.2.3) and Part 6.4.2.3.

AGRICULTURE

Estates

There were 6,310 Km^2 of agricultural estates, representing 6.7% of the total land area of Malawi and 13% of the total land under cultivation. Most of the estate lands had multiple uses for crop production, agro-processing establishments and human settlements which accommodated farm management staff, clerks and farm workers. The Central Region had the largest concentration of estates, that is 3,522 Km^2, representing 55.8% of the total estate lands in the country. The Southern Region had 1,539 Km^2 (24.4%) and the Northern Region had 1,249 Km^2 (19.8%).

With the exception of the District of Nsanje there were estates in all the districts. The largest were in the Districts of Kasungu,1,602 Km^2; Mzimba, 824 Km^2; Mchinji, 663 Km^2; Mangochi, 433 Km^2; Machinga, 385 Km^2; Nkhotakota, 329 Km^2 Rumphi, 301 Km^2; and Chikwawa, 280 Km^2. In Kasungu and Mchinji the estate lands occupied 20.4% and 19.7% respectively, of the total district area.

Smallholdings
(Under Smallholder Agricultural Projects)

This land use category covers land under the S.A.P. The holdings occupied 304 Km^2, representing 0.32% of the total land area of Malawi. They were found in all districts in the North except Karonga. The rest were in the District of Kasungu and Nkhotakota (Central Region) and Thyolo and

Mulanje (Southern Region). Kasungu District had 87% of the total land under the S.A.P. in the country. While the existing hectarages covered by the holdings appear insignificant, the information will become more useful in future studies dealing with land use trends. The use of land by other smallholder farmers is considered under part 6.2.3.3.

Village Garden/Farms

Village farming activities have resulted in two distinct land use patterns. These are scattered settlemtn gardens and nucleated settlement gardens. (These two types of spatial organization are described in Section 6.4). Scattered settlement gardens occupied 5,609.4 Km^2, representing just under 6% of the total land area of Malawi. The Central Region has 54.2% of the total land area occupied by scattered settlement gardens and the Southern and Northern Regions had 32.6% and 13.2% respectively. The District of Lilongwe had the largest area under scattered land settlement.

Nucleated settlement gardens occupied 7,919.3 Km^2, representing 8.4% of the total land area of Malawi. Of the 7,919.3 Km^2, the Central Region had 47% and the Southern and Northern Regions had 42% and 11% respectively. The District of Lilongwe had the largest area under nucleated settlement gardens. This is partly the result of the Lilongwe Land Development Programme.

National Parks and Game Reserves

National Parks and Game Reserves occupy 10,913 Km^2, representing 11.6% of the total land area of Malawi.(1)

(1) Data on National Parks and Game Reserves were obtained from the Department of National Parks and Wildlife.

There are five designated National Parks: (Nyika, Kasungu Game Park, Liwonde, Lengwe and Lake Malawi National Park); and four Game Reserves (Vwaza, Nkhotakota, Majete and Mwabvi).

National Parks and Game reserves occupy 15.4% of the total land area of the Northern Region; 11.5% of the Central Region and 8.4% of the Southern Region. A very large proportion, 62.7% of the land in Rumphi district, is under National Parks/Game Reserve. Other districts with relatively large proportions, compared to the area of the District, are Nkhotakota 42%, Chikwawa 30% and Kasungu 28%.

Forest Reserves

Gazetted Forest Reserves(1) occupy 7.7% (7,237.77 Km^2) of the total land area of Malawi. The Southern Region had 40.2% of the land under forest reserve compared to 31.4% in the Central region and 28.4% in the Northern Region. The forest reserves were concentrated in the Districts of Mangochi, Nkhata Bay, Lilongwe and Mulanje. The District of Nkhata Bay had 32% of its land area under forest reserve. Lilongwe District had 19%, Mangochi 22.5% and Mulanje 17%. Kasungu, Nkhotakota and Chikwawa are the only districts without forest reserves but these are also the three districts with vast areas under national parks/game reserves.

Major Infrastructure

Roads, railways, electric power lines (way leaves) and airfields covered 566.1 Km^2, representing 0.6% of the total land area of Malawi. The 566.1 Km^2 is broken down as follows: roads occupied 456.8 Km^2 (80.7%); railways occupied 47.5 Km^2 (8.4%); electric power lines occupied 42.1 Km^2 (7.4%); and airports/airfields occupied 19.7 Km^2 (3.5%). Explanatory Tables and Footnotes are given in Appendix 6.1.

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(1) Proposed forest reserves and forests on agricultural estates and within towns and villages are not included.

6.3 VACANT LAND AND NATURAL PHYSICAL CONSTRAINTS

Vacant Land

Vacant land in this study is the balance of arable/buildable land which is unutilized and therefore available for future development. Out of the total land area of 94,274 Km^2 of Malawi, an estimated 26,671.44 Km^2 (26.2%) was vacant. Most of this was located in Mzimba, Machinga, Mangochi, Kasungu and Ntcheu districts.

The amount of vacant land in a district as a percentage of a district's total land area is shown in Table 6.3a. The largest amounts existed in the District of Ntcheu, Machinga, Salima, Blantyre and Mwanza; and the smallest amounts existed in the Districts of Chitipa, Nkhotakota, Thyolo, Nkhata Bay, Rumphi and Nsanje. The amounts indicate the extent of land utilization, the attrition of land or the potential for the future socio-economic development involving the use of land.

Natural Physical Constraints

Swamps and Floodplains

Dambos, swamps and floodplains are estimated to cover about 6,190.5 Km^2. The largest swamp/dambos are found in Kasungu, Mchinji, Lilongwe and Mzimba districts. Most of the dambos which are found within or in the periphery of human settlements are used for farming during the dry season.

Steep Slopes

Steep slopes (lands with a gradient of 12% and over) are estimated to cover about 23,666 Km^2 of the total land area of Malawi. They are predominant in the districts of Chitipa, Karonga, Nkhata Bay, Mzimba, Nkhotakota and Dedza.

Table 6.3a
Existing Vacant Land (1983) as a Percentage of Total Area of District

Percentage of Vacant Land	Districts	
	Number	Name
49-54%	1	Ntcheu
43-48%	4	Machinga, Salima, Blantyre, Mwanza
37-42%	2	Mzimba, Zomba
31-36%	4	Mangochi, Chikwawa, Mulanje, Chiradzulu
25-30%	1	Dowa
19-24%	4	Mchinji, Lilongwe, Kasungu, Dedza
13-18%	2	Ntchisi, Karonga
7-12%	3	Nsanje, Thyolo, Nkhata Bay
1-6%	3	Chitipa, Rumphi, Nkhotakota
	24	

Steep slopes, as defined, are not recommended for cultivation but in most of the Districts, particularly Nkhata Bay, Karonga, Blantyre, and Mzimba, they are partly cultivated and this causes soil erosion and other environmental problems.

Rock Outcrops

Approximately 9,253 Km^2 of the total area of Malawi is covered by rock outcrops. This is more than the area covered by either agricultural estates or forest reserves. This estimate by the Land Husbandry Department was made from aerial photograph and landsat imagery, but it has not been possible at this stage to show the distribution by district or region.

6.4 PATTERNS OF HUMAN SETTLEMENTS AND LAND TENURE

There is no study available on the historical development of settlements in Malawi or the raison d'etre for the location/pattern of existing settlements, but it appears that the latter has been dictated by:

(a) the establishment of Christian Missions (their Churches, schools, medical facilities and residential units), colonial administrative centres, European and Asian trading centres, large agricultural estates-- all of which became the nuclei for the development of settlements and/or generated land use activities in the general areas within which they were established

(b) the establishment of forest reserves and national/game parks which have indirectly dictated the limits and direction of the growth of settlements. Except for housing for staff and labourers, the development of villages is not allowed in these parks.

(c) the role of village chiefs and headmen in allocating land in a sporadic manner, thus creating a scattered pattern of settlements.

(d) the need to live on one's garden to keep an eye on animals that destroy crops, and perhaps avoid kinship feuds and 'sing'anga' issues.

(e) soil fertility and lakeshore areas which have influenced land settlements.

(f) natural physical constraints to land settlements.

(g) the Government's planning and investment decision relating, for example, to roads and other infrastructure.

(f) the availability of a permanent water supply.

The Geographical Distribution of the Settlements

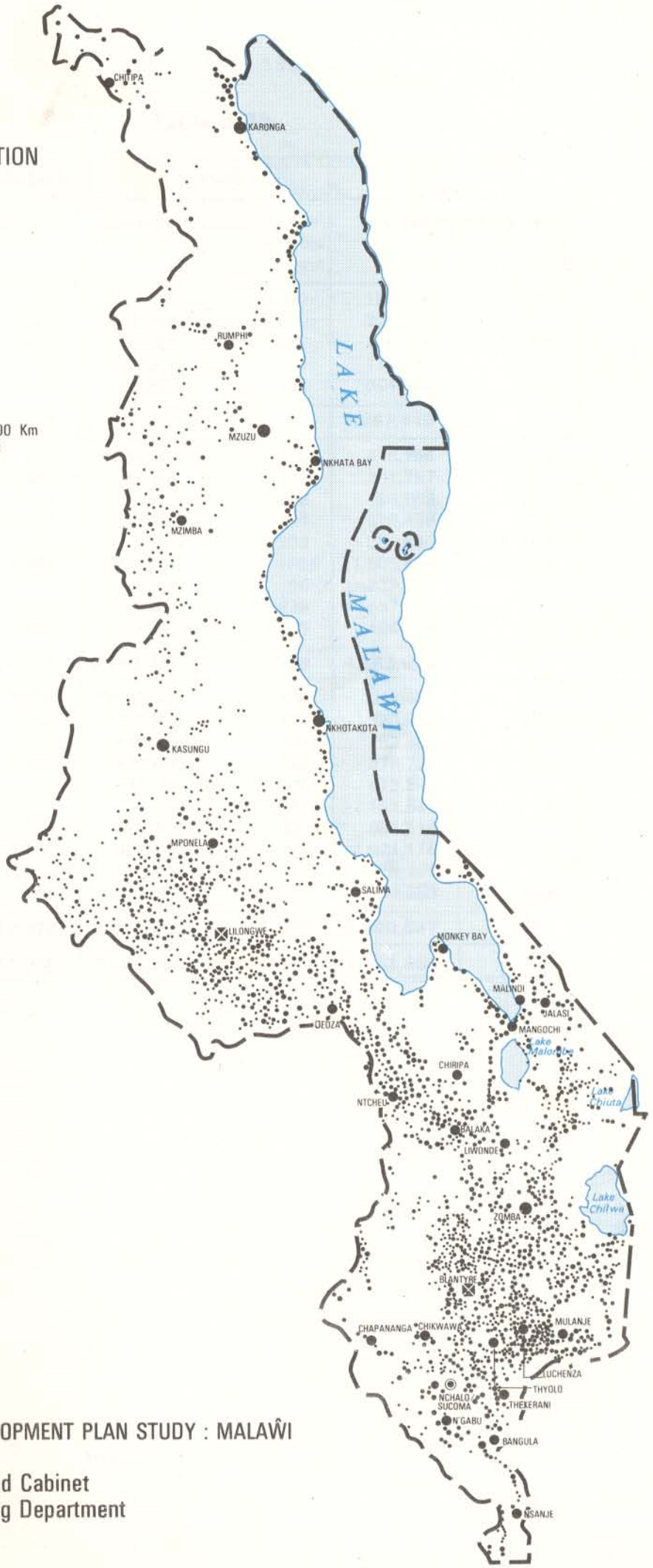
There were 2,652 nucleated settlements in the country, consisting of 1,532 minor villages, 1,087 large villages, 26 minor towns, 4 large towns, one large sugar estate town, and the two cities of Lilongwe and Blantyre. (See also Section 2.5). The settlements were heavily concentrated in the two city regions and other areas of the country as shown in Map 6-2 and described below:

744 settlements, representing 28% were concentrated in the Shire Highlands area covering the District of Zomba, Blantyre, Chiradzulu, Thyolo and Mulanje; 460 settlements (17%) were concentrated in the Lilongwe-Dedza plains, including central-southwest Dowa District; 224 settlements (8%) were concentrated within 25-30 kilometres along the east side of the Dedza-Ntcheu Balaka-Machinga transportation corridor; and 275 settlements (10.4%) were developed in a 'ribbon' form along the lakeshore from Karonga to Mangochi-Makanjila. The scattered settlements, which could not be shown on Map 6.2 because of the scale, were found largely in the hints were below the average with desities of 83 and 129 p.p. Km^2 respectively; and the Southern Region was above the average with 179 p.p. Km^2. See Table 6.3b.

GEOGRAPHICAL DISTRIBUTION OF SETTLEMENTS

Map 6-2

Km 20 0 20 40 60 80 100 Km



Key

- CITIES
- LARGE TOWNS
- SUGAR ESTATE TOWN
- SMALL TOWNS
- SMALL/LARGE VILLAGES

NATIONAL PHYSICAL DEVELOPMENT PLAN STUDY : MALAWI

Office of The President and Cabinet
Town and Country Planning Department
UNCHS/UNDP Project

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ARABLE LAND USE DENSITIES 1985-2000

Table 6.3b

District	Arable Land Area Km²	1985 Population	1985 Density/Km² of arable land	2000 Population	2000 Density/Km² of arable land
Chitipa	1,124	94,200	84	154,630	138
Karonga	1,073	139,300	130	228,629	213
Nkhata Bay	488	137,800	282	226,234	464
Rumphi	780	81,300	104	133,534	171
Mzimba	6,724	392,600	58	644,388	96
Northern Region	**10,189**	**845,200**	**83**	**1,387,415**	**136**
Kasungu	4,194	253,300	60	415,754	99
Nkhotakota	1,582	122,900	78	201,787	128
Ntchisi	825	113,900	138	186,963	227
Dowa	2,236	322,500	144	529,439	237
Salima	1,669	172,300	103	282,840	169
Lilongwe	4,884	917,200	188	1,505,584	308
Mchinji	2,085	206,900	99	339,626	163
Dedza	1,633	388,400	238	637,607	390
Ntcheu	2,484	295,000	119	484,217	195
Central Region	**21,591**	**2,792,400**	**129**	**4,583,818**	**212**
Mangochi	3,726	393,800	106	646,483	174
Machinga	4,055	445,300	110	730,934	180
Zomba	1,975	459,000	232	753,381	381
Chiradzulu	713	229,500	322	376,727	528
Blantyre	1,365	532,100	390	872,542	639
Mwanza	1,621	93,000	57	152,682	94
Thyolo	918	419,400	457	688,519	750
Mulanje	2,500	622,100	249	1,021,116	408
Chikwawa	2,339	253,300	108	415,731	178
Nsanje	864	141,700	164	232,553	269
Southern Region	**20,076**	**3,589,200**	**179**	**5,890,667**	**293**
Malawi	**51,856**	**7,226,800**	**139**	**11,861,900**	**229**

Spatial Organization within Settlements

Less than 10 or 0.4% of the nation's urban and rural settlements, which fall under the category of nucleated settlements, have been developed compactly in terms of (a) appropriate development densities within buit-up areas and (b) appropriate spatial relationships of various elements of the urban form. with the exception of the Old Town of Lilongwe, Zomba and a few other urban places, all urban areas in the country have numerous'pockets' of open spaces within built-up areas and vast areas of unutilized parcels of land.

Most of the nucleated veillages, particularly the farming ones, have been developed at low densities in terms of buildings or persons per square kilometre, even though they appear agglomerated when compared with the scattered settlements. Fishing villages, relatively speaking, have been more compactly built than farming villages, particularly if the useable beach area was of limited length. A nucleated village is an agglomerated settlement which has developed with a trading centre, Government, Mission and/or other establishment as a nucleus.

Scattered settlement is defined in this study as vast unorganized[1] rural territories with sporadic, isolated and dispersed development, consisting mainly of household dwelling units situated on or near individual small holdings at densities within the range of zero to 50 persons per square kilometre or zero 10 household units per square kilometre.

The only other uses of land in this type of settlement are footpaths or tracks and/or a road, in which case the buildings tend to be scattered along the road in a ribbon development. The 'nearest' clinic, school or shop could be about 10-15 kilometres away from the individual household unit. The scattered settlements accommodate 37% of the country's population, as discussed in Part 2.5.

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(1) 'Unorganized' implies here the absence of a communnity living in the same locality or place.

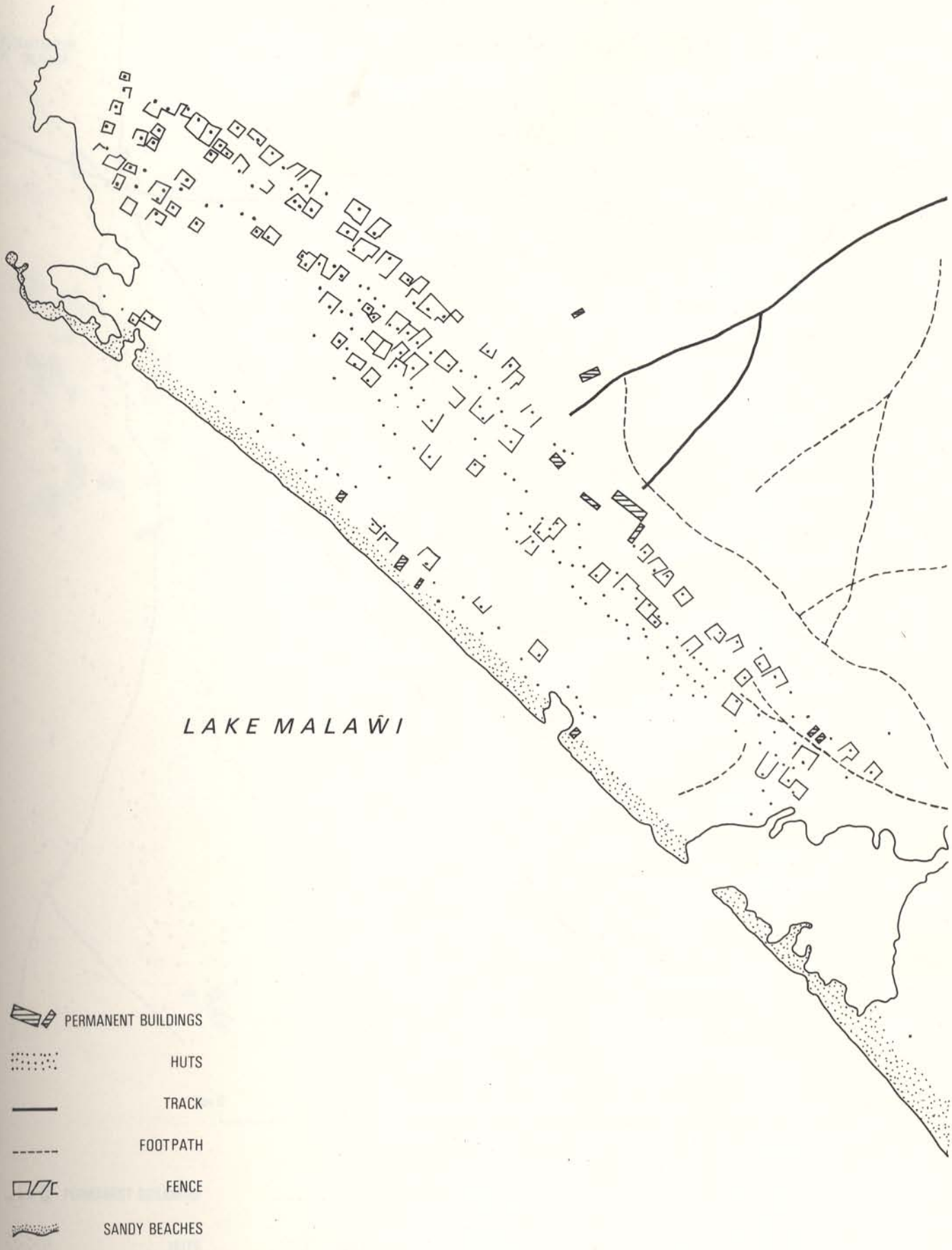

Figure 6-1: NUCLEATED VILLAGE (CHEMBE)

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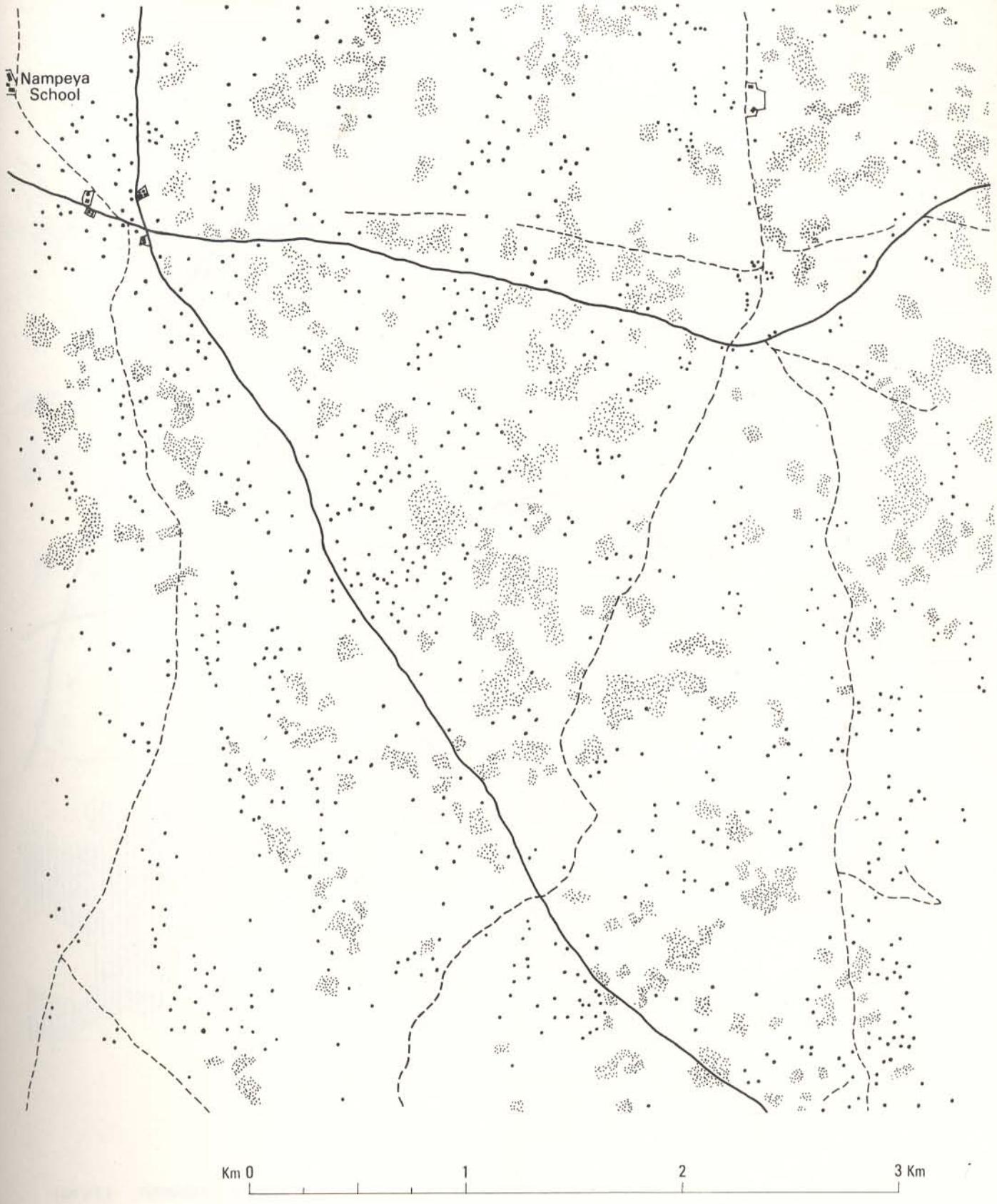

Figure 6-2: SCATTERED SETTLEMENT

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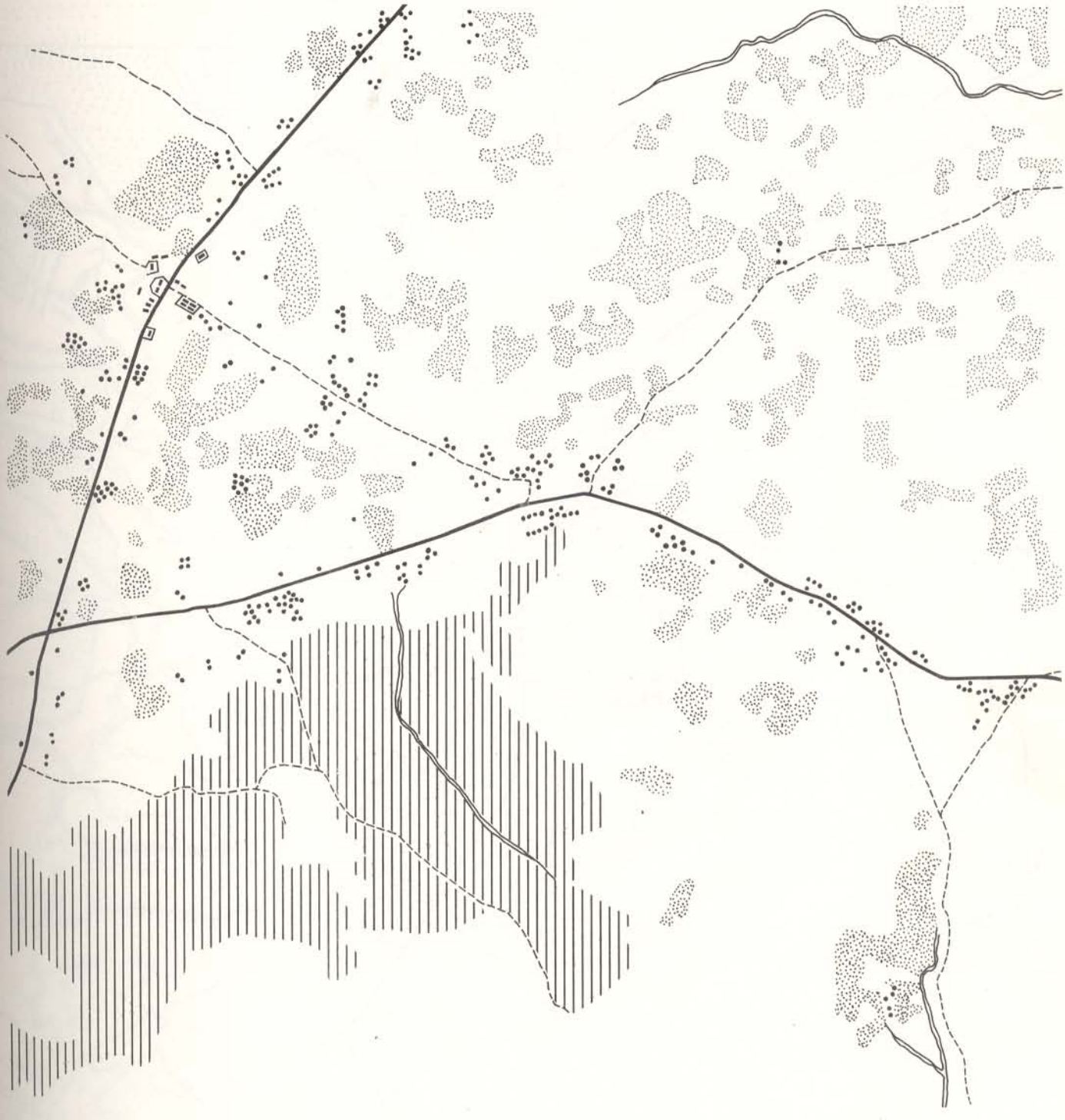

Figure 6-3: LINEAR SETTLEMENT

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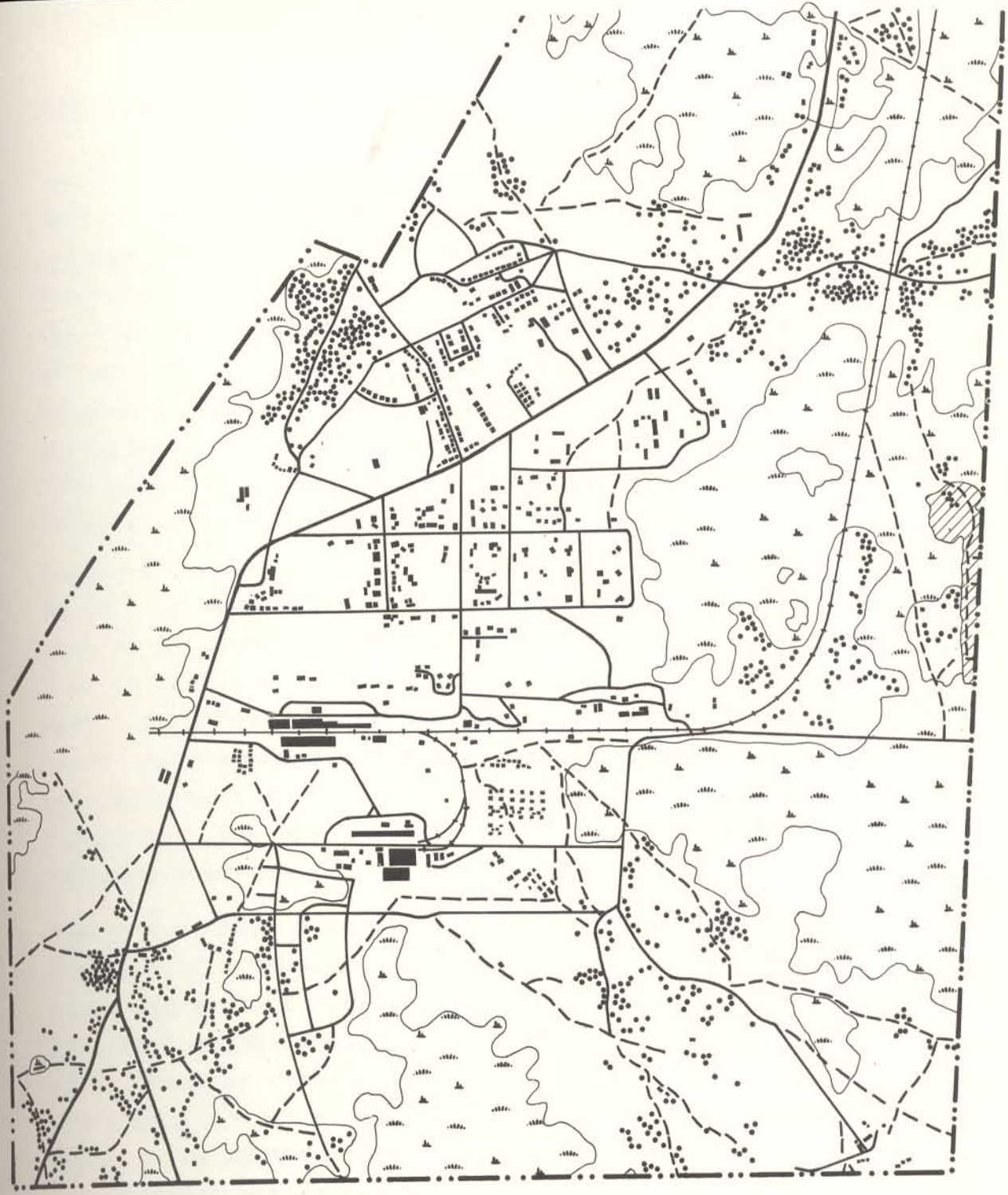

Figure 6-5: SALIMA TOWNSHIP

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Some Examples of Settlements

The following are illustrations and further descriptions of some of the human settlements. Figure 6-1 shows a fishing village south of the Goldern Sands Beach at Cape Maclear. The beach serves as a focus for fish landings, drying, smoking and selling; net mending/weaving, canoe/boat mooring and repairs; and activities such as fetching water, washing clothes and kitchen utensils, bathing for personal hygiene and recreation, and playing. Because of the preceding, the dwelling units have been built close to the beach and are agglomerated because of the limited length of the beach.

Figure 6-2 shows a settlement scattered over an area of about 35 Km^2. A much wider territory, of course, is covered by this type of settlement pattern than the area shown. Most people live on or close to their farms/gardens, but others have to walk a relatively short distance (at most half a kilometre) to reach their gardens. The area has two tracks, which are motorable only during the dry season, and a number of footpaths. The area is located south and west of Nampeya in Machinga District.

Figure 6-3 shows a settlement which has developed in the vicinity of a tobacco estate in Machinga District, north of Ntaja and west of Nselema. Here the household dwelling units have been established along the existing tracks and footpaths in a linear or ribbon type of settlement. Most of the gardens are a half to two kilometres away from the household units. There is an ADMARC centre in the north-west and an agricultural estate nearby.
Both types of settlements shown in Figures 6-2 and 6-3 have no proper centre. A large number of pockets of vacant arable land can be seen in the sparsely settled areas.

In contrast to Figures 6-2 and 6-3. Figure 6-4 shows an orderly spatial organization and efficient use of land, which is typical of the large agricultural estates. Dwelling units for farm workers are grouped and properly related to the work area, and some facilities are provided within the area. Figure 6-5 (Salima Town), shows an urban sprawl which is typical of nearly all urban development in Malawi-- a very low density development in terms of both dwelling units per hectare and persons per hectare.

LAND TENURE

There are four types of land tenure in Malawi: Customary Land, (Registered and unregistered) Leasehold Land, Absolute or Freehold (Private) Land, and Public Land.

Customary Land

About 75-80% of the total land area of Malawi is under customary tenure. Under this traditional system all land is owned by the society. Individual allocation to the head of household is granted by the village headman or chief who is trustee of the land. A parcel of land allocated to an individual is for his/her own use. The individual does not own the land which has been allocated. The allocation only gives one an interest in the land but it cannot be sold.

The "head" of the household as far as land use control is concerned is either a husband or a wife in each family; i.e.,in matrilineal societies the wife has the ultimate right to use of land while in patrilineal societies the husband is the traditional controller of use of land allocated to the family. The spatial distribution of matrilineal societies is largely confined to the Central Region and parts of the Southern Region, while the Northern Region and parts of Nsanje and Chikwawa Districts in the South are patrilineal. Thus, in the case of the matrilineal rights a man acquires land only by marriage to a woman and this entitles him to possess cultivation rights. In the patrilineal society the opposite is true.

Land is allocated to be used by each family according to need-in which a large family can always demand more land from a village headman; and if some family members move away or out of the household by marriage or death the chief or village headman has the right to re-allocate part of the land to needy families.

In some cases a more productive family may demand more land for farming if they need it. Land for collecting firewood, grass for thatching, or grazing, graveyard, wells and rivers and any other land needed for community use is owned collectively by the tribe and members have the right to use such land.

In connection with the Lilongwe land Development Programme a government policy was initiated to implement a land reform programme in order to improve agricultural productivity and encourage awareness of land as a finite resource. The following statutory instruments consequently were enacted to encourage the registration of title to land:

a) Customary Land (Development) Act (Cap 59.01)
b) Registered Land Act (Cap 58.01)
c) Adjudication of Title Act (Cap 58.05)

The Customary Land Development Act (Cap 59.01 is "An act to provide for the ascertainment of rights and interests in customary land, for the better agricultural development of customary land and for purposes connected therewith and incidental thereto". The object of the act is to provide for the conversion of customary tenure to private title held under the Registered Land Act Cap 58.01. Any customary land recorded under this title provides private interest in land to a family representative, who is usually the head of the household. Other pieces of land required for communal use continue to be administered under customary land tenure. This act has so far been applied to the Lilongwe Land Development Programme where hectarages of over 400,000 ha. have been registered.

Registered Land Act (Cap 58.01): the purpose of this Act, which was enacted in 1967 and amended in 1970, is to ascertain titles to land. This is an authentic means through which titles to land can be recorded. The register records the person in whom title to land is vested and that person has what is termed indefeasible title except where fraud has been

proved. The act provides for the setting up of a public register of titles to land and provides for a land register in each registration unit within the LLDP Area. The main function of a land registry is to maintain the land registers of all pieces or parcels of registered land and to keep a record of all subsequent land transactions. This Act has been predominantly applied within the LLDP Area. By the end of 1982 over 202,347 ha. were registered under the Act. In 1974 the power of the Act were extended ot the Capital City area in Lilongwe. This covers an area of approximately 225 sq. Km.

Adjudication of Title Act (Cap 58:05): this legislation was enacted in 1971 to provide for the adjudication of rights and interests in land which is not under the customary tenure. This enables such land to be recorded under the Registered Land Act. 1967. The act has so far been applied to the Lilongwe Capital City Area (CCDC) and to fourteen units in the Lilongwe Land Development Area (LLDP). There are plans to apply the Act to the City of Blantyre in the future.

The three legislative instruments, as mentioned earlier, form the basis of the first Land reform project in Malawi, under the Lilongwe Land Development Programme now called Lilongwe Rural Development Project (LRDP).

Under the LRDP land reform, the institution framework involves a series of tasks:

- Demarcation of Land
- uses of aerial photos to annotate boundary
- Surveying
- Producing a demarcation map on 1:5,000
- Land Allocation

The LRDP has been subdivided into 40 units and so far only 18 units have been accorded Land Certificates. Land Allocation involves a thorough investigation and data analysis. The Stages are:-

i - Collecting of village history- this helps to settle local land disputes and establishing the number of family units.

ii - Identifying village boundaries.

iii - Identifying family boundaries - this forms the basis of family land that is to be registered

iv - Identifying land used for communal use which includes residential area, graveyard, forest, commercial area, etc.

v - Surveying the area and then producing a demarcation map.

vi - Recording names of family members, including those away from the village.

vii - Making a 60-day Legal filing period to enable submissions to be made to the Local Land Board.

viii - Recording Legal Allocation and having documents signed by a family representative.

ix - Final registration with the land register.

The success of the land reform in the LLDP is yet to be established in broad socio-economic terms. The people, however, are settled and appear to welcome the reform programme. The Land reform programme marks a new direction in Land Tenure in Malawi. The possiblility of extending the Lilongwe Land Development Project to other parts of the country should be reviewed with particular reference to the financial and technical composition of the entire project. Particular attention must also be made to the time-frame of the reform process, which takes between two to four years.

The importance of individual ownership of land cannot be over emphasized. Any future policies should take into account the constraints arising from the traditional land ownership system. However, the economic feasibility of land reforms should determine national priorities where land tenure is weighed against the need to improve agricultural productivity.

Leasehold Land

Under the Leasehold title the lessee possesses land for a term of years while the lessor retains ownership of the land. during this term of years the lessee uses the land for agricultural, commercial, residential, etc., purposes subject to conditions imposed by the lessor. The lessee can also be a lessor who, after a given period of leasing land , can decide to sublet part or a whole piece of land to another lessee. Under Leasehold ownership, land is granted for an approved use at a government-fixed annual ground rent. Land is then leased for a given period and can be renewed on expiration of the lease. Where land being leased is customary, lease is issued subject to the consent of the chief who is the trustee of the land. The Lands Department is responsible for transacting all leasehold transfers and collecting ground rents on behalf of the Government.

Where land being leased is public then consent must be sought from the Government or the local authority responsible for that particular piece of land. Private land can also be leased on agreement between parties concerned. However, granting of leasehold rights is also subject to a series of consultations with all other parties or persons that may be directly or indirectly affected by the granting of a lease.

Upon receipt of any lease application the Department of Lands circulates such an application to persons and organisations that are affected by the lease application. Usually the T.C.P.D. comments on applications from the physical planning point of view and reports to the Commissioner for Lands. Thus T.C.P.D. comments together with comments by other interested parties provide the bases for the Commissioner for Lands to decide on whether or not a lease should be granted.

Leasehold land is mostly related to agricultural development. The acreage being leased are increasing each year. Table 3A shows the increasing are being leased each year from 1964 to the end of 1981. These statistics show the aggregate area under leasehold regardless of use.

Absolute or Freehold Land

This refers to "persons" owning land indefinitely and having the legal right to transfer it to another party in whole or part thereofe. The conveyance of private land is subject to the approval of the Minister for land matters under part IV of the Land Act 1965.

An annual fee is payable on freehold land except in special cases in which the Minister decides to remit or reduce any such fee. Most of the freehold land is in Thyolo, Mulanje and Nkhata Bay area under tea estates. There are also a few parcels of freehold land in Blantyre City, Zomba, Lilongwe, Mzuzu and other parts of the country. Most of these parcels of freehold land were acquired during the colonial period for commercial, residential and missionary uses. Only freehold land can be transferred to other parties on a monetary basis. It is very difficult to acquire customary or public land under feehold title except for cases under the LLDP and MHC.

From 1974 there was a tremendous decline in freehold lands for reasons not well documented in the land registry.

Public Land

Public land is land that is acquired by the Government for public use and is vested in the Life President in perpetuity. Public land is largely used for forest reserves, game reserves and national parks, institutional buildings, and other social and physical infrastructure and generally land in urban areas. About 20% of the total land area was under public ownership in 1983. Over the years there has been a gradual increase in land that is public land.

The Land Acquisition Act (Cap. 58.04) provides the statutory basis for the Government to acquire any piece of land for public use. Under Section 3 of the Act the Minister responsible for Land Matters may acquire any land, either compulsorily or by agreement. Where such land is acquired compensation is paid to the land owner as may be agreed upon or determined by the Act.

Land Tenure Statistics

Annual records kept by the Lands Department on lands under various types of tenure indicate that in 1984 the total amount of customary land was approximately 79% of the total land area of Malawi while public land represented 17.3%, freehold land 0.6% and leasehold land 3.1%. The following are the changes which have occurred between 1964 and 1984 in the amounts of land held under the various types of tenure. The total amount of customary land has decreased from 81,137.54 Km^2 (86%) in 1964 to Km^2 (79%) in 1984. Freehold land also decreased steadily from 1,663 (1.8%) in 1964 to 520.65 Km^2 (0.6%) in 1984. This loss was transferred to public land and leasehold land which increased form 10,972.50 Km^2 and 713.96 Km^2 in 1964 to 16,392.41 Km^2 and 3,015 Km^2 in 1984 respectively.

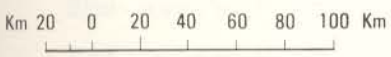
In other words, between 1964 and 1984, customary and freehold land decreased by 7% and 1.2% respectively while public and leasehold land increased by 5.7% and 2.5% respectively.

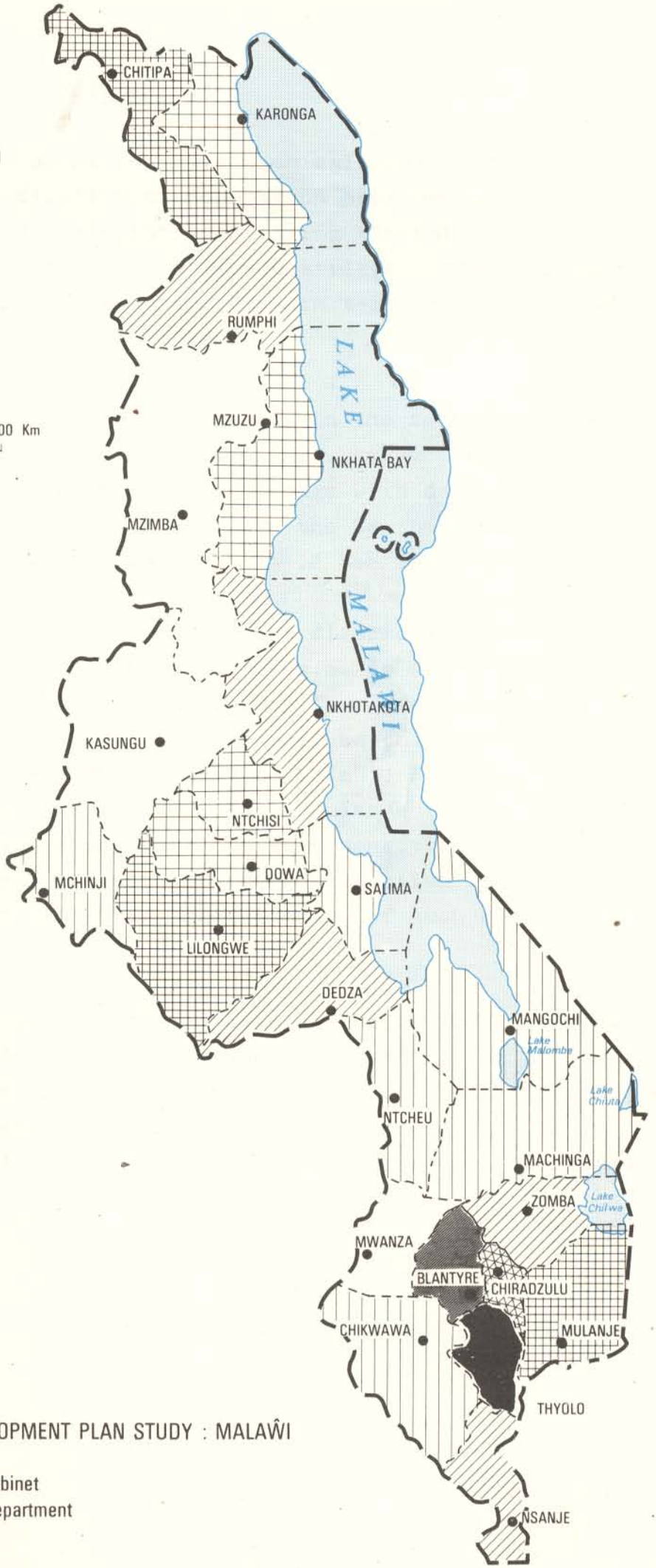
Land Tenure/Land Use Problems

Section 9 discusses the problems created by extension of urban planning areas into customary land, the allocation of customary land by chiefs, etc. and the need for chiefs and T.C.P.D to work closely together.

ARABLE/HABITABLE LAND USE DENSITIES 1983

Map 6-3





Key

Persons per Sq Km

- 50-100
- 101-150
- 151-200
- 201-250
- 251-300
- 301-350
- 351-400
- 401+ (455)

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6.5 ARABLE LAND USE DENSITIES, 1985

Arable land use densities have been calculated in order to obtain an indication of population pressures on land and to provide a basis for identifying the potential for future growth within the various districts. The densities have been calculated and expressed in terms of persons per square kilometre of arable land.

The average arable land use density in the country in 1985 was 139 persons per square kilometre (p.p. Km^2). the Northern and Central Regions were below the average with densities of 83 and 129 p.p. Km^2 respectively; and the Southern Region was above the average with 179 p.p. Km^2. See Table 6.3b.

Population densities in the various districts varied from 58 p.p. Km^2 in Mzimba District to 457 p.p. Km^2 in Thyolo District. Eleven out of the twenty-four districts had densities above the national average, seven of them much higher. These are Thyolo (457 p.p. Km^2), Blantyre (390), Chiradzulu (322), Nkhata Bay (282), Mulanje (249), Dedza (238) and Zomba (232). Some districts have densities which do not appear to reflect the size of their respective land areas and population. For a better understanding of such densities refer to Table 6.2.

Future population (natural) growth and distribution indicate that, without any policy intervention, the highest arable land density will be experienced in the District of Thyolo with 750 p.p. Km^2 followed by the Districts of Blantyre (639), Chiradzulu(528), Nkhata Bay (464), Mulanje (408), Dedza (390), Zomba (381) and Lilongwe (308).

6.6 TRENDS IN THE PHYSICAL DEVELOPMENT OF MAJOR HUMAN SETTLEMENTS

Urban land use data on changes in built-up areas[1] reflects trends not only in urban physical development but also in socio-economic development, as there is a causal relationship between land use and socio-economic activities. The study of physical development trends in 35 selected urban places, including all small towns, large towns and cities in Malawi listed in Table 6.4, shows that during, approximately, a ten-year period[2] , the urban built-up hectarage in the two leading cities of Lilongwe and Blantyre increased by 3,147 ha. (31.5 Km^2) and 2,322 ha. (23.2Km^2) respectively. All the other urban areas in the country experienced increases of less than 200 ha (2 Km^2) in their respective built-up areas.

The built-up areas in Kasungu, Zomba and Salima increased by 1.47 Km^2 , 1.08 Km^2 and 1.02 Km^2 respectively while the built-up areas in six urban areas increased between 0.5 and 1.0 Km^2 as follows: Ngabu 0.68 Km^2 , Liwonde 0.62 Km^2 , Mangochi 0.60 Km^2 , Nchalo 0.54 Km^2 , Mzuzu 0.54 Km^2 , and Karonga 0.53 Km^2 . The remaining 24 urban areas experienced increases of less than 0.50 Km^2 each.

In terms of net increases in the urban built-up areas (residential uses), the following urban areas experienced very high growth: Liwonde (213%), Lilongwe (163%), Nchalo (146%) and Phalombe (102%). (See Table 6.5).

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(1) "Built-up area" refers to the man-made physical environment

(2) The ten-year period varied, as explained in Annex A6-1 of this report.

Table 6.4
Development Trends of Selected Urban Areas in Malawi

	Urban Areas	Period	Existing Built-up Area at the Beginning of the Period (Hectares)			Expansion of Built-up Areas at the end of the Period (Hectares)			Percentage Increase in the Built-up Area (Net Increase)		
			Residential	Non Residential Areas	Total	Residential Uses	Non Residential Uses	Total	Residential Uses	Non Residential Uses	Total Percentage Increase
	Chitipa	1972-1981	39.32	51.44	90.76	38.36	4.76	43.12	97.6%	9.25%	47.5%
	Karonga	1967-1980	82.00	20.50	102.50	38.00	14.50	52.50	41.3%	70.7%	51.2%
	Chilumba	1972-1980	60.00	10.00	70.00	4.00	4.00	8.00	6.7%	40.0%	11.4%
Northern	Nkhata Bay	1972-1982	12.00	14.50	24.50	4.00	4.00	8.00	33.3%	27.6%	32.7%
Region	Rumphi	1967-1980	37.00	17.00	54.00	2.50	0.20	2.70	6.8%	1.2%	5.0%
	Mzimba	1972-1980	40.16	22.56	62.72	6.56	8.00	14.58	16.3%	35.5%	23.2%
	Mzuzu	1966-1976	89.40	30.05	114.45	40.13	13.43	53.56	44.9%	44.7%	46.8%
	Kasungu	1972-1982	117.44	44.36	161.80	131.33	16.56	147.85	118.8%	37.3%	91.4%
	Nkhotakota	1972-1982	16.08	32.08	48.16	1.44	6.08	7.52	9.0%	19.0%	15.6%
	Ntchisi	1972-1982	17.75	18.24	35.99	5.96	1.56	7.52	33.6%	8.6%	20.9%
	Dowa	1972-1982	54.46	60.26	114.72	8.20	5.96	14.16	15.1%	9.9%	12.3%
Central	Mponela	1972-1982	30.08	39.08	69.16	7.35	5.00	12.36	24.4%	12.8%	17.9%
Region	Salima	1973-1982	72.80	34.40	107.20	90.56	12.40	102.86	124.4%	36.0%	96.0%
	Lilongwe	1973-1982	1072.00	357.00	1429.00	1395.50	927.00	2322.50	130.2%	259.7%	162.5%
	Namitete	1973-1982	12.00	6.00	18.00	0.50	1.00	1.50	4.2%	16.7%	8.3%
	Mchinji	1973-1982	28.96	19.36	48.32	11.84	24.44	36.28	40.9%	126.2%	75.1%
	Dedza	1973-1982	203.76	63.02	266.78	30.52	14.96	45.48	15.0%	23.7%	17.0%
	Ntcheu	1973-1982	39.22	44.60	83.82	11.84	12.68	24.52	30.2%	28.4%	29.3%
	Mangochi	1973-1982	93.08	67.44	160.52	39.76	20.12	59.88	42.7%	29.8%	37.3%
	Machinga	1974-1982	8.00	15.00	23.00	8.50	2.00	10.56	106.3%	13.3%	46.0%
	Liwonde	1971-1982	13.92	15.36	29.28	42.08	20.16	62.24	302.30%	131.31%	212.6%
	Balaka	1973-1982	30.36	31.68	62.04	23.20	4.08	27.28	76.4%	12.9%	44.0%
	Zomba	1971-1982	458.50	111.50	570.00	90.50	18.00	108.50	19.7%	16.1%	19.3%
	Chiradzulu	1974-1982	15.48	8.04	22.52	1.50	0.72	2.22	9.7%	9.0%	9.9%
Southern	Blantyre	1972-1982	3341.00	1228.00	4569.00	2937.00	210.00	3147.00	87.9%	17.1%	68.9%
Region	Mwanza	1974-1982	24.80	8.52	33.32	8.72	3.92	12.64	35.2%	46.0%	37.9%
	Thyolo	1974-1982	16.88	25.28	42.16	7.88	11.40	19.28	46.7%	45.1%	45.7%
	Luchenza	1974-1982	16.00	59.00	75.00	1.50	4.50	6.00	9.4%	7.6%	8.0%
	Mulanje	1974-1982	30.29	38.02	68.31	2.28	1.64	3.92	7.5%	4.3%	5.7%
	Phalombe	1974-1982	6.58	6.54	13.12	8.60	4.76	13.36	130.6%	72.7%	101.8%
	Chikwawa	1972-1982	19.00	16.76	35.76	7.08	22.08	29.16	37.3%	131.7%	81.5%
	Nchalo	1972-1982	28.36	9.16	37.52	19.00	35.92	54.92	67.0%	392.1%	146.4%
	Ngabu	1972-1982	70.00	28.00	98.00	52.00	16.00	68.00	74.3%	57.1%	59.4%
	Nsanje	1972-1982	43.40	21.12	64.52	8.24	10.10	18.34	19.0%	47.8%	28.4
	Bangula	1972-1982	6.00	43.00	48.00	9.00	38.00	47.00	150.0%	88.3%	98.0%

High net increases of between 81% and 98% were experienced in Bangula, Salima, Kasungu and Chikwawa. Blantyre (69%) was fairly high. Table 6.5 gives the total net increases for the other towns. With respect to net increase in existing residential use hectarages, very high increases were experienced in Bangula (150%), Phalombe (130.6%), Lilongwe (130%), Salima (124%), Kasungu (112%) and Machinga(106%). Liwondes increase of 302% was the highest in the country. This and that of Lilongwe were due to the development of the new township and city respectively. (See Table 6.6.)

In terms of non-residential development, such as commercial, industrial and institutional uses, very high net increases were experienced in Nchalo (329%), Lilongwe (259%), Chikwawa (132%), Liwonde (131%), and Mchinji (126%). The net increases in Lilongwe and Liwonde were due to the establishment of large industrial estates and other institutional uses related to the development of the capital city and the new township respectively. The development in Mchinji was due to its new development as a transit depot for both road and rail haulage between Malawi and Zambia /Zimbabwe/South Africa. In the case of Chikwawa it was the development of Government institutions including educational uses; and in the case of Nchalo, which experienced the highest net increase in the non-residential-use hectarage, it was the expansion of the sugar industry and the trading centre. See Table 6.7.

Table 6.5
Total Net Increase in Built-up Areas (all Urban Uses): Over approximately a Ten Year Period

Very High 100%		High 80%		Fairly High 60%		Medium 40%		Low 20%		Very Low 10% +		Negligible 10% or less	
Liwonde	213%	Bangula	98%	Mchinji	75.0%	Karonga	51%	Mwanza	38%	Zomba	19%	Chiradzulu	10.0%
Lilongwe	163%	Salima	96%	Ngabu	69.4%	Chitipa	47%	Mangochi	37%	Mponela	18%	Namitete	8.0%
Nchalo	146%	Kasungu	91%	Blantyre	69.0%	Mzuzu	47%	Nkhata Bay	33%	Dedza	17%	Luchenza	8.0%
Phalombe	102%	Chikwawa	81%			Machinga	46%	Ntcheu	29%	Nkhotakota	16%	Mulanje	5.7%
						Thyolo	46%	Nsanje	28%	Dowa	12%	Rumphi	5.0%
						Balaka	44%	Mzimba	23%	Chilumba	11%		
								Ntchisi	21%				

Table 6.6
Built-up Residential Areas: Net Increase over approximately a Ten Year Period

Very High 100%		High 80%		Fairly High 60%		Medium 40%		Low 20%		Very Low 10% +		Negligible 10% or less	
Liwonde	302%	Chitipa	98%	Balaka	76%	Thyolo	47%	Chikwawa	37%	Zomba	20%	Chiradzulu	9.7%
Bangula	150%	Blantyre	88%	Ngabu	74%	Mzuzu	44%	Mwanza	35%	Nsanje	19%	Luchenza	9.4%
Phalombe	130%			Nchalo	67%	Mangochi	42%	Ntchisi	34%	Mzimba	16%	Nkhotakota	9.0%
Lilongwe	130%					Karonga	41%	Nkhata Bay	33%	Dowa	15%	Mulanje	7.5%
Salima	124%					Mchinji	41%	Ntcheu	30%	Dedza	15%	Rumphi	6.8%
Kasungu	112%							Mponela	24%			Chilumba	6.7%
Machinga	100%											Namitete	4.2%

Table 6.7
Built-up Industrial, Institutional and other Non-residential Uses: Net Increaese over approximately a Ten Year Period

Very High 100%		High 80%		Fairly High 60%		Medium 40%		Low 20%		Very Low 10% +		Negligible 10% or less	
Nchalo	392.0%	Bangula	88%	Phalombe	73.0%	Ngabu	59.0%	Chilumba	40%	Nkhotakota	19.0%	Dowa	10.0%
Lilongwe	259.0%			Karonga	70.7%	Nsanje	48.0%	Kasungu	37%	Blantyre	17.0%	Chitipa	9.3%
Chikwawa	131.7%					Mwanza	46.0%	Salima	36%	Zomba	16.0%	Chiradzulu	9.0%
Liwonde	131.3%					Thyolo	45.0%	Mzimba	35%	Namitete	16.0%	Ntchisi	8.6%
						Mzuzu	44.7%	Mangochi	30%	Machinga	13.0%	Luchenza	7.6%
								Ntcheu	28%	Balaka	13.0%	Mulanje	4.3%
								Nkhata Bay	27%	Mponela	12.8%	Rumphi	1.2%
								Dedza	24%				

6.7 LAND FOR THE FUTURE

Land for Future Smallholder Agriculture

Land available within the various districts for future smallholder agriculture will be affected by certain factors as discussed in Section 3.2.5. Analysis of the population carrying capacity of land presented in that Section indicates that the land can support a rural population of 11,906,276 persons. Nevertheless, no vacant land will be available for agriculture by the year 2000 in the Districts of Thyolo, Mulanje, Zomba, Blantyre, Chiradzulu, Dedza, Ntchisi and Nkhata Bay. By contrast large amounts of land will be available beyond the year 2000 in the Districts of Mzimba, Kasungu, Salima, Ntcheu, Mangochi, Mwanza, Chikwawa and Machinga (for details see Section 3.2.5).

Land for future Fuelwood Plantations

Estimates made by the Fuelwood and Poles Project (see Part 8) indicate that households and tobacco smallholders will experience a shortage of 6.4 million m^3 of fuelwood in 1990, increasing to 10.8 million m^3 in 2000. The only districts which will be self-sufficient by 2000 are Chitipa and Nkhata Bay. By the year 2000 shortages will be experienced in all the districts in the Central and Southern regions and in three Northern Districts; namely, Karonga, Rumphi and Mzimba.

Existing and future demands for fuelwood have considered implications for land use allocation, particularly in the face of the competing demands for land for farming. A study on Energy (Part 8) indicates that fuelwood plantations will have to be established on vast areas of land in order to meet the future demand. Some districts, for example, will require up to 40% of land (within the district) to be under fuelwood plantation by the year 2000 but there will be no vacant land left in these Districts by the year 2000. See Appendix 8-1, 8-2, 8-3, 8-4, 8-5.

If no land use measures are taken, the consequences will be very serious and the destruction of woodlands will have a disruptive impact on water catchment areas and steep slopes, and a resultant increase in soil erosion and flood. As mentioned in Part 4 the urban areas will be the first and the worst affected by the shortages.

Land for future Livestock Grazing

Malawi's livestock population is concentrated mainly in the Central and Northern Regions. The available data vary widely with the lower estimates by the D.A.H.I. and the higher estimates by the N.S.S.A. The later estimates in 1981 gave a population of 1,436,000 cattle; 1,618,000 goats and 130,000 sheep.

The national head, which graze freely on customary land all over the country, create land use conflicts or problems as follows:

(a) During the dry season the herd enter into garden plots and trample beds and ridges which have been prepared for cultivation.

(b) Overgrazing creates environmental/land husbandry problems. (Overgrazing appears to be due not to land shortage in the country as such, but to the geographical distribution of the national herd in relation to the location of diptanks, farming activities and the density of human settlements).

(c) Grazing along main, secondary and district roads, with constant road crossing by the herd, makes highway driving very hazardous.

(d) As an increasing amount of marginal land is being used for agriculture, this has resulted in conflicts between farmers and cattle owners over restricted access to diptanks during the rainy season.

(e) Young trees in gardens are destroyed by livestock.

Land for Other Future Uses

Part of the vacant land will also be required for the expansion of agricultural estates, cities, towns and villages, and related social and physical infrastructure.

6.8 SUMMARY OF MAJOR ISSUES AND IMPLICATIONS

In accordance with the Government's major development thrust, the agricultural sector, for the next fifteen years or so, will continue to be the backbone of the country's econony in terms of employment, food sufficiency and the generation of foreign currency. The following are the major constraints to the achievement of these goals, as far as physical planning is concerned.

The existing land use patterns within rural and urban settlements, as described and illustrated increase considerably (a) the building and maintenance cost of internal roads and utility services (water, electricity, telephone, sewers); (b) the maintenance cost of open spaces: (c) intra-urban transportation cost; and (d) walking distances from homes to work places.

With respect to the scattered settlements the apparent advantages are (a) the on-farm dwelling units which eliminate or minimize journeys to the garden/farm and makes it possible for the farmer to drive away baboons and other animals which destroy crops; and (b) living a preferred islolated life and avoiding village feuds and 'sing'anga' issues. But the scattered settlements have many serious disadvantages, as follows:

(a) a large majority of the non-farm household units are located more than 10 kilometres away from roads or motorable tracks. The "mlimi" cannot be provided with services and facilities.

(b) the low density of the population and distances between household/holdings make it impossible to provide access roads and other facilities, given the limited financial resources.

(c) surplus food from the remote and isolated settlements cannot be sold easily, neither can farm inputs be provided without the farmers walking very long distances of up to 20 or more kilometres.

(d) there is lack of a threshold population considered adequate to support services such as schools and health centres.

(e) in the absence of an organized village, there is no social support system, and no sense of community--the nearest 'neighbour' could be one kilometre or two kilometres away.

(d) There are thousands of unutilized 'pockets' of vacant customary land in between cultivated patches. This presents a most inefficient form of land use.

The problems relating to sporadic land settlement, as defined above, should be considered as some of the major constraints to the achievement of the country's socio-economic objectives which are directed towards agricultural and rural developments.

Under the customary land tenure system village chiefs, headmen and the "mlimi" treat land as a limitless resource. There is very little or no commitment to the land and there is a tendency to 'waste' land.

Existing and future demands for fuelwood have considerable implications for land use allocation, particulary in the face of the competing demands for land for farming and livestock grazing.

There are population growth pressures on land, particularly in the Districts of Thyolo, Blantyre, Chiradzulu, Nkhata Bay, Mulanje, Dedza and Zomba. In these districts the arable land will be nearly fully utilized or completly

utilized by the year 2000.Possibilities for further expansion to meet food requirements are and will be limited, except through more intensive use of land, voluntary migration to areas with enough vacant arable land and the creation of non-farm employment.

The land pressures are caused by national population increase but also imbalance in the geographical distribution of the population which is properly related to the existing (land) resources; extensive form of agriculture practiced; and the fact that only 49% of the total land area of the country is available for agriculture, rural and urban developments.

A large number of farmers in, for example Dedza,Chiradzulu and Ntcheu, have therefore been forced to cultivate on hillsides (with gradients exceeding 12%) and marginal lands, and in areas susceptible to flooding. Cultivation on river banks and steep slopes without proper conservation measures causes soil erosion, silting of rivers, and other enviromental problems.

With the exception of Salima A.D.D., there is no national inventory of land capacity which provides guidelines for both agricultural and land use planning, physical planning and general land use controls. There is a need to cover the rest of the country in order to facilitate:

- Making proper assessment of the population carrying capacity of land;

- planning properly for land settlement and resettlement schemes.

- formulating a national land use strategy that will effectively accommodate the competing demands for land for agriculture, human settlement, forestry, national parks, game parks, industry, tourism, etc.; and

- exercising development controls to forestall the use of the best arable lands for non-agricultural purposes.

The existing form of village/urban land use increases (a) the building and maintenance cost of internal roads and utility services; (b) the maintenance cost of open spaces: (c) intra-urban transportation cost; and (d) walking distance from the homes to work place.

Uncontrolled land use activities are carried out in sensible environmental areas; steep slopes, dambos, river banks and major river catchment areas. The activities in these areas include farming, fuelwood collection, land clearing, and livestock grazing. Although the dambos, for example may be used for livestock grazing and farming under proper management, intensive vegetable or sugarcane cropping can eventually lower the water tables. Cultivation along riversides and on steep slopes with gradients exceeding 12% also creates enviromental problems: erosion, river siltation and water pollution.

As various policy statements by the Government emphasized that agriculture is the backbone of Malawi's economy,the National Physical Development Plan must be an instrument for the presentation of the agricultural resources base-- land. It must balance space requirement for all competing uses, formulate land use measures to protect the best arable lands and provide a spatial framework and guidelines for the location of major productive activities and infrastructure.

7. SOCIAL AND PHYSICAL INFRASTRUCTURE

7.1 EDUCATION

7.1.1 INTRODUCTION

The major thrust of this study report is to consider the spatial or physical planning aspects of one of the basic educational objectives in Malawi. That is, to "secure a more equitable distribution of educational facilities and resources to realise the greatest cost effectiveness of expenditure".

This study report therefore (a) analyses the characteristics and geographical distribution of the school-age population in Malawi in relation to the location of educational facilities; (b) analyses school enrolments in relation to the supply of teachers and the provision of classrooms; (c) identifies the disparities in the existing distribution of educational facilities and pupil/teacher ratios and (d) reviews the existing school planning standards.

The study report also estimates future school enrolments up to the year 2000, and identifies the districts and regions of the country where school facilities and teaching resources should be located in order to provide equal opportunity for education. Its concluding section discusses the implication of the existing conditions and provides demographic and physical planning guidelines for future school planning and financing. Most of the basic data for this study report was provided by the Planning Unit of the Ministry of Education and Culture. Information from other sources has also been used.

This report is part of a number of study reports produced in connection with the preparation of the National Physical Development Plan (NPDP). The Plan will deal with the spatial aspects of social and economic development in Malawi, and will take into consideration (a) the existing social, economic, physical and general environmental

conditions; (b) development trends and potential; (c) Government polices; (d) proposed development projects; and future needs of the country. Relevant information from the National Physical Development Planning study reports has been used in the preparation of this report.

7.1.2 THE SCHOOL SYSTEM

Prior to independence, Malawi did not have a comprehensive educational system. Various church missions had built a few schools, mostly at the primary level, and the government provided some support. Since independence, however, there has been an acceleration of educational development. Although a large number of schools are still operated by mission, most schools are under government control and supervision.

The Ministry of Education and Culture has overall responsibility for primary, secondary, teacher training, technical schools, and other institutions. These institutions are either government financed and controlled, or government aided/assisted, or unassisted. Under delegated authority, district councils participate in the administration of primary schools. The University of Malawi is an autonomous institution that falls under the Ministry. Other Ministries administer educational/training programmes in health, agriculture, community development and other fields.

Primary Education takes eight years to complete and consists of Standards one to eight, terminating with the Primary School Leaving Certificate. The official Primary School entry age is six years. Secondary education takes two, four or six years, depending on the level of completion.

The Junior Certificate level takes two years; the Malawi Certificate of Education (M.C.E.) level takes a total of four years; and beyond that Forms Five and Six for the (Cambridge) Higher School Certificate or the equivalent of

the Advanced level or the General Certificate of Education require an additional two years. For the purpose of further education, the M.C.E. Certificate gives access to Diploma and Degree courses of the University of Malawi and Teacher Training Colleges.

Estimates from "Expenditure on Development Account" indicate that over the period 1968-1979/80, primary education received 8.4% of the total development resources allocated to the educational sector. 29.3% went to secondary education and 13.8% to other educational services/facilities. Almost all of the funds for primary education were spent on urban and special facilities.

This study report is concerned only with the spatial planning aspects of educational facilities, but it will deal predominantly with primary school facilities and to a lesser extent with secondary school facilities, because the location of secondary schools is not related to the geographical distribution of the school-age population and this is likely to continue for a long time until many parents can afford to meet secondary school expenseds including boarding facilities.

7.1.3 EXISTING CONDITIONS - SPATIAL DISTRIBUTION

PRIMARY EDUCATION

School Facilities

In 1981 there was a total of 2468 primary schools in the country. The Southern Region had 981 (representing 39%); the Central Region had 928 (38%) and the Northern Region had 566 (23%). In terms of the distribution of schools in relation to the existing school-age population, the Northern Region had one school per 314 children of the school-age group; the Central Region had one per 656 and the Southern Region had one per 773 (Table 7.1.1).

Table 7.1.1
Primary School Age Group and Number of Schools 1984/1985 (6-13 Years)

District	Primary School Age Group '000 (1)	Number of Schools (2)	School Age Population per School
Chitipa	19.7	76	259
Karonga	29.3	76	386
Nkhata Bay	28.9	80	362
Rumphi	17.2	69	250
Mzimba	82.4	265	311
NORTHERN REGION	**177.5**	**566**	**314**
Kasungu	55.3	124	446
Nkhotakota	26.8	53	506
Ntchisi	24.9	51	489
Dowa	69.9	100	699
Salima	37.7	69	547
Lilongwe	199.5	240	832
Mchinji	45.0	73	617
Dedza	84.5	115	735
Ntcheu	64.5	105	627
CENTRAL REGION	**608.2**	**928**	**656**
Mangochi	83.4	113	738
Machinga	94.0	135	697
Zomba	97.0	120	809
Chiradzulu	48.5	66	735
Blantyre	112.2	137	819
Mwanza	19.7	43	459
Thyolo	88.7	106	837
Mulanje	131.1	137	957
Chikwawa	53.1	77	690
Nsanje	30.3	47	645
SOUTHERN REGION	**757.9**	**981**	**773**
MALAWI	**1,543.6**	**2,468**	**626**

Note:(1) The total school age population for the year 1985 is taken from: Malawi Population Census 1977. Analytical Report, Volume II, Table A.9.43. The distribution over the districts is calculated in accordance with the distribution of the total population by district in the year 1985.

(2) The number of schools presents the total member of schools available in each district, according to: Education Statistics Malawi 1985, Planning Unit, Ministry of Education and Culture, December 1985, Table 3, 4 and 5.

Table 7.1.2
Primary School Enrolment 1977-1985

Year	Primary School Age group (6-13)	Total Enrolment (1)	Enrolment Ratio (%)
1976/1977	1,196,961	663,930	55 .4
1980/1981	1,346,618	809,862	60 .1
1984/1985	1,543,553	899,459	58 .3

Source: Education Statistics Malawi 1985
Planning Unit, Ministry of Education and Culture, December 1985
Malawi Population Census 1977, Analytical Report, Volume II, 1984

Note 1: Includes all ages (from 5 to 30+)

This indicates that there were relatively more schools in the Northern Region than in the Central or Southern Regions. The highest ratios occurred in Thyolo (837) and Mulanje (957); and the lowest ratios occurred in Rumphi (250) and Chitipa (259).

Enrolments (See Table 7.1.2)

The available figures on the age distribution of school pupils show that the actual range of age is much wider than the official school-age group of 6-13 years. In the case of the school year 1980/81 the statistics show that the number of pupils in the age group 6-13 accounted for 71.7% of the total enrolment. However, for the sake of consistency, the age group of 6-13 years is used throughout the report.

There were 1,197,000 children in the primary school-age group (6-13 year) in 1977, while 663,930 (of all ages) were enroled, an enrolment ratio of 55.4%. In 1981, the primary school-age group had increased to 1,346,618 of which 809,862 or 60.1% were enroled. By 1985, 1,543,600 children were in the 6-13 year category and 899,459 were enroled, a ratio of 58.3%. As can be seen, the enrolment ratio increased between 1977 and 1981 but decreased between 1981 and 1985.

To compare enrolment by district from which conclusions can subsequently be drawn about the distribution of primary education facilities in the country, two parameters have been used:- participation rate and the representation index. The participation rate (PAR) indicates the ratio of the number of enrolled pupils compared with the total school age group in the district; e.g., a PAR of 0.5 indicates that only half of the total school-age group is actually enrolled in the district. The representation index (RI) compares the district's RI with the national RI. When the RI is more than 1, that district has enrolment higher than the national average; and when the RI is less than 1, that district's enrolment is lower than the national average.

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Table 7.1.3
Participation Rate of Primary School Enrolment by District 1984/85

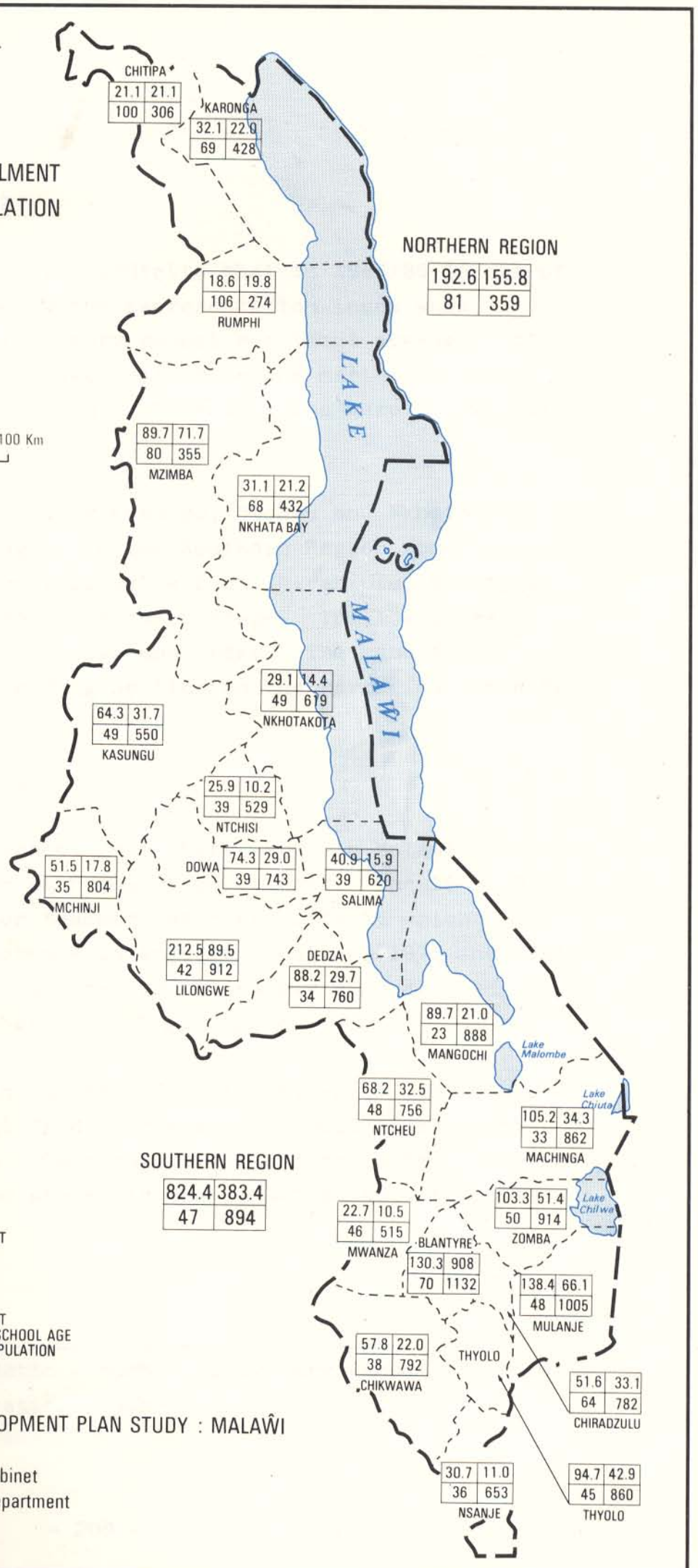
	Primary School Age Group 1984/1985 '000	Total Enrolment '000	Par	Rank
Chitipa	19.7	22.3	1.000	2
Karonga	29.3	29.0	1.000	3
Nkhata Bay	28.9	25.6	0.886	6
Rumphi	17.2	22.4	1.000	1
Mzimba	82.4	73.5	0.892	5
NORTHERN REGION	**177.5**	**172.8**	**0.974**	**1**
Kasungu	55.3	38.2	0.691	7
Nkhotakota	26.8	15.7	0.586	12
Ntchisi	24.9	12.6	0.506	14
Dowa	69.9	27.4	0.392	22
Salima	37.7	17.3	0.459	19
Lilongwe	199.5	113.8	0.570	13
Mchinji	45.0	21.9	0.487	15
Dedza	84.5	30.5	0.361	23
Ntcheu	64.5	39.9	0.619	9
CENTRAL REGION	**608.2**	**317.3**	**0.522**	**3**
Mangochi	83.4	29.3	0.351	24
Machinga	94.0	43.7	0.465	16
Zomba	97.0	57.2	0.590	11
Chiradzulu	48.5	30.6	0.631	8
Blantyre	112.2	100.4	0.895	4
Mwanza	19.7	11.8	0.600	10
Thyolo	88.7	40.8	0.460	18
Mulanje	131.1	60.6	0.460	17
Chikwawa	53.1	22.2	0.418	21
Nsanje	30.3	12.7	0.419	20
SOUTHERN REGION	**757.9**	**409.3**	**0.540**	**2**
MALAWI	**1,543.6**	**899.4**	**0.583**	

Source: Compiled from Education Statistics

PRIMARY SCHOOL ENROLMENT AND CATCHMENT POPULATION

Map 7.1-1

Km 20 0 20 40 60 80 100 Km



Key

PRIMARY SCHOOL AGE POPULATION '000 | ENROLMENT '000

ENROLMENT AS % OF PRIMARY SCHOOL AGE POPULATION

CATCHMENT PRIMARY SCHOOL AGE GROUP POPULATION

NATIONAL PHYSICAL DEVELOPMENT PLAN STUDY : MALAWI

Office of The President and Cabinet
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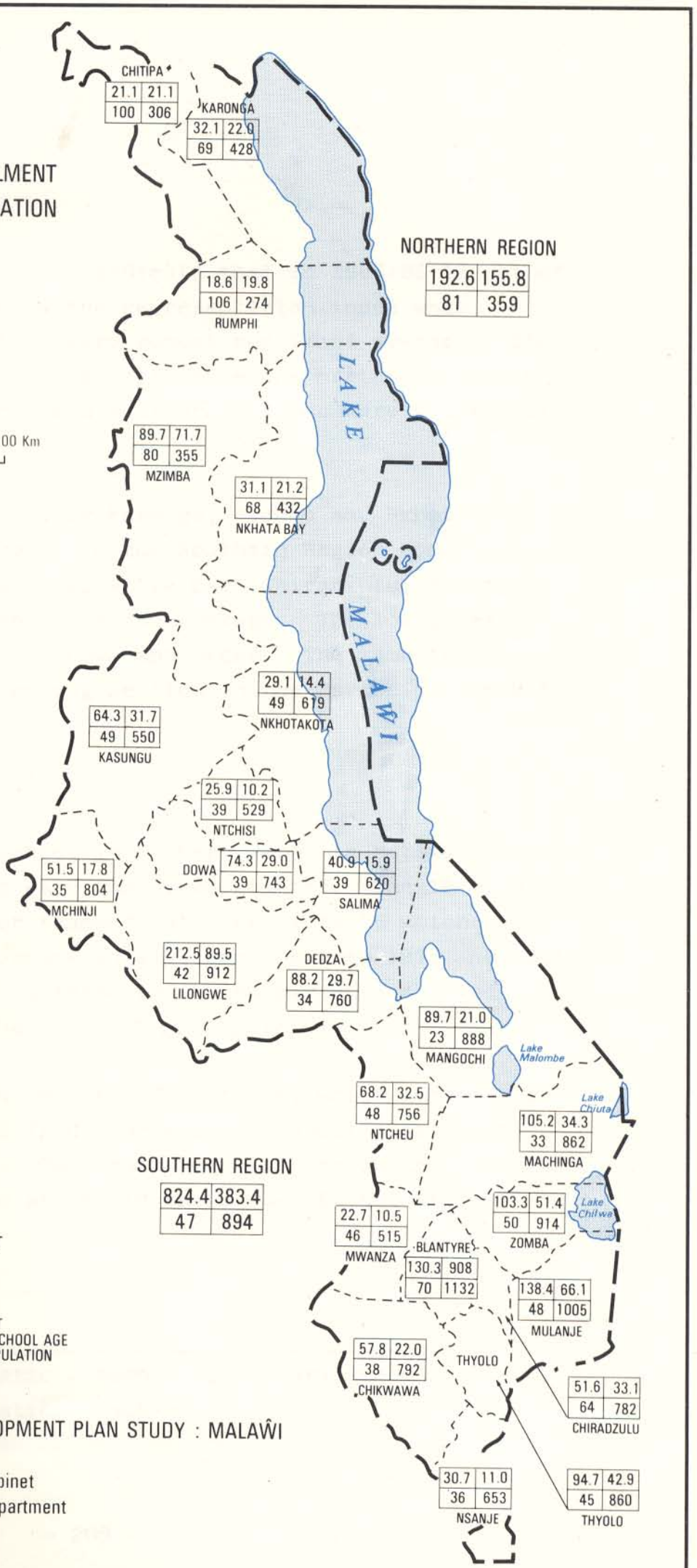
PRIMARY SCHOOL ENROLMENT AND CATCHMENT POPULATION

Map 7.1-1

Km 20 0 20 40 60 80 100 Km



Key

PRIMARY SCHOOL AGE POPULATION '000 | ENROLMENT '000

ENROLMENT AS % OF PRIMARY SCHOOL AGE POPULATION

CATCHMENT PRIMARY SCHOOL AGE GROUP POPULATION

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REPRESENTATION INDEX

Table 7.1.4 and Map 7.1-2 indicate that in 1984/85 12 out of 24 districts were below the representation index when compared to national primary school enrolment average. The entire Northern Region was well above the national average while both the Central and Southern Regions were below that average.

In the Central Region only Kasungu, Ntcheu and Nkhotakota were above the average. In the Southern Region Zomba was slightly above the average while both Chiradzulu, Blantyre, Zomba and Mwanza were above the average. The lowest PAR's were found in Mangochi, Dowa and Dedza. The same factor discussed in the preceding section on the Participation Rate is applicable.

Pupil/teacher Ratio (1)

During the 1984/85 school year there were, in Malawi, 72 primary students for each qualified teacher. The 1975-1976 school year pupil per teacher ratio was 1 to 76 which implies that the increase in enrolment between 1975 and 1985 has been matched by increase in the supply of qualified primary school teachers (See Fig. 7.1-1).

In terms of the total number of teachers, which includes a proportion of unqualified teachers, the pupil/teacher ratio in 1981 was 1 to 60. This ratio is still below the targeted objective of 1 to 50 stated in the 1973-1980 Education Plan.

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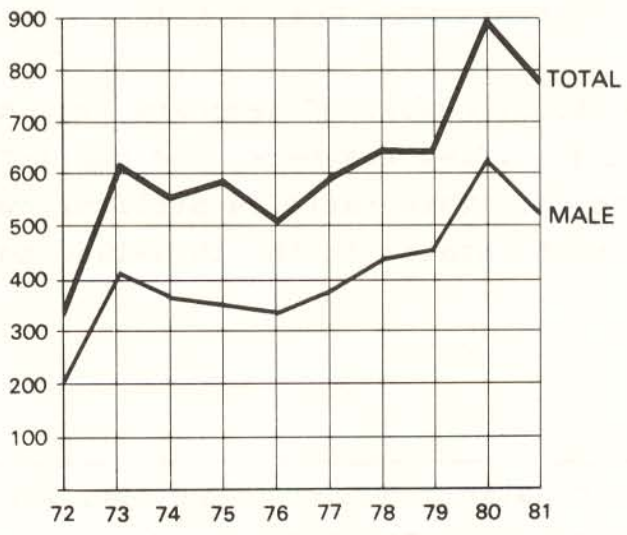
(1) Pupil/Teacher Ratio = Number of primary school students per primary education teacher.

Table 7.1.4
Representation Index of Primary School Enrolment by District 1984/85

	Primary School Age Group 1984/85 '000	Enrolment	RI	Rank
Chitipa	19.7	22.3	1.715	2
Karonga	29.3	29.0	1.715	3
Nkhata Bay	28.9	25.6	1.520	6
Rumphi	17.2	22.4	1.715	1
Mzimba	82.4	73.5	1.530	5
NORTHERN REGION	**177.5**	**172.8**	**1.671**	**I**
Kasungu	55.3	38.2	1.185	7
Nkhotakota	26.8	15.7	1.005	12
Ntchisi	24.9	12.6	0.868	14
Dowa	69.9	27.4	0.672	22
Salima	37.7	17.3	0.787	19
Lilongwe	199.5	113.8	0.978	13
Mchinji	45.0	21.9	0.835	15
Dedza	84.5	50.5	0.619	23
Ntcheu	64.5	39.9	1.062	9
CENTRAL REGION	**608.2**	**317.3**	**0.895**	**III**
Mangochi	83.4	29.3	0.602	24
Machinga	94.0	43.7	0.798	16
Zomba	97.0	57.2	1.012	11
Chiradzulu	48.5	30.6	1.082	8
Blantyre	112.2	100.4	1.535	4
Mwanza	19.7	11.8	1.029	10
Thyolo	88.7	40.8	0.789	18
Mulanje	131.1	60.6	0.792	17
Chikwawa	53.1	22.2	0.717	21
Nsanje	30.3	12.7	0.719	20
SOUTHERN REGION	**757.9**	**409.3**	**0.926**	**II**
MALAWI	**1,543.6**	**899.4**	**1.000**	

Source: Compiled from Education Statistics

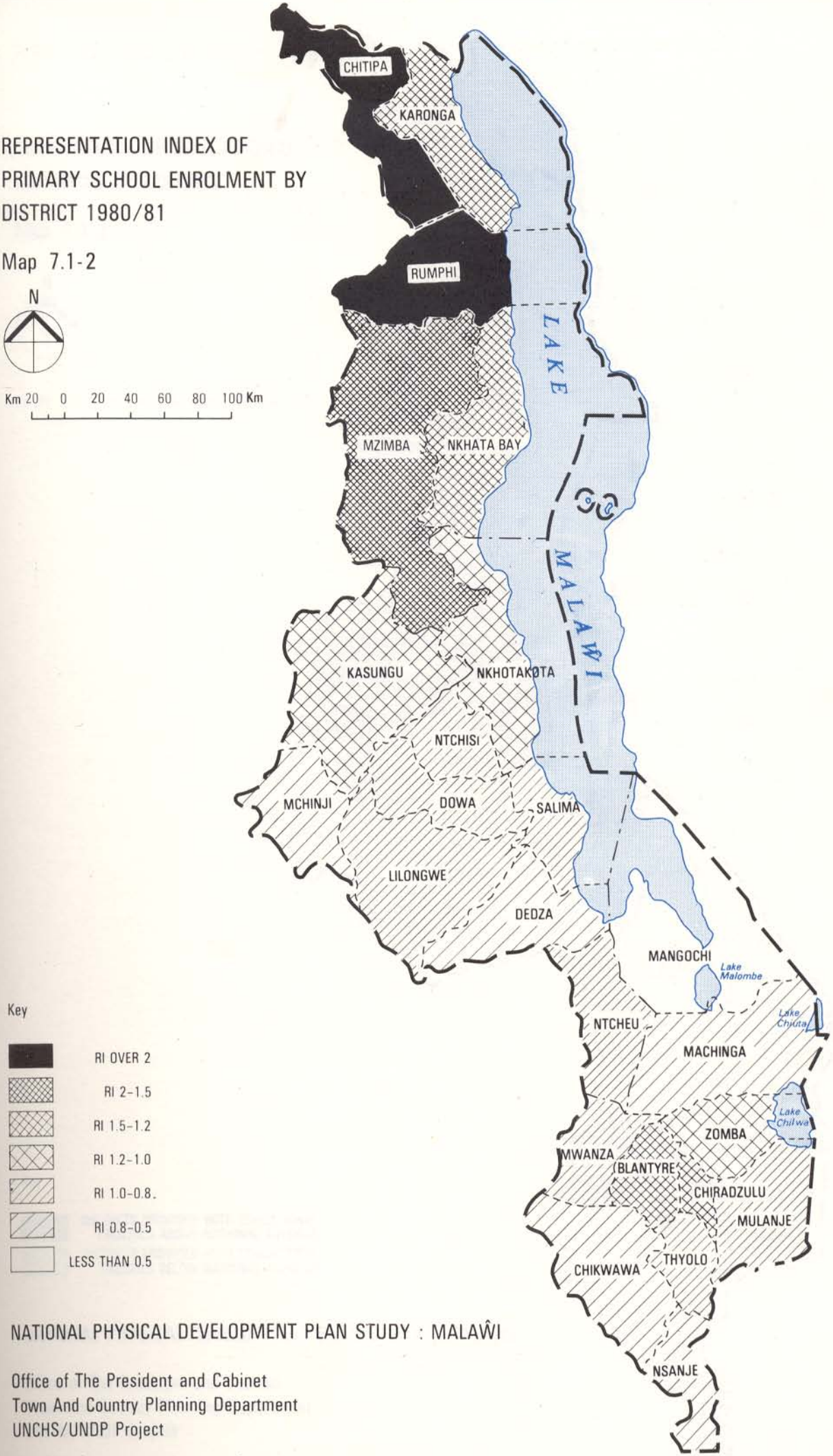


(Source: Ministry of Education)

Figure 7.1-1: NUMBER OF PRIMARY TEACHER GRADUATES 1972-1981

REPRESENTATION INDEX OF PRIMARY SCHOOL ENROLMENT BY DISTRICT 1980/81

Map 7.1-2



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With regards to all teachers, the districts of Ntchisi, Mwanza and Blantyre were near the standard but with regards to qualified teachers only the district nearest the standard was Blantyre with 58 pupils per qualified teachers while all other districts were far removed from the standard with Mangochi, with 132 pupils per qualified teacher, as worth a case (Table 7.1.5).

PUPIL/CLASSROOM RATIO

An analysis of the 1984/85 data on the number of pupils per classroom (Table 7.1.6) indicates the following

On the national average, there were 69 pupils for each classroom in the 1984/85 school year. This was below the national standard of 50 pupils per classroom.

Regionally, pupil per classroom ratios indicate that the Southern Region with 75 pupils per classroom had the highest pupil per classroom ratio among the three Regions; the Central Region with 66 pupils per classroom had the second highest; and the Northern Region with 63 pupils per classroom had the lowest pupil per classroom ratio.

By District, pupil per classroom ratios indicate that the District of Blantyre with 113 pupils per classroom had the highest ratio among the 24 districts. On the other hand, the District of Ntchisi with 47 had the lowest ratio in the country. The majority of the districts had pupil/classroom ratios ranging between 54 and 70.

Table 7.1.5
Pupil/Teacher Ratio and Representation Index of Teachers 1984/85

	Enrolment	Teachers		Pupil/Teacher Ratio					
	'000	Total	Qual.	Total	Qual.	Total	Qual.	Total	Qual.
Chitipa	22.3	374	301	60	74	1.000	0.973	12	10
Karonga	29.0	443	367	65	79	0.923	0.911	20	17
Nkhata Bay	25.6	420	347	61	74	0.984	0.973	14	11
Rumphi	22.4	388	323	69	1.034	1.043	6	4	
Mzimba	73.5	1,280	1,153	58	64	1.034	1.125	7	2
NORTH	**172.8**	**2,905**	**2,491**	**60**	**69**	**1.000**	**1.043**		
Kasungu	38.2	565	454	68	84	0.882	0.857	22	21
Nkhotakota	15.7	277	217	57	72	1.053	1.000	4	7
Ntchisi	12.6	244	168	51	75	1.176	0.960	1	13
Dowa	27.4	475	382	58	72	1.034	1.000	8	8
Salima	17.3	296	223	59	78	1.017	0.923	9	16
Lilongwe	113.8	1,955	1,762	59	65	1.017	1.108	10	3
Mchinji	21.9	361	278	61	79	0.984	0.911	15	18
Dedza	30.5	495	420	62	73	0.968	0.986	16	9
Ntcheu	39.9	627	539	64	74	0.938	0.973	17	12
CENTRAL	**317.3**	**5,295**	**4,443**	**60**	**71**	**1.000**	**1.014**		
Mangochi	29.3	346	222	85	132	0.706	0.545	24	24
Machinga	43.7	684	518	64	84	0.938	0.857	18	22
Zomba	57.2	898	763	64	75	0.938	0.960	19	14
Chiradzulu	30.6	447	369	68	83	0.882	0.867	23	20
Blantyre	100.4	1,906	1,739	53	58	1.132	1.241	3	1
Mwanza	11.8	230	168	51	70	1.176	1.029	2	5
Thyolo	40.8	717	575	57	71	1.053	1.014	5	6
Mulanje	60.6	917	760	66	80	0.909	0.900	21	19
Chikwawa	22.2	371	287	60	77	1.000	0.935	13	15
Nsanje	12.7	216	150	59	85	1.017	0.847	11	23
SOUTH	**409.3**	**6,732**	**5,551**	**61**	**74**	**0.984**	**0.973**		
MALAWI	**899.4**	**14,932**	**12,485**	**60**	**72**	**1.000**	**1.000**		

Source: Education Statistics Malawi 1985, Planning Unit, Ministry of Education and Culture, December 1985.

Table 7.1.6
Pupil/Classroom and Classroom/School Ratios by District: 1984/85

	Total Enrolment '000	Number of Classrooms	Pupil/Class-room Ratio	Number of Schools (1)	Class-room/School Ratio
Chitipa	22.3	405	55	71	5.7
Karonga	29.0	430	68	72	6.0
Nkhata Bay	25.6	357	72	72	5.0
Rumphi	22.4	365	62	69	5.3
Mzimba	73.5	1,185	62	190	6.2
NORTH	**172.8**	**2,742**	**63**	**474**	**5.8**
Kasungu	38.2	567	68	123	4.6
Nkhotakota	15.7	268	59	43	6.2
Ntchisi	12.6	268	47	50	5.4
Dowa	27.4	512	54	96	5.3
Salima	17.3	263	66	68	3.9
Lilongwe	113.8	1,422	80	206	6.9
Mchinji	21.9	382	58	73	5.2
Dedza	30.5	562	55	106	5.3
Ntcheu	39.9	592	68	95	6.2
CENTRAL	**317.3**	**4,836**	**66**	**860**	**5.6**
Mangochi	29.3	540	55	112	4.8
Machinga	43.7	607	72	110	5.5
Zomba	57.2	677	85	114	5.9
Chiradzulu	30.6	521	59	66	7.9
Blantyre	100.4	892	113	126	7.1
Mwanza	11.8	201	59	40	5.0
Thyolo	40.8	643	64	95	6.8
Mulanje	60.6	800	76	127	6.3
Chikwawa	22.2	392	57	75	5.2
Nsanje	12.7	234	55	46	5.1
SOUTH	**409.3**	**5,507**	**75**	**911**	**6.0**
MALAWI	**899.4**	**13,085**	**69**	**2,245**	**5.8**

Source : Education Statistics Malawi 1985, Planning Unit, Ministry of Education and Culture, December 1985.

Note (1) Number of schools relate to the number of schools responded, which account for 91% of all schools

In terms of the number of classrooms per school, the analysis of the 1984/85 data (Table 7.1.6) indicates the following.

On the national average, there were 5.8 classrooms per primary school. Regional averages of classroom per school ratios were 6.0 in the Southern Region, 5.6 in the Central Region; and 5.8 in the Northern Region.

By district, the analysis of classroom per school ratios indicates that Salima District with 3.9 classrooms per primary school had the lowest classroom per school ratio while Chiradzulu anf Blantyre districts with 7.9 and 7.1 classrooms per school, respectively, had the highest ratio.

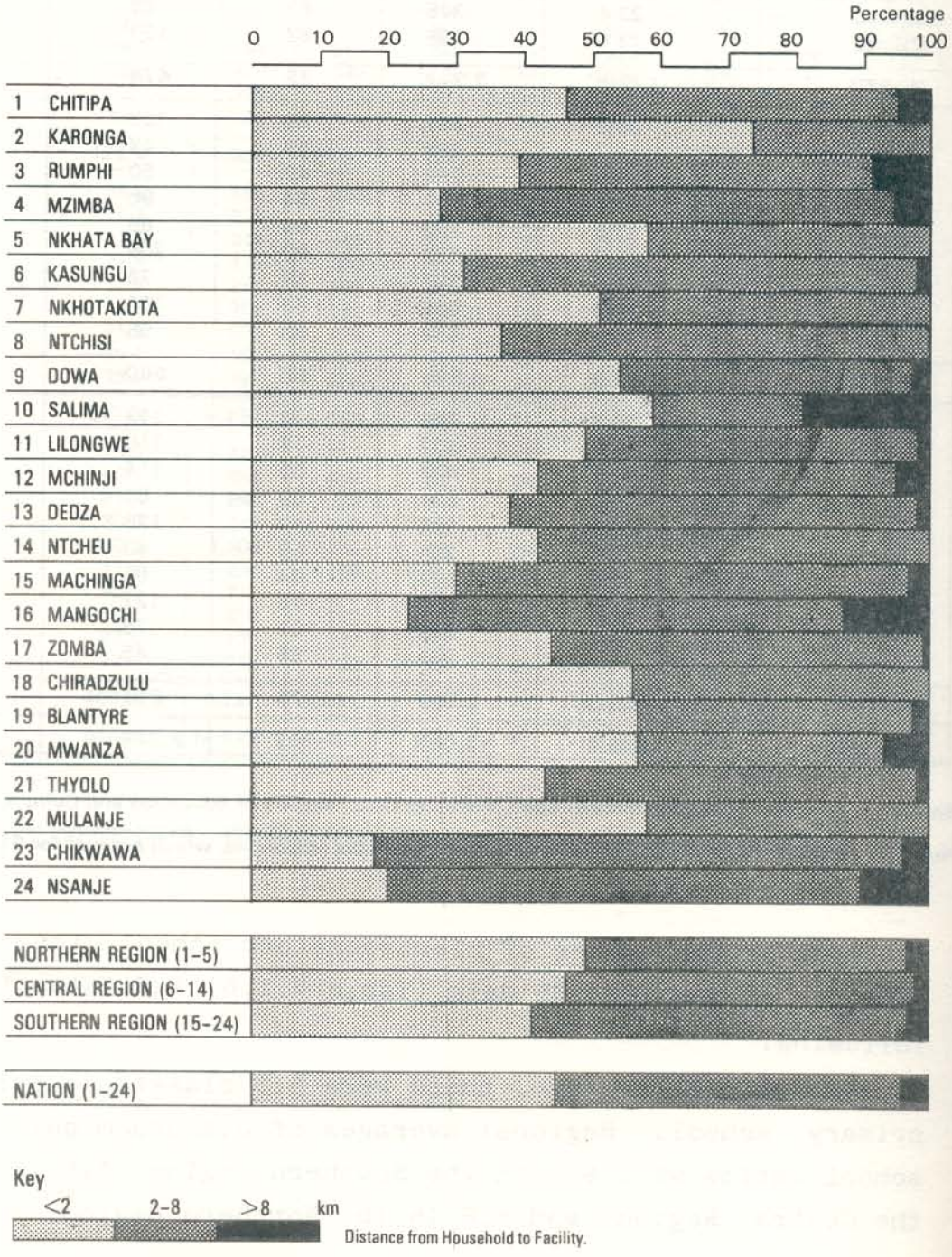


Figure 7. 1-2 : ACCESSIBILITY PROFILE : PRIMARY SCHOOL

SCHOOL SERVICE RADIUS AND ACCESSIBILITY

The service radius or catchment area of a school which is established by the Ministry of Education and Culture is 5 kilometres. This planning standard means that schools should be located in such a way as to make it possible for school pupils to walk a 'reasonable' distance of 1-5 Km in order to attend schools.

Figure 7.1-2 illustrates the accessibility of primary schools in the various districts. The illustration is based on a sample survey carried out by the National Statistics Office in 1981. It was found that more than 50% of the pupils in rural areas have to walk distances exceeding 2 Km. The poorest accessibility was found in the districts of Mzimba, Kasungu, Ntchisi, Dedza, Mangochi, Machinga, Chikwawa and Nsanje.

Table 7.1.7
Representation Indices of Three Aspects of Educational Facilities/Services by District: 1984/1985

District	Enrolment	Qualified Teachers	Classroom	Total	Rank
Chitipa	1.715	0.973	1.256	3.944	1
Karonga	1.715	0.911	1.015	3.641	4
Nkhata Bay	1.520	0.973	0.958	3.451	5
Rumphi	1.715	1.043	1.113	3.871	2
Mzimba	1.530	1.125	1.113	3.768	3
NORTH REGION	**1.671**	**1.043**	**1.095**	**3.809**	**1**
Kasungu	1.185	0.857	1.015	3.057	11
Nkhotakota	1.005	1.000	1.169	3.174	9
Ntchisi	0.868	0.960	1.468	3.296	7
Dowa	0.672	1.000	1.278	2.950	13
Salima	0.787	0.923	1.045	2.755	21
Lilongwe	0.978	1.108	0.863	2.949	14
Mchinji	0.835	0.911	1.190	2.936	15
Dedza	0.619	0.986	1.255	2.860	18
Ntcheu	1.062	0.973	1.015	3.050	12
CENTRAL REGION	**0.895**	**1.014**	**1.045**	**2.954**	**2**
Mangochi	0.602	0.545	1.255	2.402	24
Machinga	0.798	0.857	0.958	2.613	22
Zomba	1.012	0.960	0.812	2.784	20
Chiradzulu	1.082	0.867	1.169	3.118	10
Blantyre	1.535	1.241	0.611	3.387	6
Mwanza	1.029	1.029	1.169	3.227	8
Thyolo	0.789	1.014	1.078	2.881	16
Mulanje	0.792	0.900	0.908	2.600	23
Chikwawa	0.717	0.935	1.211	2.863	17
Nsanje	0.719	0.847	1.255	2.821	19
SOUTH REGION	**0.926**	**0.973**	**0.920**	**2.819**	**3**
MALAWI	**1.000**	**1.000**	**1.000**	**3.000**	

SUMMARY

In the previous Part, three major indicators have been analysed: enrolments, teachers and classroom. In addition, Representation Indices have been calculated for the various districts. A summary of the RI's is presented in Table 7.1.7, which gives on a comparative basis a fairly good indication of the level of the primary educational facilities and services in the various districts.

The table shows clearly that the Northern Region is well provided with school facilities compared to the national average and the other regions. The Central Region is about the national average. At the district level, Chitipa had the highest level of facilities, while the other northern districts are also well above average. The Central Districts of Ntchisi, Kasungu, Nkhotakota and Ntcheu are also above average. Three out of the ten southern districts are above the national average, Chiradzulu, Blantyre and Mwanza. The districts with the least facilities include Mulanje, Salima and Machinga.

SECONDARY EDUCATION

SCHOOL FACILITIES

In the school year 1984/85 there were 73 secondary schools, of which 34 were Government schools, 24 government aided and 15 unassisted. Of the government and government aided schools 31 were day schools and 26 boarding schools.

ENROLMENT

The secondary school age group range officially from 14 to 17 years inclusive.

However, in the school year 1984/85, the 14 to 17 years' group accounted for only 33% of all students enroled in Form 1 to IV.

Of the total secondary school age group in 1985, of 581,200 only 7,996 pupils (1.35%) of the same age group was enroled.

However, if the total enrolment figure is taken, 24,030 pupils, the enrolment for this year was 4.1%. Total enrolment since 1977 has increased by 6.4% per annum, which resulted in an increase of enrolment ratio from 3.1% in 1977 to 4.1% in 1985.

REGIONAL AND DISTRICT COMPARISON

With the current low enrolment figures and in view of the fact that enrolment takes place across the regional and district boundaries, comparison of regional and district disparities does not make statistical sense and is therefore not carried out.

7.1.4 FUTURE REQUIREMENTS - SPATIAL DISTRIBUTION

7.1.4.1 PRIMARY EDUCATION 1980-2000

The following assumptions/objectives form the bases of the projected demand for primary school facilities:

Pupil/Classroom ratio : According to the Development Programme and the National Educational Plan, the objective is to provide one classroom per 50 pupils.

Classrooms/Primary School : The Ministry's planning standard is 8 classrooms per primary school. (In the school year 1980/81 this number varied between 2.0 in Nsanje to 6.6. in Blantyre and Mulanje). In this study it is assumed that existing schools which are below the standard will be extended to 8 classrooms.

All children of school-going age have been considered for the purpose of identifying the possible maximum size of future enrolment in accordance with the Ministry's aim to achieve universal primary education by year 2000.

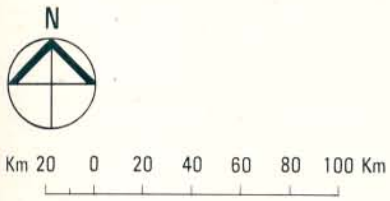
For Blantyre District only (82% urban population in 2000) the standard size of a school is assumed to be 16 classrooms covering an area of 8 hectares.

The site planning standard for an 8-classroom school is 4 hectares.

It is assumed that the additional classrooms required to upgrade existing schools can be incorporated on the existing school grounds. The actual land area required can be estimated only at the local planning level.

REPRESENTATION INDEX OF SECONDARY SCHOOL ENROLMENT AND BOARDING FACILITIES BY DISTRICT

Map 7.1-4

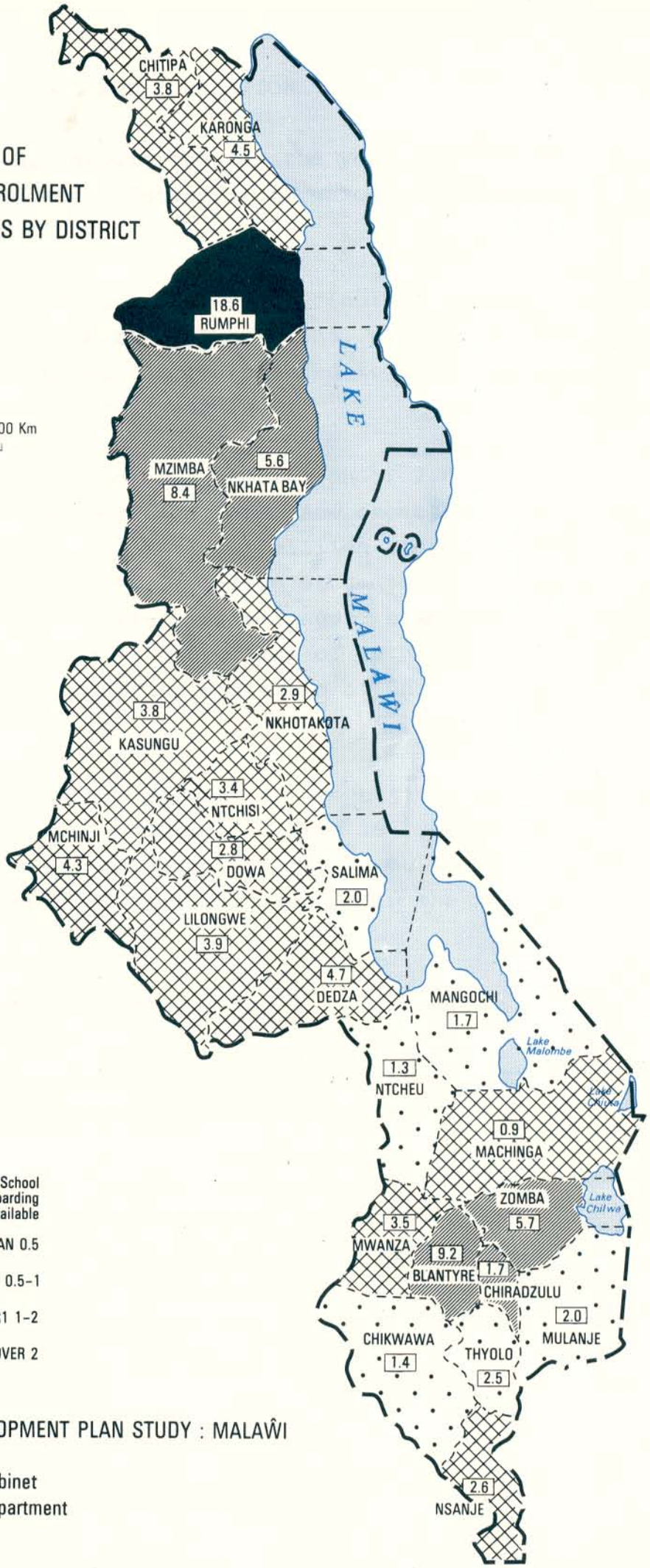


NORTHERN REGION (7.9)

CENTRAL REGION (3.5)

SOUTHERN REGION (3.5)

NATION (14.9)



Key

00.0 The percentage of Secondary School age population for which boarding facilities are available

LESS THAN 0.5

R1 0.5-1

R1 1-2

R1 OVER 2

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PROJECTED PRIMARY SCHOOL-AGE POPULATION

The primary school-age population for the year 2000 has been estimated and presented in Table 7.1.8, which indicates the following results:

> Approximately 2.6 million persons, (out of a total national population of 11.6 million), will be in the school age group and can be expected to enrol in primary schools by the year 2000.

Of the total national school-age population of 2.6 million, 1.2 million students representing 46%, are expected to be located in the Southern Region; 1.1 million students (42%) in the Central Region; and 0.3 million students (12%) in the Northern Region. The districts of Lilongwe, Blantyre and Machinga will have a greater proportion of future primary school-age population while the Districts of Chitipa and Mwanza will have the least.

It should be noted that the population projections used here are given in the "Malawi Population Census 1977, analytical Report, Volume II" which assumes a similar population distribution per region and per district as in the 1977 census.

PROJECTED NUMBER OF CLASSROOMS

The total demand for primary education classrooms by the year 2000 is presented in Table 7.1.9 and gives the following results:

> The number of primary education classrooms should increase substantially form 13,085 in 1985 to 52,893 in 2000 in order to accommodate the projected enrolments. This requires the provision of 39,813 new classrooms during the planning period.

Table 7.1.8
Projected Primary School-Age Population 1980—2000

Districts	Primary School-Age Population: 6—13 Years	
	1980	2000
Chitipa	19,700	30,900
Karonga	29,300	45,500
Nkhata Bay	28,900	45,000
Rumphi	17,200	26,600
Mzimba	82,400	127,800
NORTHERN REGION	**177,500**	**275,500**
Kasungu	55,300	103,400
Nkhotakota	26,800	50,100
Ntchisi	24,900	46,600
Dowa	69,900	131,400
Salima	37,700	70,100
Lilongwe	199,500	374,000
Mchinji	45,000	84,300
Dedza	84,500	158,500
Ntcheu	64,500	120,300
CENTRAL REGION	**608,200**	**1,138,700**
Mangochi	83,400	135,000
Machinga	94,000	152,600
Zomba	97,000	157,400
Chiradzulu	48,500	78,800
Blantyre	112,200	182,000
Mwanza	19,700	32,000
Thyolo	88,700	143,800
Mulanje	131,100	213,300
Chikwawa	53,100	86,800
Nsanje	30,300	48,700
SOUTHERN REGION	**757,900**	**1,230,700**
MALAWI	**1,543,600**	**2,644,900**

Source: Malawi Population Census, 1977, Analytical Report, Volume II, Table A 9.43. The distribution over the districts is calculated in accordance with the distribution of the total population by district in the year 2000

Of the estimated additional requirement of 39,813 new classrooms between 1980 and 2000, 24,614 classrooms should be provided in the Southern Region; 22,774 in the Central Region; and 5,510 in the Northern region. On an annual basis, these figures will be 1,277, 1,197 and 186 repectively.

The greatest annual classroom demand is expected in the Districts of Lilongwe (404), Blantyre (184), Dedza (174), Zomba (165), Machinga (163) and the least is expected in the Districts of Rumphi (11), Chitipa (14) and Mwanza (30).

Table 7.1.9:
Recommended Provision/Distribution of Classrooms by The Year 2000

	Existing No. of Classrooms 1985 (1)	Projected enrolment by the Year 2000 (2)	Additional classrooms required 1985/2000 (3)	Total No. of classrooms required by 2000 (4)=(1)+(3)	Annual increase of new classrooms 1986 (5)
Chitipa	405	30,600	207	612	14
Karonga	430	45,500	480	910	32
Nkhata Bay	357	45,000	543	900	37
Rumphi	365	26,600	167	532	11
Mzimba	1,185	127,800	1,371	2,556	92
North	**2,742**	**275,500**	**2,768**	**5,510**	**186**
Kasungu	567	103,400	1,501	2,068	100
Nkhotakota	268	50,100	734	1,002	49
Ntchisi	268	46,600	664	932	45
Dowa	512	131,400	2,116	2,628	141
Salima	263	70,100	1,139	1,402	76
Lilongwe	1,422	374,000	6,058	7,480	404
Mchinji	382	84,300	1,304	1,686	87
Dedza	562	158,500	2,608	3,170	174
Ntcheu	592	120,300	1,814	2,406	121
Central	**4,836**	**1,138,700**	**17,938**	**22,774**	**1,197**
Mangochi	540	135,000	2,160	2,700	144
Machinga	607	152,600	2,445	3,052	163
Zomba	677	157,400	2,471	3,148	165
Chiradzulu	521	78,800	1,055	1,576	71
Blantyre	892	182,300	12,754	3,646	184
Mwanza	201	32,000	439	640	30
Thyolo	643	143,800	2,233	2,876	149
Mulanje	800	213,300	3,466	4,266	231
Chikwawa	392	86,800	1,344	1,736	90
Nsanje	234	48,700	740	974	50
South	**5,507**	**1,230,300**	**19,107**	**24,614**	**1,277**
Malawi	**13,085**	**2,644,900**	**39,813**	**52,898**	**2,660**

Table 7.1.10
Projected Number of Secondary Schools and Required Area: 1985—2000

	1985	2000	Increase over the period 1985—2000
Secondary School-Age Population	591,200	1,033,200	442,000
Enrolment Ratio[1]	4.1	8.0	-
Secondary School Enrolment	24,030	82,656	58,626
Number of Schools	73	-	-

[1]The 1985 enrolment ratio of 4.1 is assumed to increase to 8 percent by 2000.

The assumption is based on the enrolment increase recorded between 1972 and 1980.

Population projections for the year 2000 indicates that there will be almost 1.03 million persons in the secondary school-age group of 14-17 years.

Estimates of the future demand for facilities is based on the Ministry's enrolment target of 8% by the year 2000. This means that enrolment will increase form 24,030 in 1984/85, to 82,656 in 2000, a net increase of 58,626 students (Table 7.1.10). The locational aspects of secondary schools will not be dealt with in the National Physical Development Plan.

7.1.5 SUMMARY CONCLUSIONS AND IMPLICATIONS

This study report has dealt with the spatial (physical) planning aspects of one of the basic educational objectives aimed at securing "a more equitable distribution of educational facilities and resources to realize the greatest cost effectiveness of expenditure". The crucial questions involved are:

(a) What is the aggregate size of the school-age population to be served?

(b) What is the geographical distribution of the school-age population within the various districts, and how is the distribution related to school locations?

(c) What are disparities in the distribution of existing educational facilities and pupil/teacher ratio? and

(d) How many in the future, and how should they be distributed within the districts?

The following is a summary of the findings and conclusions.

Primary Education

Out of 2468 primary schools in the country in 1985 40% were located in the Southern region, 38% in the Central Region and 22% in the Northern region. But in terms of the distribution of schools in relation to the existing school-age population the Northern Region had one school per 314 pupils while the Central and southern Regions had 656 and 773 pupils per school respectively.

In 1985 there were 1.54 million children in the primary school-age group (6-13) of which 899,459 (58.3%) were enroled. the Northern Region had the highest primary school participation rate. Thus in terms of the spatial distribution of schools and enrolments, the Northern region was better served with schools than in the other regions.

District participation rates varied substantially from 3.51% in Mangochi to 1.0% in Rumphi, Karonga and Chitipa. The lowest participation rates in the nation existed in Mangochi, Dedza, Dowa, Chikwawa and Nsanje.

On the national average, there were 69 students for each classroom in 1984/85 school year. This was below the national standard of 50. The District of Blantyre with 113 students per classroom had the highest ratio among the 24 districts. On the other hand, the District of Ntchisi had the lowest ratio in the country. The majority of the districts had pupil/classroom ratios ranging between 54 and 70.

On the national average there were 5.8 classrooms per primary school in 1985. Salima District with 3.9 classrooms/school had the lowest ratio while Blantyre and Chiradzulu Districts with 7.1 and 7.9 classrooms/school respectively had the highest.

Estimates of future school enrolments indicate that approximately 2.6 million persons, out of a total population of 11.6 million, can be expected to enrol in primary schools by the year 2000. The districts of Lilongwe, Blantyre and Dedza will have a greater proportion of future primary school enrolments while the districts of Rumphi, Chitipa and Nsanje will have the least enrolments.

Secondary Education

Estimates indicate that by the year 2000 there will be over 1.2 million persons within the secondary school-age group (compared with 591,200 persons in 1985) and the enrolment will have increased from 24,030 in 1985 to 82,656 in the year 2000-- an additional of 58,626 enrolments. (This is based on the assumption that the enrolment ratio will increase from 4.1% in 1985 to 8% in year 2000).

Concluding Observations and Recommendations

The provision of the total number of new classrooms and schools required to enrol the entire primary school-age group of 6-13 years is far beyond the present means of the government, in terms of financial and human resources.

Priority should be given to the Districts of Mangochi, Machinga and Mulanje in the Southern Region, and Salima in the Central Region, because these districts had and will continue to have the greatest needs for school facilities and (teacher) services, in relation to the enrolment and the school-age population.

The Government's ability to provide educational facilities in some of the rural areas is limited by several basic constraints including (a) the nature of the scattered settlements; (b) low population densities of zero to 50 persons per square kilometre; and (c) lack of proper road access and/or transport.

As a result of the combined effects of scattered settlements and the resultant low density distribution of the population, there is lack of an adequate population threshold required to support school facilities and services.

The third constraint, (c) above, is related to access to school and the established standard of 5 Km school service radius, but the fact remains that a large number of rural areas within a 5 Km radius do not have the adequate population threshold mentioned above.

TCPD can offer assistance in solving these spatial problems relating to equal opportunity or access to education. Each district or rural area has different constraint and conditions. Therefore any proposals and school planning standards must be considered within the context of the peculiar characteristics of a district or rural area.

There is therefore a need to co-ordinate educational facilities or schools planning and physical planning, involving the Ministry of Education, the District Development Committee and the TCPD.

7.2 HEALTH FACILITIES

7.2.1. INTRODUCTION

This Section is primarily concerned with the demographic and spatial (locational) aspects of the health delivery system. That is (a) the provision of health facilities in relation to the density/distribution of the population served; (b) the distance factor in the accessibility of the facilities; and (c) the implications of future population growth and settlement pattern for the provision of health facilities.

7.2.2 THE EXISTING HEALTH SERVICE AND FACILITIES

Health services in Malawi are provided by the Central Government (The Ministry of Health). Local Authorities (directed by the District Councils) and Church Mission in collaboration with the Private Hospital Association of Malawi.

At the time of independence, Malawi's health service delivery system was based on the curative-hospital model. The few hospitals that existed were found only in major population centres, because of high costs of construction, daily operations and training of personnel. Following Malawi's independence, the first "Five Year Health Plan (1965-1969) was introduced.

In 1971 a report entitled "National Health Plan for Malawi" was prepared covering a period of 15 years from 1973 to 1988. One of the priorities emphasized in the Plan was the establishment of a network and hierarchy of health infrastructure, particularly in the rural areas. In the hierarchical system of health service, the higher level units supervise the lower level units; and the lower level units were to refer patients to the higher level units when required. The health plan is currently under review and the report will be ready in 1985.

Health Infrastructure

The existing health services are delivered at the following levels:

- Health Posts
- Health Sub-Centres
- Primary Health Centres/Rural Hospitals
- District Hospitals
- Central Hospitals
- Special Hospitals

Health Posts offer community-level services. These are outreach services delivered through mobile clinics at manned or unmanned health posts. The service covers immunization, pre-natal and post-natal care and simple curative diagnosis and treatment.

In addition, a health education programme deals with environmental sanitation issues and treatment of diseases. A health post serves a population of about 2000 persons.

Health Sub-Centres provide curative and maternity service and also provide bases for outreach services. One HSC serves about 10,000 persons.

Primary Health Centre/Rural Hospitals

The services provided at primary health centres vary, but they are being upgraded and standardized. The established standard services include basic curative services, taking care of referrals from outreach posts, pre-natal, natal and post-natal care, well-baby care, nutrition clinics and all outreached services. A PHC serves a population of 50,000 persons. All rural hospitals are also considered as PHC's and they provide limited in-patient services.

District Hospitals offer curative services and serve as referral facilities for health centres and for other health activities in the district. The facilities provided include special wards for in-patients and a dispensary. All preventive services offered at health centres are also available at district hospitals.

Central Hospitals provide a full range of curative and preventive services, including under-five clinical services.

Special Hospitals provide special services relating to mental illness, leprosy and tuberculosis.

The MOH is currently reviewing the system of health facilities as part of the preparation of a new National Health Plan.

7.2.3 THE SPATIAL DISTRIBUTION OF HEALTH FACILITIES IN RELATION TO THE POPULATION SERVED

The total number of health facilities existing (in 1983) in the country is shown by district in Table 7.2.1. There were 24 district hospitals, 61 primary health centres, 174 full health sub-centres, and 63 health posts (40 of which were unmanned). The district hospitals were evenly distributed (one in every district), but there were disparities in the distribution of the other facilities, as can be seen in Table 7.2.1.

The adequacy of the distribution of health facilities has been assessed here in terms of the number of people served by each facility. The comparison of the actual catchment population with the Ministry's health delivery standards goves an indication of the need to improve the access to the various facilities. Table 7.2.2 shows the distribution of various facilities in relation to the population served.

Table 7.2.1
Distribution of Health Facilities by District : December 1983

District	District * Hospital	Primary Health Centre	Health Sub - Centre			Health Post		Remarks
			Full	Disp.	Mat.	Manned	Unmanned	
Chitipa	1	1	2	5	3	-	6	
Karonga	1	2	6	4	1	4	-	
Nkhata Bay	1	2	8	11	1	-	-	
Rumphi	1	4	4	5	4	-	-	
Mzimba	1	6	15	27	12	-	-	
North	**5**	**15**	**35**	**52**	**21**	**4**	**6**	
Kasungu	1	2	11	10	-	2	-	
Nkhotakota	1	2	6	11	1	-	-	
Ntchisi	1	-	2	3	4	-	-	
Dowa	1	3	6	5	-	-	-	
Salima	1	-	10	2	-	3	-	
Lilongwe	1	9	10	18*	7	-	23	* Most in Lilongwe City
Mchinji	1	2	1	3	4	-	-	1 Lepra Hospital
Dedza	1	5	7	10	9	-	-	1 Lepra Hospital
Ntcheu	1	-	11	8	7	-	-	
Central	**9**	**23**	**64**	**70**	**32**	**5**	**23**	
Mangochi	1	3	18	11	1	-	1	
Machinga	1	4	10	9	2	-	3	2 Lepra Hospital
Zomba	1	2	5	11	5	-	1	1 Mental Hospital
Chiradzulu	1	2	2	3	3	-	-	
Blantyre	1	2	8	32**	7	-	-	** Most in Blantyre City
Mwanza	1	1	4	1	3	-	-	
Thyolo	1	3	10	35	10	-	-	1 Lepra Hospital
Mulanje	1	2	2	31	14	-	3	
Chikwawa	1	2	8	8	1	12	-	
Nsanje	1	2	8	2	-	2	1	
South	**10**	**23**	**75**	**143**	**46**	**14**	**9**	
Total	**24**	**61**	**174**	**265**	**99**	**23**	**40**	

*Note: This does not include hospitals operated by the Private Hospital Association of Malawi

Table 7.2.1
Distribution of Health Facilities by District : December 1983

District	District * Hospital	Primary Health Centre	Health Sub - Centre			Health Post		Remarks
			Full	Disp.	Mat.	Manned	Unmanned	
Chitipa	1	1	2	5	3	-	6	
Karonga	1	2	6	4	1	4	-	
Nkhata Bay	1	2	8	11	1	-	-	
Rumphi	1	4	4	5	4	-	-	
Mzimba	1	6	15	27	12	-	-	
North	**5**	**15**	**35**	**52**	**21**	**4**	**6**	
Kasungu	1	2	11	10	-	2	-	
Nkhotakota	1	2	6	11	1	-	-	
Ntchisi	1	-	2	3	4	-	-	
Dowa	1	3	6	5	-	-	-	
Salima	1	-	10	2	-	3	-	
Lilongwe	1	9	10	18*	7	-	23	* Most in Lilongwe City
Mchinji	1	2	1	3	4	-	-	1 Lepra Hospital
Dedza	1	5	7	10	9	-	-	1 Lepra Hospital
Ntcheu	1	-	11	8	7	-	-	
Central	**9**	**23**	**64**	**70**	**32**	**5**	**23**	
Mangochi	1	3	18	11	1	-	1	
Machinga	1	4	10	9	2	-	3	2 Lepra Hospital
Zomba	1	2	5	11	5	-	1	1 Mental Hospital
Chiradzulu	1	2	2	3	3	-	-	
Blantyre	1	2	8	32**	7	-	-	** Most in Blantyre City
Mwanza	1	1	4	1	3	-	-	
Thyolo	1	3	10	35	10	-	-	1 Lepra Hospital
Mulanje	1	2	2	31	14	-	3	
Chikwawa	1	2	8	8	1	12	-	
Nsanje	1	2	8	2	-	2	1	
South	**10**	**23**	**75**	**143**	**46**	**14**	**9**	
Total	**24**	**61**	**174**	**265**	**99**	**23**	**40**	

*Note: This does not include hospitals operated by the Private Hospital Association of Malawi

Table 7.2.2
Health Facility in Relation to Population Served, by District

District	Population 1983	Facility/Population Ratio				Ranking			
		P.H.C	Full H.S.C.	Disp.	Health Post	P.H.C.	H.S.C.	H.P.	All
Chitipa	83,400	41,700	20,850	9,266	5,560	5	13	7	7
Karonga	132,200	44,688	14,688	10,169	7,776	6	6	8	8
Nkhata Bay	124,200	41,400	11,290	5,645	5,645	4	4	2	2
Rumphi	76,100	15,230	8,455	5,435	5,073	1	2	1	1
Mzimba	371,500	53,071	16,886	7,581	7,581	8	10	5	6
North		**39,370**	**14,316**						
Kasungu	274,700	91,566	19,621	11,445	10,565	18	11	10	13
Nkhotakota	118,600	39,533	13,177	5,930	5,930	3	5	3	3
Ntchisi	103,000	103,000	34,333	17,166	17,166	19	18	18	19
Dowa	296,600	74,150	7,415	19,773	19,773	12	1	20	9
Salima	167,100	167,100	15,190	12,853	10,443	21	7	13	14
Lilongwe	869,000	86,900	43,450	22,868	14,245	15	20	22	21
Mchinji	215,900	71,966	53,975	30,842	30,842	11	23	24	22
Dedza	329,000	54,833	25,307	14,304	13,708	9	16	16	15
Ntcheu	271,200	271,200	22,600	13,560	13,560	24	14	15	18
Central		**82,659**	**27,553**						
Mangochi	365,900	89,225	16,222	10,815	10,497	17	9	9	11
Machinga	424,600	84,920	28,306	17,691	15,725	14	17	19	16
Zomba	387,800	129,266	48,475	20,410	19,390	20	21	21	23
Chiradzulu	193,900	64,633	38,780	24,237	24,237	10	19	23	17
Blantyre	552,300	184,100	50,209	12,844	12,844	23	22	12	20
Mwanza	94,700	47,350	15,783	13,528	13,528	7	8	14	8
Thyolo	354,200	88,550	25,300	7,228	7,228	16	15	4	10
Mulanje	519,200	173,066	103,840	14,422	13,312	22	24	17	24
Chikwawa	227,500	75,833	20,681	11,973	11,973	13	12	11	12
Nsanje	115,500	38,500	10,500	8,884	7,218	2	3	6	4
South		**97,775**	**29,875**						
Malawi		**78,342**	**25,710**						

Primary Health Centres(PHC)

Given the planning standard of one PHC per 50,000 persons the following districts were sufficiently served by PHC's: Rumphi District: One PHC per 15,230 persons; Nsanje district: One PHC per 38,500 persons; Nkhotakota District: One per 39,533 persons; Nkhata Bay district: One per 41,400 persons; Chitipa District: one per 41,700; Karonga District: One per 44,066; and Mwanza District: one per 47,258 persons. All other districts were below the standard. The districts with the lowest standard of provision were Ntcheu District: One per 271,200 persons; Blantyre District: One per 184,100 persons; Mulanje District: One per 273,066 persons; Salima District: one per 167,100 persons; and Zomba District One per 129,266 persons.

The average for the whole country was one PHC per 78,342 persons. In terms of the standard provision of the PHC per 50,000 persons, 35% of the national population had no easy access to a PHC.

Health sub-Centres(HSC)

Only three districts met the standard of one HSC per 10,000 persons. These were the districts of Dowa: one HSC per 7,415 persons; Rumphi: one per 8,455 persons; and Nsanje: One per 10,500 persons. The districts with the lowest standard of provision were Mulanje: one HSC per 103,840 persons; Mchinji: One per 53,975 persons; Blantyre: One per 50,209 persons; Zomba: One per 48,475 persons; and Lilongwe: One per 43,450 persons.

The average for the country was one HSC per 25,710 persons. Thus 61% of the national population was not adequately served or had no easy access to an HSC

Health Posts

On the basis of the standard of one HP per 2,000 persons, HP's, manned or unmanned, were insufficiently provided in all districts. The catchment population ranged from one health post per 5,073 persons in Rumphi to one per 20,842 persons in Mchinji District. The districts with the best access to health posts were Rumphi, Nkhata Bay, Nkhotakota, Nsanje, Karonga and Mzimba; and the districts with the most limited access were Mulanje, Zomba, Mchinji, Lilongwe, Blantyre, Ntchisi and Ntcheu.

General Beds

Another important measure of the provision of health facilities is the number of persons per general bed (which excludes maternity beds, special hospital beds). Table 7.2.3 provides the general bed per population ratio for each district. there is no standard for the provision of general beds . That is bed/population ratio, but the table indicates the disparities in the distribution of beds. It shows that Rumphi District was the best served with 36 bed per 10,000 persons followed by Nsanje (27) and Zomba (20). The least served districts were Salima with 3 beds per 10,000 persons, Ntchisi (5) and Mulanje (5).

On the whole the districts of the Northern Region were better supplied with health facilities than those in the Central and the Southern Regions.

Table 7.2.3
Distribution of General and Maternity Beds - 1983

District	Population 1983*	General Beds	Maternity Beds	General Bed per 10,000 Population
Chitipa	83,400	86	70	10
Karonga	132,200	183	102	14
Nkhata Bay	124,200	169	105	14
Rumphi	76,100	276	144	36
Mzimba	371,500	547	433	15
Northern Region	**787,400**	**1,261**	**854**	**16**
Kasungu	274,700	214	117	8
Nkhotakota	118,600	168	124	14
Ntchisi	103,000	51	49	5
Dowa	296,600	278	102	9
Salima	167,100	51	86	3
Lilongwe	869,000	1,148	458	13
Mchinji	215,900	176	83	8
Dedza	329,000	312	252	9
Ntcheu	271,200	149	186	5
Central Region	**2,645,100**	**2,547**	**1,457**	**10**
Mangochi	356,900	450	271	13
Machinga	424,600	274	198	6
Zomba	387,800	764	223	20
Chiradzulu	193,900	238	96	12
Blantyre	552,300	757	439	14
Mwanza	94,700	183	95	19
Thyolo	354,200	354	220	10
Mulanje	519,200	278	278	5
Chikwawa	227,500	176	99	8
Nsanje	115,500	319	132	27
South Region	**3,226,600**	**3,793**	**2,051**	**12**
Malawi	**6,659,100**	**7,601**	**4,362**	**11**

* Source: NPDP Estimate

7.2.4 ACCESSIBILITY OF HEALTH FACILITIES

This section deals with the distance factor in the accessibility of health facilities. As mentioned earlier in this study report, one of the important objectives of the Ministry's health plan is to improve access to modern health services. Accessibility, in this report , is seen mainly in terms of walking distance as walking is the most common means of transport for at least 90% of the total population.

In an NPDP sample survey of settlements, carried out in various parts of Malawi, 89% of people who reported visiting under-five clinic travelled by foot; in the case of visits to dispensaries and hospitals 82% and 36% respectively went by foot. For those visiting hospitals the most common mode of transport was travel by bus, which accounted for 39%. Those walking to health facilities tended to travel considerably longer distances beyond 5 Km although generally not beyond 50 Km. Of the respondents travelling by foot to under-five clinics, 34% walked beyond 5 Km to reach the clinics; thus they were not within easy access of the facility according to the standards. the corresponding figures for dispensaries and hospitals were 44% and 67% respectively.

In Section 6 an issue has been raised regarding the low density of residential development in urban areas and the scattered pattern of rural settlements. The densities in both rural and urban areas are directly related to the distance factor in accessibility of health facilities, where they exist.

As discussed in Section 6 37% of the nation's population live in scattered settlements and there is a lack of a threshold population considered adequate to support services. These conditions make it difficult, financially, to improve access to health facilities by building new facilities. In addition to the density distribution of population, the actual service delivery points or location

of the actual service delivery points or location of facilities in relation to the population served is also an important factor in accessibility of the facilities.

The MOH envisages that the new National Health Plan will provide locational planning standards for Health Centres, District and Central Hospitals, based on the sole criterion of accessibility, either in terms of distance or in terms of travelling time. The locational standards, to be provided in the Plan will be as follows:

- Health Centres, an accessibility standard of 5 mile (8 Km) radius.
- District Hospital, one to be provided in each District, and
- Central Hospital, one to be provided in each Region

7.2.5 CONCLUDING OBSERVATIONS

It should be pointed out that while the projections of future facilities required are based on present health service delivery standards and future population, three factors will change the requirements. These are:

(a) the service delivery points or the actual location of the facilities in relation to the catchment population and the distance factor in the accessibility of the facilities and

(b) the proportion of the district's population that has easy access to a hospital, as hospitals provided the same services available at PHC's, HSC's and HP's. For example, in Blantyre District fewer than 28 PHC's may be required, depending on the proportion of the catchment population that is within walking distance from the Queen Elizabeth Central Hospital.

There is a need for a health facilities mapping study to be carried out by district. In the absence of such a study, health facilities cannot be properly located in relation to the population they are to serve.

The planning objective, among other things should be divided towards improving accessibility in particular minimizing walking distance and upgrading existing facilities which are below standards.

7.3 TRANSPORTATION

7.3.1 INTRODUCTION

Transportation is fundamental to the development of the country. The economy depends heavily on exports and imports. Malawi is land-locked and that is a major constraint. Internally it is equally vital to have an efficient transportation system for distributing commodities to urban and rural areas where they are needed and, generally, strengthening functional linkages.

The importance of the transportation sector has been recognised since the early days of independence. Between 1974 and 1979 almost 50% of development expenditure went into transportation projects. The proportion dropped to below 40% between 1979 and 1982, but that was still a larger share than that received by any other sector.

Despite the high priority given to the development of the transportation system there is no overall plan for the transportation sector. The 1964 'National Transportation Plan for Nyasaland' (1) is the only comprehensive transportation plan that has ever been produced, and it was an advisory document. The main reason for the absence of planning is that no single Ministry is responsible for integrated planning in the transportation sector.

Institutional Framework

The Ministry of Works and Supplies is responsible for main and secondary roads and bridges outside the municipalities and townships. Municipal and Town Councils are the highway authorities for all roads in their areas and they receive a Government grant for the construction and maintenance of main and secondary roads. In the case of district roads

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(1) National Transportation Plan for Nyasaland, Surveys and Research Corporation, Washington D.C. June 1964.

the district councils are responsible and they are eligible for a Government grant towards the cost of construction and maintenance. Some branch and estate roads are maintained by the Ministry of Works and Supplies and others by estate owners or other major users.

The Ministry of Transport and Communications is responsible for road traffic regulations and general policy on public passenger transport and freight transport, including Air Malawi and Malawi Railways, although in practice Air Malawi and Malawi Railways have considerable autonomy. The Transport Planning Unit of the Economic Planning Division (Office of the President and Cabinet) is expected to co-ordinate all planning activities but they do not have the necessary staff capacity.

The Town and Country Planning Department, which is responsible for the preparation of physical development plans, has expertise in land use-transportation relationship and in particular the transportation system as it relates to the development of rural and urban areas. The Department, however, has not been involved effectively in the transportation sector.

Recently the Malawi International Transport Company (MITCO) and a National Transport Committee were established. The National Transport Committee, with a small permanent secretariat, is responsible for monitoring international freight traffic (road, rail and sea) and giving advice on choice of route, availability of backhauls, etc., in the interest of improved speed and efficiency.

MITCO, on the other hand has been established to promote Malawi transporters, "support their financial viability and endeavours to increase their capacity to carry reliably their fair share of available traffic." MITCO has other functions but this section only mentions briefly the Government ministries and agencies involved in the transportation sector.

7.3.2 ROAD TRANSPORT

Road Network and Traffic

Malawi's national road network has five classes of roads -- Main Roads, Secondary Roads, District Roads, Branch Roads and Estate Roads -- totalling 11,000 kilometres. In 1982 there were 2,659 kilometres of main roads (67% bituminised); and 2,857 kilometres of secondary roads (10% bituminised)(1) Most of the district, branch and estate roads were built to earth or gravel standard.

Map 7.3-1 shows the existing network of Main and Secondary Roads and Map 7.3-2 shows the average daily traffic flow on the Main and Secondary Road network. The roads in the Southern Region were busier than those elsewhere. the M1 road from Blantyre to Zomba was the busiest inter-urban road in the country. Other busy roads include the entire section of the M1 in the Southern and Central Regions, The M4 from Lilongwe to Mchinji and the M5 from Lilongwe to Salima. Uncertainties in future economic factors make it difficult to forecast traffic growth. Most of the road appraisal studies in recent years, however, have used growth rates of 6-9% per annum.

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(1) Source: Economic Report 1984. EPD, NSO, Treasury and the Reserve Bank of Malawi

Road Network And Human Settlements

One of the major factors in the development of settlements is good accessibility as it promotes the flow of commodities, the delivery of services and generally functional links among settlements. An indication of accessibility of towns and villages is given in Table 7.3.1, which lists per district the number and percentage of settlements which are located along Main Roads, Secondary Roads, District Roads and "Other" roads. For the analysis, it is assumed that the Main, Secondary and District Roads are all-weather roads, while the "other" roads are passable during the dry season either because of river and "dambo" crossings or because of muddy and flooded road surfaces.

Of 2,652 nucleated[1] settlements in Malawi 464 (17.5%) were situated along main roads; 234 (8.8%) along secondary roads and 1513 (57.1%) on seasonal roads and tracks with no access during the rainy season.

Settlements in the Northern Region generally had better access to roads than the villages in the other two regions. 59% of the villages in the North were located on main, seconday or district roads, compared with 45% and 37% in the Central and Southern regions respectively.

At the district level, Rumphi had the highest accessibility, as 91% of its towns and villages were located on all-weather roads; followed by Karonga 82%, Mangochi 78%, Nsanje 71%, Chitipa 70%, and Salima 62%. Mwanza was the most inaccessible District, as 93% of its villages were located on seasonal roads. Other districts with very low accessibility were Zomba with 81% of its settlements located on seasonal roads, Thyolo 79%, Blantyre 77%, Chiradzulu 72%, Kasungu 68%, Mchinji 67%, Ntchisi 65%, Mulanje 63% and Lilongwe 60%.

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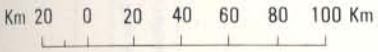
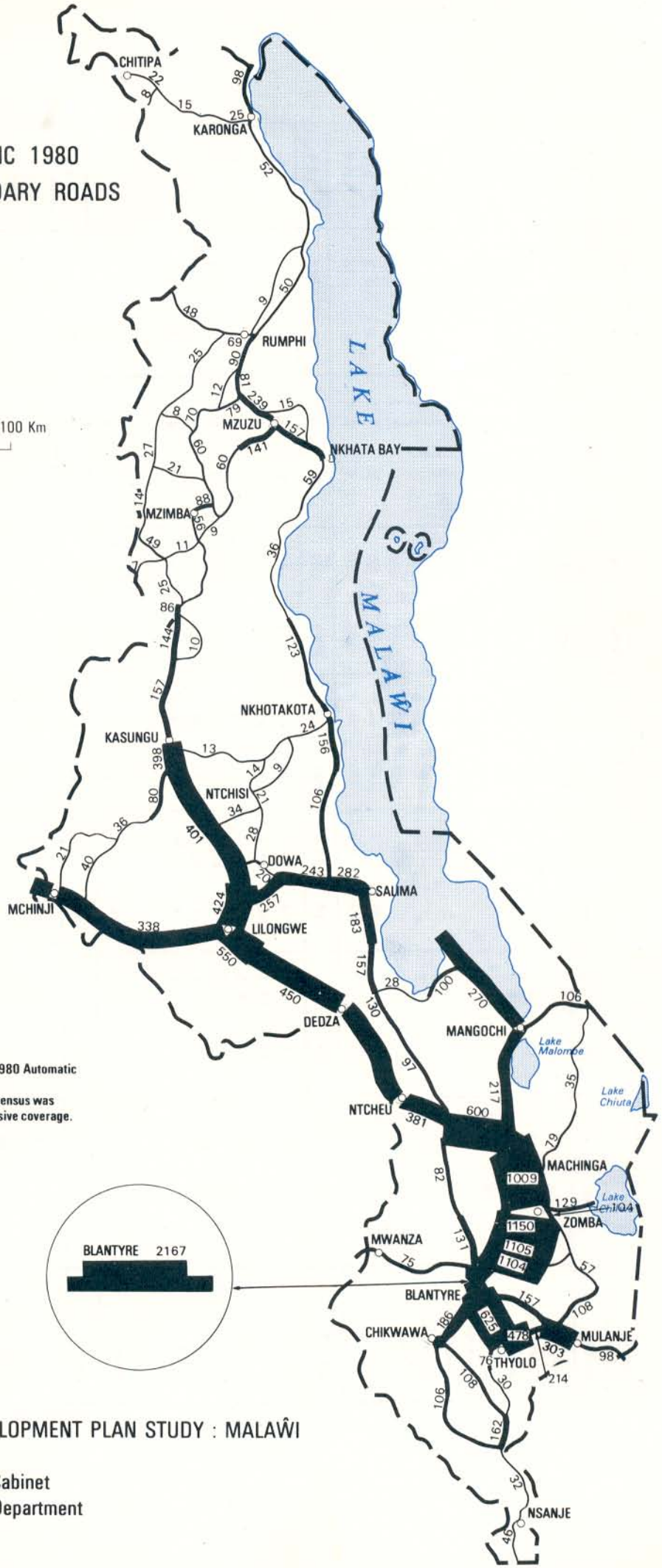
(1) Nucleated settlements include all cities, towns and villages as described in Section 5.

AVERAGE DAILY TRAFFIC 1980 ON MAIN AND SECONDARY ROADS

Map 7.3-2





Source: 1980 National Traffic Census and 1980 Automatic Traffic Count Census.
Data from some points in the 1979 Census was also used in order to give comprehensive coverage.

NATIONAL PHYSICAL DEVELOPMENT PLAN STUDY : MALAWI

Office of The President and Cabinet
Town And Country Planning Department
UNCHS/UNDP Project

Printed by the Department of Surveys, Blantyre 1987

Table 7.3.1
Number of Villages along Roads and at Road Junctions

Districts	Roads										Junctions				
	Main		Secondary		District		Other		Total		Main and Secondary		Main and Secondary		Total Junction
	No.	%	No.	%	No.	%	No.	%	No.	%	No	%	No	%	%
Chitipa	4	13 .3	5	16 .7	12	40 .0	9	30 .0	30	100	3	10 .0	3	10 .0	20 .0
Karonga	17	43 .6	5	12 .8	10	25 .6	7	18 .0	39	100	5	12 .8	3	7 .7	20 .5
Nkhata Bay	21	39 .6	2	3 .8	7	13 .2	23	43 .4	53	100	5	9 .4	-	-	9 .4
Rumphi	20	62 .5	-	-	9	28 .1	3	9 .4	32	100	7	21 .9	1	3 .1	25 .0
Mzimba	22	15 .5	24	16 .9	17	12 .0	79	55 .6	142	100	7	4 .9	9	6 .3	11 .2
North	**84**	**28.4**	**36**	**12.2**	**55**	**18.6**	**121**	**40.9**	**296**	**100**	**27**	**9.1**	**16**	**5.4**	**14.5**
Kasungu	12	11 .8	7	6 .9	14	13 .7	69	67 .6	102	100	5	4 .9	2	2 .0	6 .9
Nkhotakota	27	60 .0	-	-	-	-	18	40 .0	45	100	1	2 .2	-	-	2 .2
Ntchisi	5	19 .2	1	3 .8	3	11 .5	17	65 .4	26	100	-	-	-	-	0 .0
Dowa	20	21 .3	7	7 .4	28	29 .8	39	38 .3	94	100	8	8 .5	3	3 .2	11 .7
Salima	13	23 .6	6	10 .9	15	27 .3	21	38 .2	55	100	4	7 .3	3	5 .5	12 .8
Lilongwe	24	7 .5	21	6 .6	83	25 .9	192	60 .0	320	100	8	2 .5	6	1 .9	4 .4
Mchinji	13	14 .3	17	18 .7	-	-	61	67 .0	91	100	3	3 .3	1	1 .1	4 .4
Dedza	17	10 .6	18	10 .7	60	35 .5	74	43 .8	169	100	3	1 .8	7	4 .1	5 .9
Ntcheu	43	26 .7	3	1 .9	25	15 .5	90	55 .9	161	100	3	1 .9	-	-	1 .9
Central	**174**	**16.4**	**80**	**7.5**	**228**	**21.4**	**581**	**54.7**	**1063**	**100**	**35**	**3.3**	**22**	**2.1**	**5.4**
Mangochi	35	25 .5	15	10 .9	57	41 .6	30	21 .9	137	100	8	5 .8	1	0 .7	6 .5
Machinga	27	11 .8	17	7 .5	48	21 .0	136	59 .6	228	100	3	1 .3	5	2 .2	3 .5
Zomba	11	7 .6	17	11 .8	-	-	116	80 .6	144	100	3	2 .1	-	-	2 .1
Chiradzulu	11	13 .2	12	14 .5	-	-	60	72 .3	83	100	1	1 .2	-	-	1 .2
Blantyre	27	18 .6	6	4 .1	-	-	112	77 .2	145	100	2	1 .4	-	-	1 .4
Mwanza	3	6 .8	-	-	-	-	41	93 .2	44	100	-	-	-	-	0 .0
Thyolo	26	16 .3	7	4 .4	-	-	127	79 .4	160	100	1	0 .6	-	-	0 .6
Mulanje	20	9 .0	28	12 .6	34	15 .2	141	63 .2	223	100	7	3 .1	8	3 .6	6 .7
Chikwawa	13	16 .7	13	16 .7	19	24 .4	33	42 .3	78	100	7	16 .5	1	2 .4	18 .9
Nsanje	33	64 .7	3	5 .9	-	-	15	29 .4	51	100	3	5 .9	-	-	5 .9
South	**206**	**15.9**	**118**	**9.1**	**158**	**12.2**	**811**	**62.7**	**1293**	**100**	**35**	**2.7**	**15**	**1.2**	**3.9**
Malawi	**464**	**17.5**	**234**	**8.8**	**441**	**16.6**	**1513**	**57.1**	**2652**	**100**	**97**	**3.7**	**53**	**2.0**	**5.7**

Road Development

Since Independence the Government has put a high priority on developing the country's road network, particularly north-south links, and much has been achieved. Construction of the road link between Blantyre and Mwanza is under way. It is the main route to Mozambique and Zimbabwe. The short-term road development programme is shown in Table 7.3.2. Most of these schemes are likely to be underway or completed within the next 5-7 years.

Several thousand kilometres of crop extraction roads have been built under the National Rural Development Project, the District Roads Improvement and maintenance Project (DRIMP) and the Village Access Road and Bridge Project.

DRIMP, which started in 1979, aims at upgrading the district roads up to an all-weather earth standard that will require only simple maintenance thereafter. DRIMP Phase 2 is nearing completion and Phase 3, covering remaining districts, should be finished by late 1987. The Project has attracted considerable interest in other countries. The Village Access Road and Bridges Project which complements DRIMP is directed towards the improvement of the roads that link the smaller rural settlements and farms to the District Roads.

7.3.3 CROSS COUNTRY BUS SERVICES

Most of the bus services in Malawi are operated by United Transport (Malawi) Limited (UTM), a private company which has been operating since 1947. Currently a UK company owes 51% of the shares and the remainder are held by ADMARC (35%) and the Malawi Government (14%). UTM has a large fleet of buses and employs over 1,800 people. In addition to UTM there are about six other smaller companies operating services.

Table 7.3.2
Short-term Road Development Programme

Road Section	Length (Km)	Type of Surface	Stage Reached	Date of Completion
Jenda-Luwawa Turn-off	32	Bitumen	Under construction	1984
Luwawa Turn-off to Champhoyo	51	Bitumen	Designed	-
Champhoyo-Mbowe	47	Spot Improve-ments	Designed	-
Dwangwa-Nkhata-Bay	135	Not Determined	Pre-Feasibility Study	-
Karonga-Chitipa-Nakonde	98 (Malawi) 90 (Zambia)	Not Determined	Feasibility Study	-
Karonga-Kaporo-Itungi to Mbeya Road (Tanzania)	48	Not Determined	Awaiting Study	-
Kasungu-Chamama Nkhotakota	112	Bitumen	Feasibility Study	-
Mangochi-Namwera-Chiponde-Mozambique Border	45	Not Determined	Feasibility Study	-
Lirangwe-Balaka	116	Bitumen (Upgrading)	Preliminary Study	-
Lirangwe-Mwanza Mozambique Border	95	Bitumen	Construction about to start	1986
Blantyre-Mulanje Mozambique Border	100	Bitumen (Upgrading)	Feasibility Study	-
Nsanama-Ntaja Namwera-Mangochi	-	-	-	-
Kasungu-Mchinji via Kamwendo	-	Bitumen	Awaiting Tender	-

Map 7.3-3 shows the route network (all operators) in the dry and wet seasons and the frequency of service. There were a few small populated areas that were not well served, such as:

(a) Eastern borders of Mchinji District - T.A. Zulu.

(b) Western end of T.A. Pemba along the Mozambique border in Dedza District.

(c) T.A. Katuli north of Namwera in Mangochi District.

(d) Eastern edge of Machinga District near the Mozambique boarder - T.A. Nyambi, S.C. Ngokwe, S.C. Chikweo.

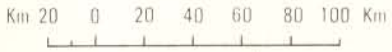
(e) Central Section of Phalombe Plain along the boundary between Zomba and Mulanje Districts.

Most of these areas were not well served because they were inaccessible by road. In some areas without a bus service people used lake and rail service.

The smaller private companies mentioned earlier operated mostly on the more profitable trunk routes such as Lilongwe -Blantyre. The Road Traffic Commissioner is currently applying a prime routes policy as follows: No bus operator can obtain additional permits to operate on prime route unless 45% of the total services mileage is on non-prime routes. This is to encourage services on the less viable rural routes. It is intended that the smaller operators should also be eligible for modest Government financial assistance, providing certain conditions are met.

BUS ROUTES WET AND DRY SEASON 1981

Map 7.3-3



Key

ALL WEATHER	DRY SEASON ONLY	
▬▬▬	▬ ▬ ▬	MORE THAN ONE SERVICE A DAY EACH WAY
▬▬▬	▬ ▬ ▬	ONE SERVICE A DAY EACH WAY
———	- - - - -	LESS THAN ONE SERVICE A DAY EACH WAY

NATIONAL PHYSICAL DEVELOPMENT PLAN STUDY : MALAWI

Office of The President and Cabinet
Town And Country Planning Department
UNCHS/UNDP Project

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7.3.4 ROAD HAULAGE

There are a number of large companies operating in the road haulage sub-sector. The dominant operator is Press Transport (1975) Limited. In addition to the major companies there are several hundred smaller operators. Most of them own one or two medium-sized (7 ton) trucks. One of the largest road haulage operations involves the movement of agricultural produce from the ADMARC's main depots and processing centres.

The volume of international road haulage traffic has grown enormously in the past few years because of the drastic reduction in rail movements to and from the Mozambique ports. One principal movement is to and from the South African port of Durban, which is currently handling a significant proportion of Malawi's overseas trade. The port of Dar-es-Salaam is also being used and there is a significant amount of traffic to and from Zimbabwe and Zambia. Most of this traffic goes via Mchinji and Lusaka (Map 7.3-4).

7.3.5 AIR TRANSPORT

Airports and airstrips are located in many parts of the country (Table 7.3.3). There is a regular service between the four main airports: Kamuzu International Airport (Lilongwe), Chileka (Blantyre), Mzuzu and Karonga. Kamuzu International Airport, considered to be among the most modern airports in Africa, is the main airport for all scheduled international flights. In the long-term it is planned to develop a second shorter runway, primarily for use by light aircraft.

Table 7.3.3
Airports in Malawi: Facilities and 1981 Traffic Level

Airport	Number of Runways	Runway (1) Length (Metres)	Total Aircraft Movements 1981
Kamuzu International, Lilongwe	1	3,600 (3)	-
Chileka, Blantyre	2	2,325 (3)	
		1,372 (3)	12,583
Mzuzu	1	1,303 (3)	1,273
Karonga	1	1,280 (3)	275
Bangula	1	790	2
Chelinda	1	-	22
Chilumba	1	906 (2)	20
Chintheche	1	800	18
Chitipa	1	1,815 (2)	36
Dedza	2	959	8
		971	-
Dwangwa	-	-	833
Kasungu	1	1,200 (3)	193
Katumbi	1	1,006	2
Kasungu Flue-Cured Tobacco Authority	-	-	197
Lifupa	-	-	44
Likoma	1	818	117
Lilongwe	2	1,363 (3)	7,572
		1,383	-
Luchenza (Not in operation)	-	-	128
Mangochi	1	800	87
Matope	1	640	-
Mchinji	1	1,000	6
Monkey Bay	1	990	209
Mzimba	1	871	30
Ngabu	-	-	153
Nkhotakota	1	796	22
Nsanje	1	1,000	15
Ntchisi	1	922	2
Salima	1	1,384	402
Sucoma	1	-	115
Usisya	1	594	-
Zomba	2	1,305 (3)	902

(1) All runways are grass-covered except where indicated

(2) Gravel surface

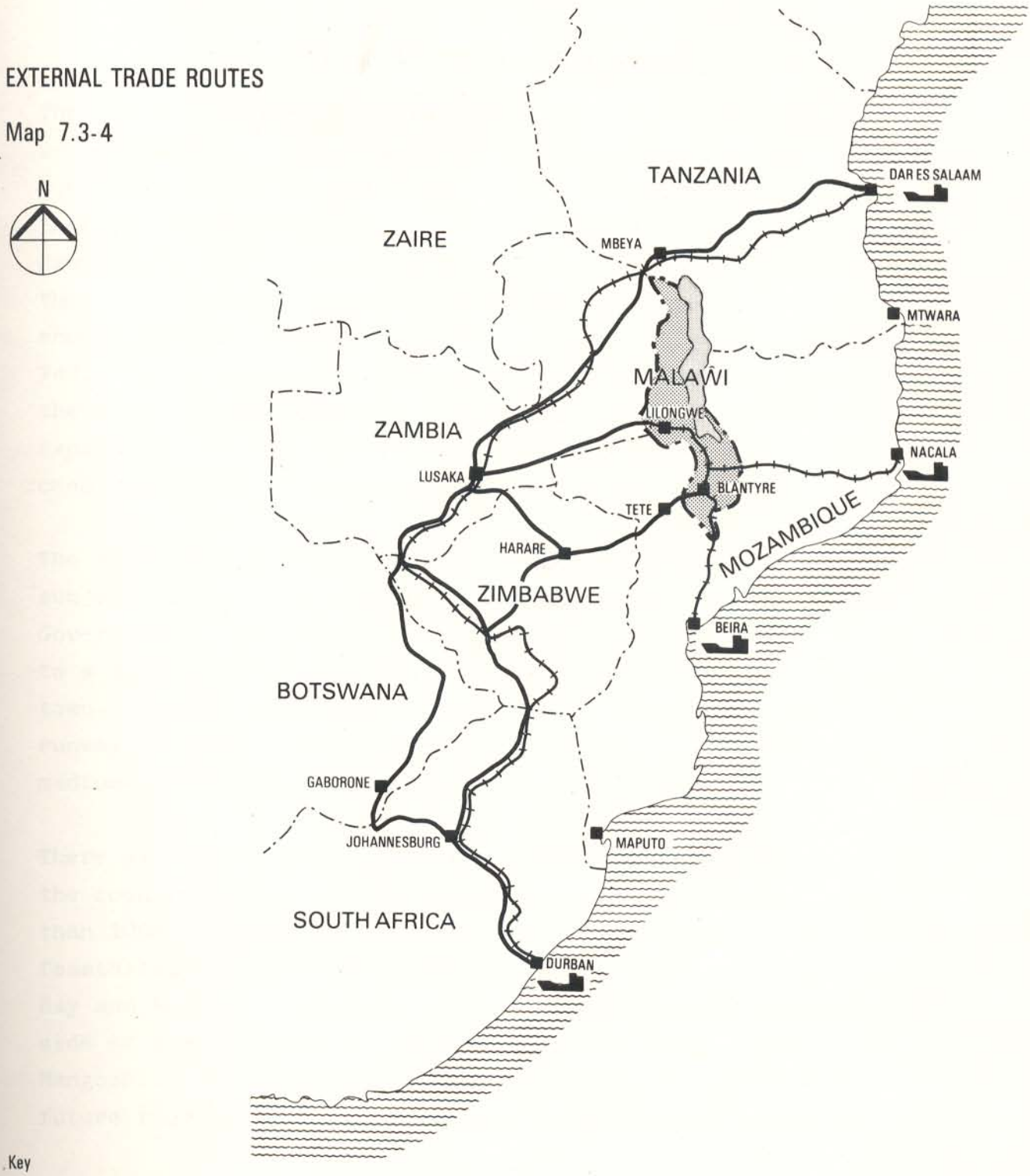
(3) Bitumen surface

Source: (1) Report of Statistics 1981, Department of Civil Aviation

(2) Malawi Statistical Yearbook 1981, National Statistical Office

EXTERNAL TRADE ROUTES

Map 7.3-4



NATIONAL PHYSICAL DEVELOPMENT PLAN STUDY : MALAWI

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The present runway at Chileka Airport, Blantyre, cannot accommodate the larger aircraft now in operation on long-haul international flights. It now handles only internal flights and there are no plans for expansion. Both Mzuzu and Karonga Airports have bitumen-sealed runways but they cannot handle night-time flights and are only long enough to take smaller aircraft such as the 44 seater HS 748. Mzuzu Airport is situated very close to the centre of the town and this makes it impossible to modernise and expand it. The airport's location is also a major constraint on the development of the town.

The re-location and upgrading of Mzuzu airport has been the subject of a recent feasibility study funded by the French Government. The study recommends that the Airport be moved to a site close to the Mzuzu -Mbowe road, 5 Km outside the town. In the long-term it is proposed that Mzuzu have a runway of 3,000 metres which would be capable of taking medium-size aircraft on international flights.

There are twenty-six additional airstrips in use throughout the country. Most of then have short grass runways, less than 100m, and can be used only in the dry season. A new feasibility study recommends replacing the present Monkey Bay and Mangochi airstrips with a new airport on the west side of the M15 Mangochi-Monkey Bay road 15 Km north of Mangochi. The new airport should be able to cater for future tourist traffic (including international flights).

The volume of air traffic has fluctuated during the past ten years. There were large increases in passenger traffic in the mid-1970's but traffic now has fallen back nearer to the 1970 volume. The present (November 1983) scheduled international services are listed in Table 7.3.4.

Table 7.3.4
Scheduled International Air Services-November 1983

Route	Total Number of Flights per Week
Europe-Lilongwe-Europe	2
Harare-Lilongwe-Harare	7
Johannesburg-Lilongwe-Johannesburg	6
Nairobi-Lilongwe-Nairobi	3
Lusaka-Lilongwe-Lusaka	3
Mauritius-Lilongwe-Mauritius	1
Maputo-Beira-Lilongwe-Comoros Islands	1
Swaziland-Lilongwe-Swaziland	1

The busiest routes are to and from Nairobi, Harare and Johannesburg as these cities provide good connections to transcontinental flights. The current domestic scheduled service are listed in table 7.3.5.

Table 7.3.5
Scheduled Domestic Air Services-November 1983

Route	Total Number of Flights per Week
Lilongwe-Blantyre-Lilongwe	21
Lilongwe-Mzuzu-Lilongwe	4
Lilongwe-Mzuzu-Karonga-Mzuzu-Lilongwe	2
Lilongwe-Mangochi-Blantyre-Mangochi-Lilongwe	2

Air traffic between Blantyre and Lilongwe has grown steadily. Since the opening of Kamuzu International Airport Air Malawi has been using its 74-seater BAC 1-11 aircraft on the more popular flights. The second busiest route is between Lilongwe and Mzuzu. Traffic on this route has increased significantly over the last ten years. A scheduled service to Chitipa was introduced in January 1981 but was withdrawn soon afterwards due to lack of patronage.

The amount of airfreight handled by Malawi's airports increased rapidly during the late 1970's but has declined in recent years due to the recession and import controls. There are currently several scheduled airfreight flights a week between Europe, Lilongwe and South Africa. The volume of international airfreighted imports has generally been between four and five times greater than the tonnage of airfreighted exports.

7.3.6 WATER TRANSPORT

Great use was made of water transport during the exploration and early development of Malawi. Travel by canoe or boat is still very common amongst the people living along the shore of the lakes and rivers. However, with the advent of other modes of transportation the existing lake transport does not play a major role in the nation's transport system. The Lake Service is operated by Malawi Railways, using a fleet of seven vessels and a number of tugs and barges. Details of this fleet are given in Table 7.3.6.

Table 7.3.6
Malawi Railways Lake Service 1983

Name of Vessel	Type	Gross Tonnage
M .V . Illala	Passenger/Freight	560
M .V . Mtendere	Passenger/Freight	562
M .V . Karonga	Freight	345
M .V . Ufulu	Fuel Tanker	300
M .V . Mpasa	Fuel Tanker (to be converted to freight)	295
M .V . Chauncy Maples	Passenger/Freight	241
M .V . Nkhwazi	Freight	268

Source: Malawi Railways Compendium, 1981 .

These vessels are all based at Monkey bay, the headquarters of the lake Service. The other main ports are Chipoka, Nkhata Bay and Chilumba. Chipoka was recently modernised with the help of funds from the World Bank. A rail spur from the Balaka-Salima line and a pipeline from the nearby oil storage tanks are connected to the quay. Port facilities at Nkhata Bay consist of a floating pontoon linked to the shore by a Bailey bridge and a pipeline connected to the pontoon. Chilumba has a short quay with a pipeline connection and outside the port ADMARC has large warehouses. There are sizeable storage sheds at both Chipoka and Monkey Bay. There are limited cranage facilities at Chipoka and Chilumba, and none at Nkhata Bay. Twice a week some freight is carried on the passenger service and a cargo vessel calls at these ports about once every week.

The two main passenger ships, the M.V. Ilala and M.V. Mtendere, operate round trips from Monkey Bay to the North. In addition to the main ports the passenger vessels call at Nkhotakota, Likoma Island, Kambwe (in Karonga) and other small places. Passengers and freight have to be ferried to and from these shores by launch and lighter boats.

Nkhata Bay is the busiest port for passenger traffic on the Lake, while Chipoka handles much more freight than any other port. Nearly all freight in Chipoka is transferred to or from the rail system. Map 7.3-5 shows the total freight handled in 1984 at each of the ports on the Lake.

Data for passengers were collected in April and May 1985 for the Ilala, Chauncy Maples and the Mtendere. Table 7.3.7 shows the aggregate figures for the three vessels.

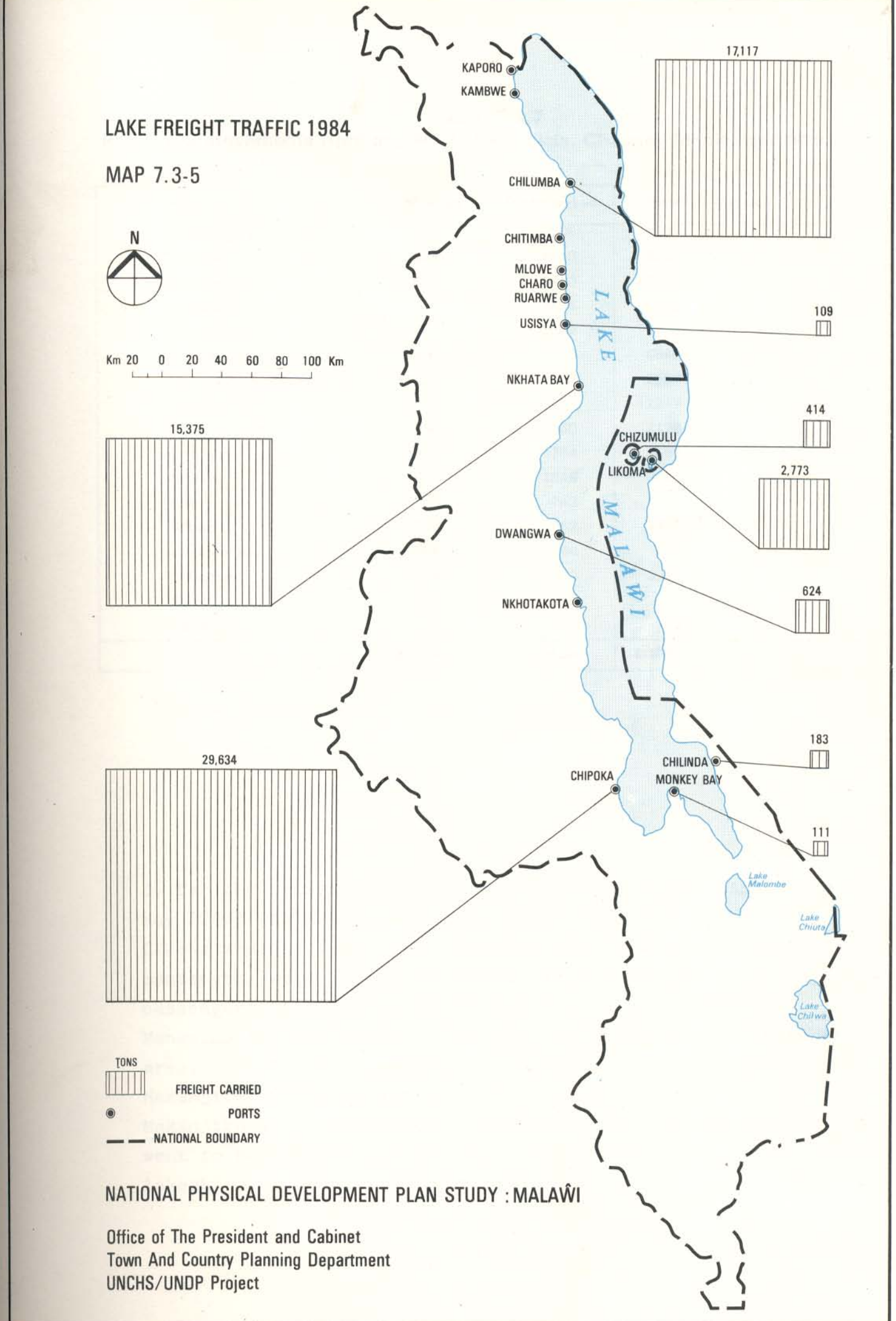

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Table 7.3.7
Passenger movements April and May 1985: Illala, Chauncy Maples and Mtendere

Port	Embarked	Disembarked	Total	Ranking
Monkey Bay	2894	2705	5599	3
Chilinda	2005	1940	3945	5
Makanjila	1685	1410	3095	
Chipoka	3799	4421	8220	2
Nkhotakota	1034	1642	2676	
Likoma Island	2454	2386	4840	4
Chizumulu Island	1424	1163	2587	
Nkhata Bay	6428	5789	12217	1
Mangwina Bay	969	1160	2129	
Usisya	1869	1794	3663	
Ruarwe	1514	1546	3060	
Charo	790	742	1532	
Mlowe	919	862	1718	
Chitimba Bay	206	244	450	
Chilumba	1814	1912	3726	6
Kambwe	206	249	455	
Kaporo	144	219	363	
	30184	**30184**	**60368**	

Source: Malawi Railways .

By far the busiest port during the survey period (April and May 1985) was Nkhata Bay, followed by Chipoka, Monkey Bay, Likoma and Chilinda. The ports of least importance for the passengers were Kaporo, Chitimba Bay and Kambwe. Most passengers boarding at Nkhata Bay went to Likoma Island, Mangwina Bay and Usisya. 23% went to the Southern lakeshore area. About 70% of passengers boarding at Monkey Bay went to Makanjira, Chilinda and Chipoka; while those boarding at Makanjira went to Chipoka. Nearly all Chilinda passengers went to Monkey Bay and Chipoka. Most trips along the lakeshore originated from Chipoka.

"General Land Use and Natural Physical Constraints".

-Plans to harness or regulate a river for electric power generation should take into consideration the use of the river for other purposes such as irrigation, water supply, fishing and navigation, and related land use activities. It would be useful, for example, to investigate the potential of the proposed Kapichira reservoir for irrigation of the Lower Shire Valley and/or rural water supply schemes.

ESCOM is already concerned about the possible environmental impact of power development schemes. Consultation should be maintained between ESCOM and the Town and Country Planning Department with respect to

(a) further studies to determine the impact of the proposed power projects on existing land use activities and human settlements, and on proposed developments;

(b) feasibility studies of power stations and other facilities which involve the use of land; and

(c) the alignment of proposed overhead transmission lines (Way-leaves).

Such consultation will enable the Town and Country Planning Department to (i) employ appropriate planning measures in support of the development of power; and (ii) resolve any land use conflicts.

Ten years ago the future of the Lake Service looked much brighter as the Viphya (wood pulp) and Dwangwa (sugar) projects were expected to make great demands for lake transport. Consultants appointed to assess how best to develop water transport on the Lake and on the Upper Shire River proposed that the upper Shire be dredged to create a navigation channel as far as Liwonde, where a new port and ship repair yard was built.(1) This was to be the main transfer point between water and rail transport and it was to serve the proposed Liwonde New Town. It was further proposed that port facilities be constructed at Karonga, Chintheche, Nkhotakota and Senga Bay.

The pulpmill project at Chintheche has been deferred and the tug and barge that were built to transport the produce to Liwonde have remained unused. The Dwangwa sugar Project did go ahead. The harbour at Dwangwa has been developed for sugar to go North to Chilumba via Karonga and the Viphya tug and barge are carrying containers between Chilumba and Chipoka. The lake is generally being developed as part of the Northern corridor to Dar-es-Salaam for all types of cargo.

The team working under the UNDP/UNCTAD Transit Project for the Southern Africa Subregion are investigating the potential for Lake transport along the Mozambique and Tanzanian shore and the possibility of developing the port of Mbamba Bay in Tanzania and linking it by road to the Indian Ocean port of Mtwara. This would help open up the eastern shore of the Lake, which is inaccessible at present, and it would provide Malawi with another route to the coast for overseas trade. Itungi and Mbamba Bay do not feature in the Northern corridor plans. There is, however, a SADCC project to study integrated services on Lake Malawi which in due course could lead to the development of local cross-lake traffic.

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(1)"Lake Malawi and Upper Shire Transportation Project", KAMPSAX, Copenhagen, February 1968.

Other possible long-term projects which would have an impact on the Lake Service are:- (a) the exploitation of the Ngana coal reserves in the north of Karonga district; (b) a major exploration of the Lake for oil; (c) the development of road container services between Malawi and Dar-es-Salaam - in which case a roll-on-roll-off ferry service between Chipoka and Itungi Port in Tanzania could be an attractive proposition.

7.3.7 RAILWAYS

Until recently, more than 90% of Malawi's import/export goods and virtually all the overseas components were shipped by rail via the ports of Beira and Nacara in Mocambique. These rail routes are considered convenient because the distance from Blantyre to Beira and Nacala is only 586 Km and 805 Km respectively. There have been, however, delays, derailments and other problems between the two ports and Malawi. Since 1981 the situation has worsened to such an extent that the Beira line has effectively been closed since December 1983 while the flow on Nacala has been reduced to a 'trickle' since April 1984. the virtual closure of the Mocambican routes has prompted Malawi to look for alternative routes to the sea which are much more costly than the traditional routes. For example, the bulk of Malawi's Overseas trade has been diverted to Durban, which can be reached by three main routes. The shortest is 2,666 Km long through Tete and the longest is 3,762 Km via Lusaka and Bulawayo. Use of the Durban port adds between K100 and K300 per ton to the land transport costs.

Given the conditions of the country's traditional routes to the sea the government is exploring an alternative route, that is the Blantyre/Dar-es-Salaam corridol[1]. This route which would combine rail, road and water transportation is so far considered the most attractive option. In October 1984 an emergency road was opened between Karonga and Ibanda, thus a rudimentary Northern Corridor already exists. GITEC Consultants have examined the technical feasibility and economic viability of improving this corridor. The following are some of the recommendations of the study.

(i) Malawi Railways maintenance efforts should be concentrated on the Balaka - Salima line
(ii) The port at Monkey bay should be rehabilitated
(iii) The Karonga - Ibanda Road paving projects should be implemented as a matter of urgency
(iv) Studies should be undertaken in connection with the improvement of the Dwangwa, Nkhata Bay and Balaka - Salima Sections of the Lakeshore Road
(v) Studies should be undertaken on the engineering of dry goods handling and storage facilities at Chilumba and chipoka
(vi) A new port should be built near Karonga

---

(1) Transport system study of the Blantyre/Dar-es-Salaam Corridor. GITEC Consultants Draft Final Report February 1985

The Northern Corridor will consist of a rail from Dar-es-Salaam to Mbeya with rail-road transshipment facilities at Mbeya; a road from Mbeya to either the port of Kaporo, Karonga or Chilumba; Water from either of the three ports to Chipoka ; and by rail from Chipoka to Blantyre or Lilongwe. In the initial stages (before the lake service attains its capacity) most of the goods to and from the inland of the Northern Region will be by road. It is considered that road may even prove later, to be more competitive than the lake service due to transport costs amd delays associated with the service.

In contrast to goods traffic, the volume of rail passenger traffic within Malawi has been increasing in recent years, following the opening of new lines. 1982 was the first year of operation of the Mchinji extension. Passenger traffic on this exceeded that on the Lilongwe-Salima section. High priority is being given to the development of road/rail transshipment facilities at Mchinji.

Future plans are directed towards improving the northern corridor to make it fully operational by rehabilitating the line from Salima to Balaka. Malawi's rail system is also being extended into Zambia. Work is underway to build a rail link from Malawi border to Chipata, and Zambia has a long-term plan to extend the line to Lusaka. This would provide Zambia with another rail route to the Indian Ocean.

There is a tentative proposal to build a new rail line between Lilongwe and a proposed cement works at Chamama in Kasungu District. The line would also serve Kamuzu International Airport (Aviation fuel/Freight) and the town of Kasungu. No feasibility study has been done.

7.3.8 TRAVEL IN URBAN AND RURAL AREAS

Travel In Towns

Walking is the most common means of travel. Journeys to work, school, and places for services, shopping etc., generally involve long walk trips. In urban areas, probably between 50-70% of workers in the low income group walk to work (Table 7.3.8) and a significant number walk long distances of about 3-5 Km. In general, facilities for the pedestrian are minimal. Pedal cycling is an important means of travel among low-income people in both urban and rural areas. In addition to making work trips the bicycle is used extensively to convey relatives produce and household goods.

Table 7.3.8
Mode of Travel for Journey to Work: Heads of Household Living in Traditional Housing Areas in Lilongwe 1982

Mode of Travel	Percentage
Does not travel (works at home)	5
Walk	55
Bus	9
Company/Government vehicle	18
Bicycle	4
Private Car	4
Other/non-response	5
	100

Source: Lilongwe Traditional Housing Survey, 1980 Centre for Social Research, University of Malawi .

Buses mostly operated by U.T.M., are the main form of public transport in the cities. They are very over-crowed at the peak (journey-to work) periods and a large number of people cannot afford the fares on regular basis. The bus routes focus on the main commercial areas and some of the industrial areas. Most of the newer residential areas are not well-served and cross-town journeys are inconvenient and very time-consuming.

A privately-operated minibus service was introduced early in 1981 in an attempt to expand the transport service and reduce the amount of matola (illegal taxi) business. The buses are proving very popular even though the operators are required to charge higher fares than those of the stage-carriage bus. It is evident, too, that some operators have switched to more profitable routes. No more minibus licences are being issued at present because of the lack of proper terminal facilities.

An increasing common mode of transport is 'staff bus' operated by employers. A recent survey of low-income housing areas in Lilongwe showed that 18% of the heads of households travelled by such vehicles to work. (Table 7.3.8). Employers probably operate this type of service to ensure that their staff members get to work on time, particularly those living in areas not served by buses.

There are no studies on existing transportation-land use relationships and the demand for movement of goods and passengers in terms of purpose of travel, type of movement and volume. Consequently, there are no comprehensive transport policies or plans for the major urban areas. The Town and Country Planning Department has recommended that transportation studies be carried out for Blantyre and Lilongwe, and the government is looking for a donor to fund the studies.

Efforts are being made to ensure that new areas of development are relatively self-sufficient in terms of employment opportunities in order to minimise travel distances to work. This need is particularly felt in Lilongwe. The problem here is compounded by the low residential densities, rigid land use zoning which does not permit mixed development, and the location of traditional (low-income) housing in fringe areas which forces the low-income residents to travel long distances to work.

Travel In Rural Areas

It is recognized that poor access to services or the lack of transport facilities adversely affects the quality of life of people and, generally, the national economy. Various transportation modes are employed in the rural areas including walking, (the predominant means of travel), cycling, private vehicle, use of the boat/canoe, ox-cart, bus or 'matola'(1). Recently rural bus services have been improving markedly. And a consultant is at present designing a pilot scheme for improving rural transportation.

The main transportation activity in the rural areas is connected with the distribution of agricultural produce for processing and/or sale, and various inputs (seed, fertilizer, etc.). Most of the agricultural produce in Malawi, other than tobacco, is bought and marketed by ADMARC, which maintains about 50 main markets and over 700 seasonal bush markets.

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(1) Private vehicle illegally used for carrying passengers in return for payment.

This market network means that most farmers have to transport their produce about 5-10 Km to sell it. The farmers usually hire a truck or use an ox-cart or pick-up van to take crops to ADMARC.

Most of the country's agricultural output is harvested over a short period in the year and its collection, movement and storage are complex. ADMARC hires a large number of road hauliers to carry the produce from the markets to the storage depots. The road haulage rates paid by ADMARC vary according to whether roads are bitumen -surfaced of good gravel or poor gravel/earth. for instance, it is estimated that if the road from Chitipa to Karonga were to be improved to bitumen standard and the ADMARC transport cost savings passed on the farmers, the total amount of maize produced and sold to ADMARC each year in Malawi would increase by 240 tons. (1)

In the rainy season the road conditions deteriorate, many stream crossings become impassable and some roads and bridges get washed away, so that some areas of the country are completely cut off.

These problems should be reduced once the District Roads Improvement and maintenance Project is completed.

Very little is known about origin-destination of traffic and travel needs in the rural areas. The development of rural roads passenger service, however, is to be the subject of a forthcoming study which, among other things, will identify the potential for privately operated minibus services acting as a feeder service to the main bus service network.

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(1) See Karonga-Nakonde-Mpulungu Road Study. Final report Appendix 4, February, 1983.

In addition to the general accepted priorities for road development[1], the following road links should be considered and prioritized, as funds are limited.

. Rumphi-Katumbi-Zambia Border
. Mzimba-Euthini-Rumphi
. Upgrading of MI from Luwawa Turn-Off through Mzimba to M14 Engucwini
. Katumbi-Nthalire-Chitipa
. Jenda-Dwangwa
. Mchinji-Kasungu
. Upgrading of M10 Lumbadzi-Dowa-Ntchisi-Nkhotakota
. Lilongwe-Bunda-Mozambique Border
. Upgrading of M5 Lilongwe to Salima
. Dedza-Golomoti
. Ntcheu-Neno-Mwanza
. Mangochi-Makanjira
. Zomba-Phalombe
. Upgrading of S38 from M8 near Chikwawa to M9 near Muona
. Nsanama-Namwera-Mangochi

There is a need to increase the mobility of the villager by promoting the use of bicycles. The advantages of bicycle ownership warrants the consideration of ways to reduce the cost of bicycles; for example, by exempting them from import duties, or setting up an assembly plant in Malawi

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(1) These road links include (a) the Jenda-Mzuzu link, completing the route to the Northern Region; (b) the Blantyre-Mwanza international route; and (c) the Karonga-Kaporo-Tanzania international route.

The following land use and physical planning considerations should be included in the criteria for determining priorities in the development of the road network and generally, in transportation planning.

(a) the Land Use structure as it generates commodity flows, movement of people and the delivery of services.
(b) the location of major productive activities;
(c) the geographical distribution of human settlements;
(d) population densities;
(e) the location of major service centres; and
(f) generally, the need to strengthen functional linkages between rural and urban settlements and the need to support the Government's policy of decentralizing development.

In urban areas pedestrians and cyclists should be given greater consideration in road and traffic planning.

The location of low-income residential areas should be closely related to work place in order to (a) minimize the cost of travel to work; and (b) make it possible for those who cannot afford bus fares to walk to work.

The Economic Planning Division (EPD) should be given the responsibility for comprehensive transportation planning in close collaboration with the Ministry of Transport and Communications, Ministry of Works and Supplies, and the Town and country Planning Department. In view of this the Government should strengthern the capacity of the Transport Unit, (EPD) by adding to its staff transportation planners with qualifications in traffic engineering and land use planning or urban/regional planning.

Future transportation planning or transportation studies should recognize the strong causal relationship between traffic and land use, (or generally, socio-economic activities and land use; and the importance of origin-destination surveys.

7.4 ELECTRICITY

7.4.1 INTRODUCTION

Electricity accounted for only 2.8% of the total energy in 1980, but as a main energy source[1] for industry, the contribution of electricity to Malawi's economic performance is significant.

This brief study report gives an overview of the existing distribution system, supply and demand, planned extensions and the physical planning implications. Data used in the report has been obtained from the Economic Planning Division.

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(1) See Section 8, On "Energy", NPDP.

7.4.2 THE SYSTEM

The Electricity Supply Commission of Malawi (ESCOM) established after Malawi's independence is responsible for the generation and supply of electricity throughout the country. Prior to the Country's independence, electricity was supplied only to the urban centres of Blantyre, Lilongwe, Mzuzu and Mangochi by steam and diesel generation and to Zomba by a hydro plant. With the construction of the Kamuzu Barrage at Liwonde on the Shire River, hydro-power generation plants have been developed in the middle Shire River and to date account for 83.3% of the generating capacity installed at various plants as shown in Table 7.4.1.

Table 7.4.1
Electricity Generating Capacity, 1984

Location	Type	Installed Capacity Kw	%
Tedzani Falls	Hydro	40,000	26 .8
Nkula Falls "A"	Hydro	24,000	16 .1
Nkula Falls "B"	Hydro	60,000	40 .3
Blantyre	Gas Turbine (stand-by)	15,000	10 .1
Zomba	Hydro	600	0 .4
Lilongwe	Diesel	5,400	3 .6
Kasungu	Diesel	360	0 .2
Mtunthama	Diesel	900	0 .6
Mzuzu	Diesel	2,200	1 .5
Karonga	Diesel	560	0 .4
Total		**149,020**	**100.0%**

Since the development of the Nkula Falls "A" Power Station in 1966, the main grid system has been extended as shown in Map 7.4.1. The system consists of 228 Km of 132 Kv and 972 Km of 66 Kv transmission lines and 2,340 Km distribution lines of 33 Kv and 11 Kv.

Rural Electrification

A Rural Electrification Programme was initiated in 1981 under a K6.1 million loan from the African Development Bank. A total of twelve centres have been selected to benefit from the rural electrification programme. The status of the work under the programme is shown below:

Completed	Under Construction	Not Started
Chiradzulu	Bangula/Makhanga/Nsanje	Mzimba
Malindi/Namwera	Mchinji	Chitipa
Nkhotakota	Dowa	
Ekwendeni	Nkhata Bay	
Rumphi		
Mtendere Campus		

7.4.3 SUPPLY AND DEMAND

Of the total power units of 393.9 GHW produced in 1983, the Southern Region consumed 79% and the Central and Northern Regions combined consumed 21%. Table 7.4.2 shows the total units sold in the country, by sector, in 1984.

Table 7.4.2
Electricity Consumed by Sector, 1984

Sector	Units Consumed (MWH)	Percentages
Power (Small and large Industries and agriculture)	287,089	70 .70
General	51,237	12 .62
Domestic	54,732	13 .50
High Density	11,132	2 .74
Export	1,591	0 .40
Special	148	0 .04
Total	**405,930**	**100.00**

Source: ESCOM

According to ESCOM estimates the demand for electricity will increase from 343,000 MWH in 1981 to 1,085,000 MWH in the year 2000, representing an increase of 11% per annum. The projected demand indicates that additional generating capacity will be required (Table 7.4.3).

Table 7.4.3
Existing and Projected Supply and Demand

Year	Supply (MWH)	Demand (MWH) (Actual units sold)
1981	388,000	343,000
1985	482,000	424,000
1990*	677,000	550,000
1995**	1,204,000	858,000
2000	1,612,000	1,085,000

* Nkula Falls B completed: total installed capacity 179MW

** Kapichila Falls completed: total installed capacity 279MW

7.4.4 DEVELOPMENT PROJECTS

To satisfy future demands for electricity ESCOM has plans for the development of the following hydro power stations:

(1) Two additional generators for Nkula Falls "B" Scheme (40 MW) between 1984-89 costing approximately K12 million:

(2) Development of the first stage of the Kapichira 120 MW hydro-electric station between 1991 and 1993 at approximately K150 million;

(3) Reinforcement of the 132 Kv transmission system plant from Nkula to Blantyre and to the Capital City, Lilongwe, and extension from Blantyre to Kapichira costing approximately K30 million, and

(4) Completion of the current Rural Electrification Programme, including extension schemes to Ntchisi, Mwanza and other centres.

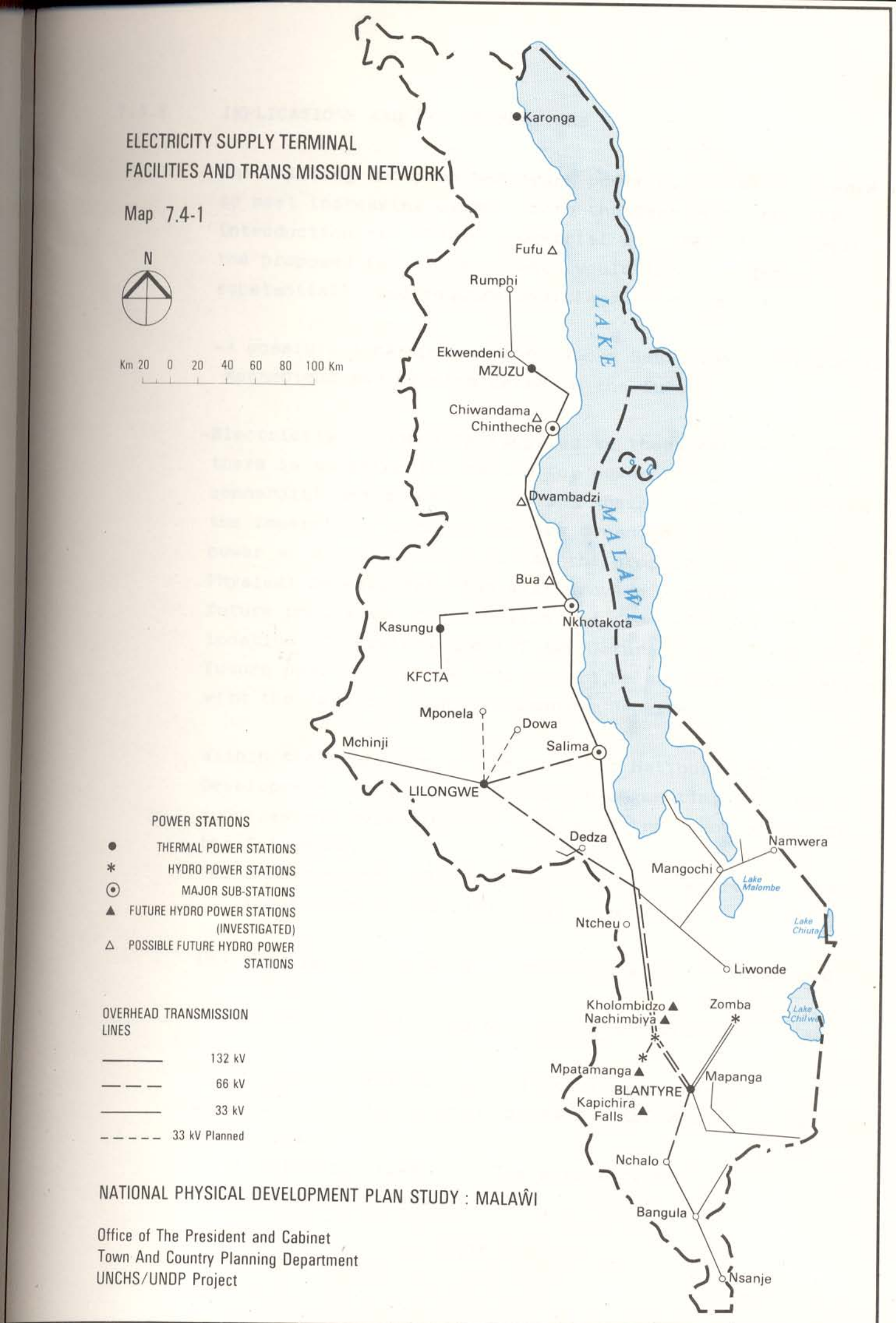
While funds for the current Rural Electrification Programme have already been secured, timely realization of projects 2 and 3 above depends on securing suitable loans, as for previous projects.

Upon completion of the above projects, existing capacity will be increased by another 160 MW of hydro power. This is projected to meet the country's needs until 1996.

In addition to these proposals various alternative sites have been identified for the development of small scale hydro power plants. The known possible sites are near Fufu, on the South Rukuru River, and Bua on the Bua River (Map 7.4-1).
A recent study carried out by TAMS (Consultants) for ESCOM compared two proposed power development schemes: Kapichira and Kholombizo. The possible environmental impacts of these two alternative schemes are of physical planning interest. In the case of the Kapichira project in appears the environmental impact would be minimal, but the environmental impact of the Kholombidzo site could be very disruptive. In the case of a low dam, innundation and flooding could extend up to the Kamuzu Barrage. Agricultural lands would be flooded; proposed buildings in Liwonde would be affected and therefore people and land uses would have to be relocated. In the case of a high dam, the flooding/innundation would extend up to Lake Malombe, and have a disruptive impact on the entire lakeshore. ESCOM wants to involve all interested parties in the development of the scheme.

ELECTRICITY SUPPLY TERMINAL FACILITIES AND TRANS MISSION NETWORK

Map 7.4-1



NATIONAL PHYSICAL DEVELOPMENT PLAN STUDY : MALAWI

Office of The President and Cabinet
Town And Country Planning Department
UNCHS/UNDP Project

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7.4.5 IMPLICATIONS AND RECOMMENDATIONS

The existing and proposed hydro power plants will be able to meet increasing demand up to the year 2000, but the introduction of a large industrial consumer (for example, the proposed fertilizer plant) would increase demand substantially and require additional investments.

-A possible link-up with the Cabora Bassa Power Station in Mozambique may be considered in the future.

-Electricity is normally supplied to those centres where there is an effective demand for power for industrial, commercial and domestic uses and there are cases in which the imperative is not effective demand but the need for power as a social utility. As the proposed National Physical Development Plan will provide a strategy for future population distribution and framework for the location of services and infrastructure, the selection of future power supply centres should be made in consultation with the Town and Country Planning Department.

Within the framework of the proposed National Physical Development Plan, the criteria for augmenting existing supplies and selecting new supply centres should include the following:

(a) a settlement's function as a service centre and its importance in the hierarchy of centres.

(b) the size and density of the population to be served.

(c) existing or proposed productive activities.

-The following NPDP Background Study also provide analytical and information bases for ESCOM's planning activities:

"Population Growth and Characteristics"

"Urbanization" and

7.5 WATER

7.5.1 INTRODUCTION

Access to an adequate supply of clean potable water is fundamental to the development of the country and the Government attaches great importance to the supply of water. Even before the endorsement of the United Nations declaration of the International Drinking Water Supply and Sanitation Decade, the Government had developed quite a number of water schemes outside the main urban areas, which hitherto had a great proportion of funds allocated from water supply schemes. This report deals with water supply in relation to human settlements.

7.5.2 INSTITUTIONAL FRAMEWORK

Prior to 1979 the responsibility for water supply and related functions was fragmented and involved for example the Ministry of Works and Supplies, Department of Community Development and Social Welfare, Ministry of Agriculture, Ministry of Health, Water Resources Board and separate Water Boards for Blantyre and Lilongwe. In 1979, however, most of the water supply functions were integrated under the Department of Lands, Valuation and Water, Office of the President and Cabinet. In 1984 the responsibility was transferred to the Ministry of Works and Supplies (M.O.W.A.S).

The Water Department of M.O.W.A.S. is now responsible for (a) the supply of treated water to all urban areas in the country except urban areas served by Lilongwe and Blantyre Water Boards: (b) piped water supply to rural areas: (c) irrigation schemes; and (d) the development of water resources generally.

There is close cooperation between the Water Boards and M.O.W.A S. The Ministry of Health is still responsible for monitoring the quality of water and the Water Supply Branch of the Department of Water continues to operate

water schemes initiated under a loan from the African Development Bank prior to the integration of water supply functions.

7.5.3 EXISTING WATER SUPPLY AND DEVELOPMENT EFFORTS

A study report prepared in 1981 states that Malawi, with an estimated gross water availability of over 9,000 litres per capita per day, is well endowed with water resources*. Numerous rivers and perennial mountain streams, the lake and groundwater resources feed the system.

There has been considerable improvement in urban water supply and management since 1977, using external sources of funding.

Urban Supply

The urban distribution system supplies water through private house connections and communal stand-pipes. In the high density and traditional housing areas, water is made available mainly at communal stand-pipes. Hand-pumped boreholes provide water to most of the smaller urban areas.

Urban water supply by region, available in 1982, is shown in Table 7.5.1. In the Central Region, 48% of the urban population had access to potable water. In the Southern and Northern Regions, the proportions of urban population served were 46% and 45% respectively. Thus 46% of urban dwellers in the country had access to potable water**.

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* Water Supplies to Urban Centres" UNDP Project MLW/80/003, 1981

** "National Water Resources Master Plan Interim Report - Volume 1.

Table 7.5.1
Urban Water Supply by Region, 1982 (excluding Blantyre and Lilongwe)

Region	Total Urban Population	Number of Persons Served	% of Total Population Served
Northern	64,200	28,900	45
Central	60,100	28,800	45
Southern	68,500	31,500	46
Total	**192,800**	**89,200**	**46**

Source: National Water Resources Master Plan Interim Report Volume 1

Water supply schemes in Blantyre and Lilongwe have large reservoirs, complete water works and a network of trunk and secondary distribution mains. A summary of urban water supply schemes for 1983 is given in Table 7.5.2.

At present there are 51 urban water supply systems and 5 institutional supplies. The total urban population within these urban centres is about 650,000 of which about 50% is served.

Further improvements in urban water supply schemes are being considered under a Swiss Government grant and an African Development Bank loan. The 44 urban areas which have been listed for funding under the scheme are shown in Table 7.5.3 and in Map 7.5-1.

Rural Supply

The main sources of rural water supply are (a) piped gravity water systems which draw water from forest catchments to communal taps; and (b) boreholes and protected shallow wells. Much progress has been made in recent years largely due to the success of the Surface Rural Water Supply Project. The rural population participates in the planning, construction, operation and maintenance of the system. A second project based on this self-help approach was initiated in 1978 to provide water from protected shallow wells. It is expected that the project once completed will provide 5,000 wells to serve

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Table 7.5.2
Urban Water Supply Schemes

Southern Region Scheme	Source of Supply	Type of Scheme	Water Connection	Annual Consumption M3	Approximate Pop. Served
1 . Zomba	Mulunguzi	Gravity	1,730	1,720,000	23,800
2 . Machinga	Mabububu River	"/Pumped	65	14,500	200
3 . Balaka	Borehole (2)	Pumped	120	120,000	1,500
4 . Mangochi	Shire River	Pumped	290	178,000	2,500
5 . Domasi	Domasi River	Pumped	65	46,000	650
6 . Liwonde	Shire River	Pumped	200	234,000	3,300
7 . Namadzi	Spring	Pumped	20	8,800	120
8 . Monkey Bay	Scheme under construction				
9 . Namwera	Scheme under construction				
10 . Songani	Borehole (1)	Pumped	1	1,400	20
11 . Chikwawa	Borehole (3)	Pumped	120	53,000	740
12 . Thyolo River	Nsuwadzi	Pumped	220	99,000	1,400
13 . Mwanza River	Nsuwadzi	Pumped	70	21,800	300
14 . Ngabu	Borehole (4)	Pumped	255	108,000	1,500
15 . Mikolongwe	Borehole (4)	Pumped	50	36,000	500
16 . Nsanje	Borehole (2)	Pumped	180	104,000	1,500
17 . Mpemba	Borehole (2)	Pumped	85	28,400	400
18 . Nchalo	Borehole (2)	Pumped	20	27,000	380
19 . Phalombe	Phalombe River	Gravity	35	14,600	200
20 . Chiradzulu	Borehole/ Chisambasukubi	Gravity/ Pumped	90	24,200	340
21 . Luchenza	Borehole/Thuchila	Pumped	50	31,200	430
22 . Muloza	Borehole	Pumped	10	6,600	90
23 . Mulanje	Muloza/Namichila Rivers	Gravity	190	219,000	3,050
	Total Southern Region		**3,866**	**3,095,500**	**42,920**

Table 7.5.2 (continued)

Central Region Scheme	Source of Supply	Type of Scheme	Water Connection	Annual Consumption M3	Approximate Pop. Served
1. Nkhotakota	Borehole (1)	Pumped	200	120,000	1,700
2. Mchinji	Spring	Gravity	85	55,000	700
3. Likuni	Lilongwe	Pumped	50	105,000	1,500
4. Dowa	Borehole (1)	Pumped	60	64,000	850
5. Chitedze	Borehole (3)	Pumped	180	91,000	1,200
6. Bunda	Borehole	Pumped	160	33,000	450
7. Lilongwe Airport	Borehole	Pumped	50	12,300	150
8. Dedza Sec. Schools	Chimwankhuku	Pumped	50	25,000	350
9. Salima	Borehole	Pumped	320	265,000	4,000
10. Mponela	Borehole (3)	Pumped	70	53,000	750
11. Dedza	Mala River	Gravity	280	116,000	1,600
12. Kasungu	Chitete River	Pumped	270	266,000	4,000
13. Ntchisi	Kawombe River	Pumped	110	29,000	400
14. Dedza Customs	Borehole (1)	Pumped	1	2,500	
15. Ntcheu	Kadansana River	Gravity/ Pumped	110	115,000	1600
16. Kochilira (HC)	Shallow Well	Pumped	1	12,000	1,200
17. Kabudula (HC)	Borehole	Pumped	1	5,000	
18. Nkhande	Nkhande River	Pumped	1	20,500	200
19. Kamuzu Academy	-	Institutional			-
20. Salima Army College	-	Institutional			-
21. Mvera	-	Institutional			-
	Total - Central Region		**1,999**	**1,389,300**	**20,650**
Northern Region **Scheme**	**Source of Supply**	**Type of Scheme**	**Water Connection**	**Annual Consumption M3**	**Approximate Pop. Served**
1. Mzuzu	Lunyangwa River	Pumped	1,000	480,000	7,000
2. Mzimba	Mzimba River	-do-	330	180,000	2,500
3. Rumphi	Rumphi River	Gravity	190	36,000	500
4. Chitipa	Borehole (3)	Pumped	200	78,000	1,100
5. Karonga	Lake Malawi	Pumped	230	108,000	1,500
6. Chintheche	Lake Malawi	Pumped	30	8,000	120
7. Nkhata Bay	Lake Malawi	Pumped	140	55,000	800
8. Hora	Borehole (1)	Pumped	2	8,800	130
9. Chintheche (2)	Borehole	Pumped	4	16,000	2,400
10. Ekwendeni	Lunyangwa River	Pumped	under construction		
11. Chilumba	Lake Malawi	Pumped	under construction		
	Total-Northern Region		**2,096**	**969,800**	**16,050**
Water Boards Lilongwe Blantyre					99,000 125,000
				National Total	**303,620**

Source: Water Supply Branch, MOWAS, 1983.

Table 7.5.3
List of Urban Water Supply Schemes Selected for Feasibility Studies

Region	Urban and Other Centres Selected for Study		
	By WSB or additional external resources	By WSB through/ Government grant	By Consultant through ADB Phase II loan
Northern		Mzuzu	Nkhata Bay, Ekwendeni Rumphi, Embangweni+ Chitipa, Champhira+ Mzimba, Engucwini+ Chilumba, Kafukule+ Bolero+, Edingeni+ Chintheche, Mbalachanda+
Total	—	**1 Scheme**	**14 Schemes**
Central	Likuni Kabudula Kochilira	Kasungu	Salima, Namitete+ Nkhotakota, Madisi+ Mponela, Nambuma+ Ntchisi, Mkanda+ Dowa, Kasiya+ Mchinji, Chipoka+ Dedza, Nkhoma+ Chamama+
Total	**3 Schemes**	**1 Scheme**	**15 Schemes**
Southern	Mangochi Machinga Chiradzulu Nchalo Monkey Bay Namwera Chileka Muloza Mpemba Mikolongwe	Luchenza	Thyolo, Nsanje Luchenza, Phalombe Ngabu, Bangula+ Balaka, Chingale+ Mwanza, Lirangwe+ Mulanje, Namadzi+ Chikwawa, Thekerani+ Thondwe+
Total	**10 Schemes**	**1 Scheme**	**15 Schemes**
Malawi Total	**13 Schemes**	**3 Schemes**	**44 Schemes**

Urban and other Centres selected for study
+ Denotes new schemes

500,000 people. The levels of various rural supplies are summarized in Table 7.5-4 . It shows that 27% of the estimated rural population in 1977 were served and by 1981 the proportion had increased to 28.8%*.

The National Water Resources Master Plan (NWRMP)

The NWRMP, a UNDP/UNDTCD Project, Ministry of Works and Supplies, is currently charged with the following responsibilities.

(a) to appraise water resources availability and the potential of major river basins.

(b) to assess water balances for problem areas and recommend solutions.

(c) to analyse priority projects which require water resources, and

(d) to outline an overall national strategy for phased and progressive water resource development.

7.5.4 ACCESS TO POTABLE WATER

A survey carried out by the National Statistical Office of the accessibility of various facilities and services in Malawi showed that of the nation's population that had to fetch water by walking, 46% walked within 2Km, which is considered the maximum distance beyond which it is not desirable to walk to fetch water. 35% walked within 2-8Km; and the remaining 19% walked more than 8Km. It is quite likely that those who had to walk more than 8Km and a majority of those walking between 5 and 8Km lived in scattered settlements.

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*Source: National Water Resources Master Plan - Interim Report Volume 1 General December 1983 Table 5.4.

Table 7.5.4
Rural Water Supply Service 1977 and 1981

Categories of Water Supply	Population Served-1977	Population Served-1981
Surface and Wells		
20 Existing Gravity Supplies	300,000	300,000
5 New Gravity Supplies	-	143,000
Protected Wells	20,000	200,000
Protected Boreholes		
4,275 Existing	820,000	1,220,000
	1,140,000	1,863,000
Private & Institutional		
3.0% of total popula-	150,000	165,000
Total Rural Served	**1,422,300**	**2,623,000**
	26% of the estimated rural population of 4.8 million	37% of the estimated rural population of 5.2 million

The Southern Region was better served with water, as more than 50% of those walking to fetch water found water within 2Km. For the same distance the proportion in the Central Region was 48%; and in the Northern Region 41% walked within 2Km.

Accessibility to supplies in the various districts indicated that, in each of the following districts, those walking to fetch water found it within 2Km.

Karonga	Zomba
Nkhotakota	Chiradzulu
Salima	Blantyre
Lilongwe	Mulanje
Ntcheu	Nsanje

The best served districts in terms of access to potable water were Karonga, Nkhotakota, Mulanje, Salima, Lilongwe and Nsanje in that order. The districts which had the least number of people within the 2Km distance were Nkhata Bay 10%; Mwanza 15%; Ntchisi 28%.

7.5.5 DEMAND FOR WATER

In view of the on-going operations of the National Water Resources Master Plan Project, it is not necessary to attempt in this study an estimate of present and future water demand for domestic, commercial industrial and institutional uses.

The following sections of NPDP studies, however, provide some of the important information and analytical bases required for estimating future water demand:

Section 2 : Population Growth and Characteristics;
Section 4 : Urbanization;
Section 6 : General Land Use and Natural Physical Constraints.

Other relevant studies, when published, will be made available to the Ministry of Works and Supplies. The NWRMP Project has already used these documents in a preliminary paper on the "Ranking of Urban Centres, Population Projections and Demands of Domestic Water Supply over Various Planning Horizons".

On the basis of improvements made to the Blantyre system, the Blantyre Water Board has predicted that its resources will be adequate to meet future demands up to 1991*. In view of rapid population growth in Lilongwe and future demand a Water Supply and Sanitation Plan was prepared by the former Department of Lands, Valuation and Water.

7.5.6 IMPLICATIONS AND RECOMMENDATIONS

As many human settlements depend on forest catchments for existing and future water supply, land use measures and policies should be formulated to project forest catchments from:

(a) uncontrolled or undesirable felling of trees for fuel or poles;

(b) farming activities that involved clearance of forest; and

(c) other incompatible uses or activities that have a disruptive environmental impact on forest catchments.

The following ministries and department should be involved in joint efforts regarding the preceding: Ministry of Works and Supplies; Forestry and Natural Resources; Agriculture; and the Town and Country Planning Department.

The Water Supply Branch of the Water Department, M.O.W.A.S. has already consulted the Town and Country Planning Department and the NPDP Project regarding the selection of new water supply schemes for 44 urban and rural centres which are to be carried out under Swiss Government grant and an African Development Bank loan. The consultation should be maintained in order to (a) determine the priorities for the schemes; and (b) consider other schemes which are required in accordance with the Government's goal of providing safe drinking water for all by year 1990.

The following should be considered as part of the bases for determining priorities for the augmentation and development of water schemes.

(a) A settlement's function as a service centre and its importance in the hierarchy of centres.

(b) The size and density of the population to be served.

(c) The density of population in the hinterland.

(d) Existing or proposed productive activities.

A number of NPDP studies which have been produced should provide useful information/data bases for the Water Supply Department and the Water Boards to design long-term programmes directed towards water supply to meet the needs of the future population. The studies cover population growth and characteristics, general land use, physical planning constraints and urbanization.

Water Supply is a major factor in an individual's choice of a house plot and farm location. It also plays a significant role not only in supporting socio-economic activities but also in influencing the direction of

growth, the pattern of settlements and the density distribution of population. Water supply, therefore, can and should be used as an effective tool in national physical planning and settlement development strategies.

The following is crucial in the Government's objective of providing adequate water supply for all by 1990. 37.3% of the nation's population live in dwellings scattered over vast rural territories. It would be uneconomic and impossible to provide water for a large majority of that population. The issue is discussed fully in Part 6.

8.0 ENERGY

8.1 INTRODUCTION

Energy has become a very important subject matter to many governments and to private and professional bodies. Research reports and official policy statements all over the world continue to deal with various aspects of energy; such as, alternative forms of energy; conservation of energy; biomass (forest products) and the production of methanol; the harnessing wind and solar energy; the design and production of domestic appliances based on alternative energy sources; energy and land use; energy and rural development; etc. Malawi the Government has recently established an Energy Unit in the Office of the President and Cabinet for the formulation of energy policies and overall co-ordination of the various Ministries and Agencies which are involved in the energy sector.

Studies have indicated that most of the non-conventional and renewable energy resources, (which call for more extensive and costly research and development) are not likely to have any practical impact on Malawi within the next twenty-five years. Consequently, alternative energy sources which may become useful to Malawi are mentioned briefly.

This study, therefore, deals mainly with fuelwood, which accounts for nearly 90% of energy sources in Malawi and is directly related to land use. Mention is also made of petroleum and coal. Electricity, which accounts for 3% of the total energy consumption in Malawi, is dealt with separately under Infrastructure : Part 7.5 and is only mentioned briefly in this part of the report. The major thrust of this part of the report is the consideration of those aspects of energy issues that are related to the use of land.

This study borrows from two existing studies: namely, "Fuelwood and Pole Project", Ministry of Agriculture, 1978; and "Malawi: Issues and Options In the Energy Sector" UNDP/World Bank. August 1982; and further from information

from the Ministry of Forestry and Natural Resources.

8.2 SOURCES OF ENERGY SUPPLY

Fuelwood, the traditional fuel, is the most important source of energy in Malawi. It accounts for 89% of the primary energy supplies. The balance is made up of agricultural waste, petroleum products, hydro-electricity and coal, as shown in Table 8.1 and illustrated in Figure 8-1 and Map 8-1.

Table 8.1
Energy Supply by Sources 1984

Source	Primary Energy	
	Thousand toe	Percentage
Fuelwood	2463.3	89.0
Other biomass	83.4	3.0
Petroleum products	69.1	2.5
Electricity	101.5	3.7
Coal	50.3	1.8
Total	**2767.6**	**100.0**

Source: Energy Study Unit, Ministry of Forestry and Natural Resources.
toe means Tonne of oil equivalent

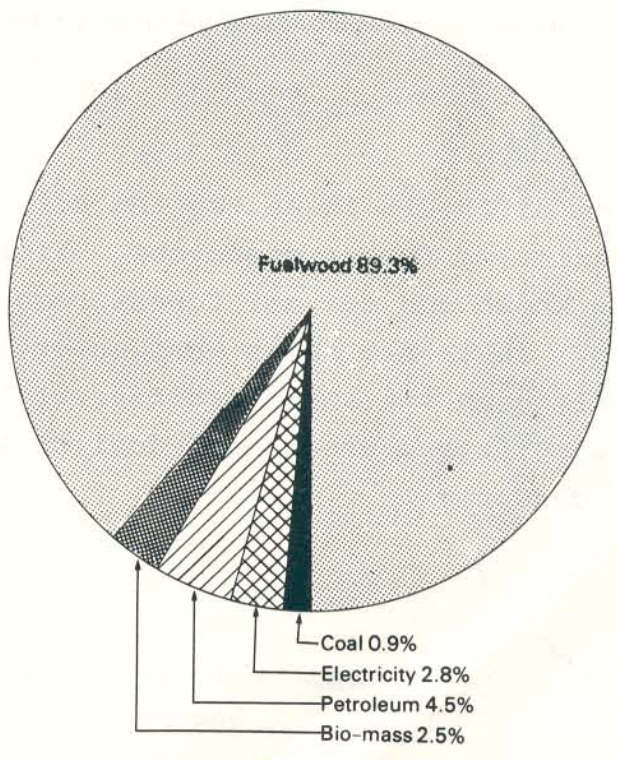

Figure 8-1: ENERGY SUPPLY BY SOURCE 1980

Fuelwood Supply

Fuelwood accounts for 89% of Malawi's energy supply. There are about 5.5 million hectares (ha) of woodlands and forest, which represent about 60% of the total land area. The main source of fuelwood is the indigenous woods on customary lands (covering an area of 3.5 million hectares) which were under the jurisdiction of traditional authorities until recently. They are now under the control of the Ministry of Forestry and Natural Resources. The remaining woods exist in National Parks and Game Reserves (1.07 million ha.) and in gazetted forest reserves and protected hill slopes (0.98 million ha.) (See Table 8.2).

Table 8.2
Forest Resources in Malawi 1985

Resource	'000 ha	Percentage
Indigenous woods on customary lands	3,500	63 .0
National Parks & Game Reserves	1,070	19 .0
Gazetted Forest Reserves	690	12 .0
Proposed Forest Reserves	290	6 .0
Total	**5,550**	**100.0**

Source: Compiled from information provided by the Ministry of Forestry and Natural Resources .

It has been difficult to assess the actual fuelwood supply from the existing forest resources. Yield figures are not accurately known and not all forest resources are accessible. Table 8.3 shows various estimates of fuelwood supply. Although the amounts differ it is clear that all estimates indicate a pronounced decline in the coming years in fuelwood supply.

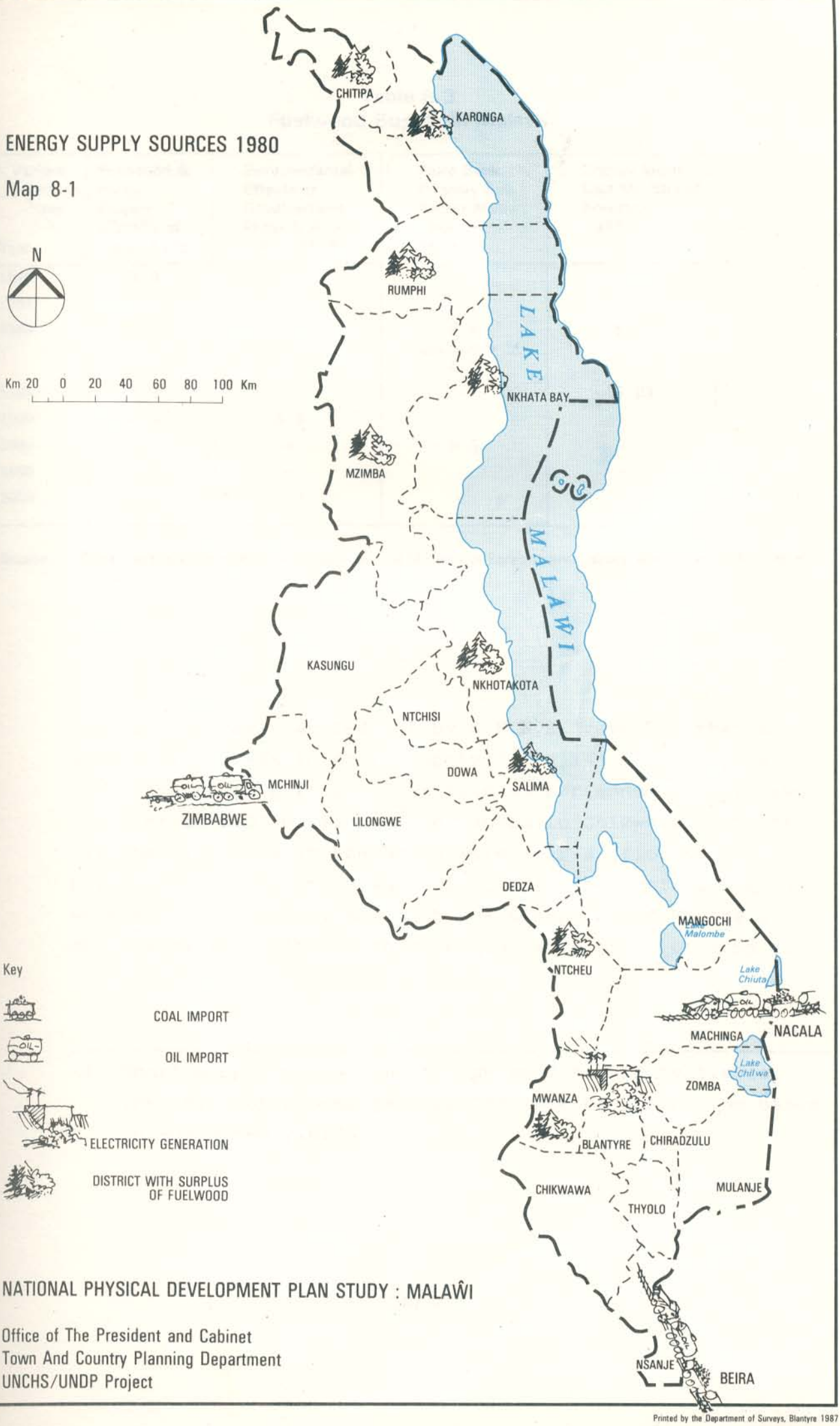

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Table 8.3
Fuelwood Supply in Malawi

Various Estimates / Year	Fuelwood & Poles Project: Ministry of Agric. 1978	Environmental Effects of Development Phase II Report F.A.O. 1985	Word Bank Forestry Sub Sector Study - Malawi 1984	Energy Study Unit Ministry of Forestry 1985
1980	8 .9	-	-	-
1981	-	3 .7	-	-
1984	-	-	6 .4 (accessible 4 .3)	6 .9
1985	6 .5	-	-	6 .83
1990	4 .9	3 .5	-	-
1994	-	-	5 .3	-
1995	4 .8	-	-	-
2000	2 .7	3 .2	-	-

Source: Compiled from information obtained from the Ministry of Forestry and Natural Resources . (M .F .N .R .)

District surveys carried out by M.F.N.R. revealed that in 1980 fuelwood was in short supply(1) in 14 out of the 24 districts ranging from 1.7 million M^3 per annum in Lilongwe District to 0.07 million M^3 per annum in Chikwawa District. All the districts in the North were self-sufficient. Lilongwe, Ntchisi and Dowa Districts in the Central Region were short of supply, and with the exception of Mwanza all the districts in the Southern Region were short of supply.

(1) Short supply means that though wood may be available, the level of demand exceeds the rate of production based on sustained yields.

The government's awareness of the dwindling fuelwood resources has resulted in the establishment of a Wood Energy Project, which will form the initial stage in a programme to make Malawi self-sufficient in fuelwood and poles, and to create alternative sources of energy. One main problem is the general unawareness of the public (households and industry) of the serious situation in the supply and demand of fuelwood. The Wood Energy Project's long term development objectives are:

- the improvement of fuelwood and poles supplies to the rural and urban population for domestic and commercial use by establishing rural nurseries to provide farmers with seedlings for their private woodlots and by establishing tree plantations in wood-deficit rural areas and main urban centres.

- the introduction of management of forest resources on customary land and the intensification of management of gazetted forest reserves.

- the promotion of a viable forestry development through appropriate legislation and pricing of forest products.

A yet untapped source is the Viphya Forest Plantation, established for the purpose of producing pulp, paper and wood panels. In terms of energy resources, its possible alternative uses include the production of methanol, gasoline and charcoal.

Petroleum Products Supply

Malawi's petroleum requirements are met through direct import of refined products, but the production of ethanol commenced in 1982 at an initial rate of 7.5 million litres per year for mixing in a ratio of 13: 87 with gasoline. Although small in quantity, about 150,000 toe accounting for 2.5% of the total energy supply in 1984, petroleum is the second most important energy resource in Malawi. The Government has become quite concerned about the periodic interruptions in the supply of this vital energy resource.

These interruptions are related to (a) operational problems at the ports in Mozambique; (b) the poor physical conditions of the railway lines between Mozambique and Malawi; and (c) the occasional insurgent activities in Mozambique.

There are some prospects for the local supply of oil and natural gas. A team from Duke University in the United States have found sediments under Lake Malawi of over 2 Km thick, which it is said could possibly contain natural gas or oil deposits. Shell Oil has shown interest in doing geophysical work in the Lower Shire Valley and parts of the lake. Both studies provide little information. There also are substantial practical difficulties and high costs in commercial exploration and development. At present, however all exploration activities have been halted.

Exploration of more reliable supply lines, combined with strengthening of the institutional framework, are the government's highest priority.

Coal

Coal accounts for less than 2% of Malawi's total energy consumption. It is presently imported mainly from Mozambique, Zimbabwe and South Africa, and in smaller quantities from Zambia. 90% of it is used as industrial fuel in and around Blantyre by a very limited number of users. The main users, Portland Cement and David Whitehead Textiles, together account for 50% of total coal consumption and are expected to increase their consumption but not significantly.

Malawi's own sources are rather limited. The Ngana field in the North is a most promising deposit. Although the deposit has not been fully delineated, the exploration carried out so far is considered enough to warrant a mining feasibility study. Total proven reserves amount to 12.2 million tonnes but estimates of minable deposits are in the range of 1.6-1.8 million tonnes. Alternative use of this deposit would be mine-mouth generation of

electricity.

Recently, mining operations have started in the Kaziwiziwi coal fields near Livingstonia with an estimated output of 10,000 ton in 1985 increasing to 40,000 in 1991, totalling 185,000 ton of good quality coal.

The exploitation of this coal field will provide valuable experience for working on the Ngana fields, which is scheduled to begin in the next 3-5 years.

Alternative Renewable Energy Sources

Although research on alternative energy sources has been going on for a considerable time, practical application on a large scale with respect to some of the alternatives is rather futuristic.

As far as Malawi is concerned some alternatives are likely to be useful in the future, such as:

- mini hydro-electric schemes in the North Rukuru, South Rukuru and Bua Rivers;

- solar energy in remote areas for heating and processing of agricultural products.

8.3 ENERGY CONSUMPTION

There is no reliable data on the trends of energy consumption by sector in Malawi but an estimate of the 1980 situation has been made by the World Bank as shown in Table 8.4. Figure 8.2 "Energy Flow, 1980" is a graphic illustration of the Table. The figure shows clearly the dominant role of fuelwood in sectoral energy consumption pattern and the main users (Households and Industry). Industry consumed 95% of the total coal supply, 73% of the electricity, just under half the petroleum products and 50% of fuelwood. Households, on the other hand, consumed 49% of total fuelwood supply and other sources of energy marginally.

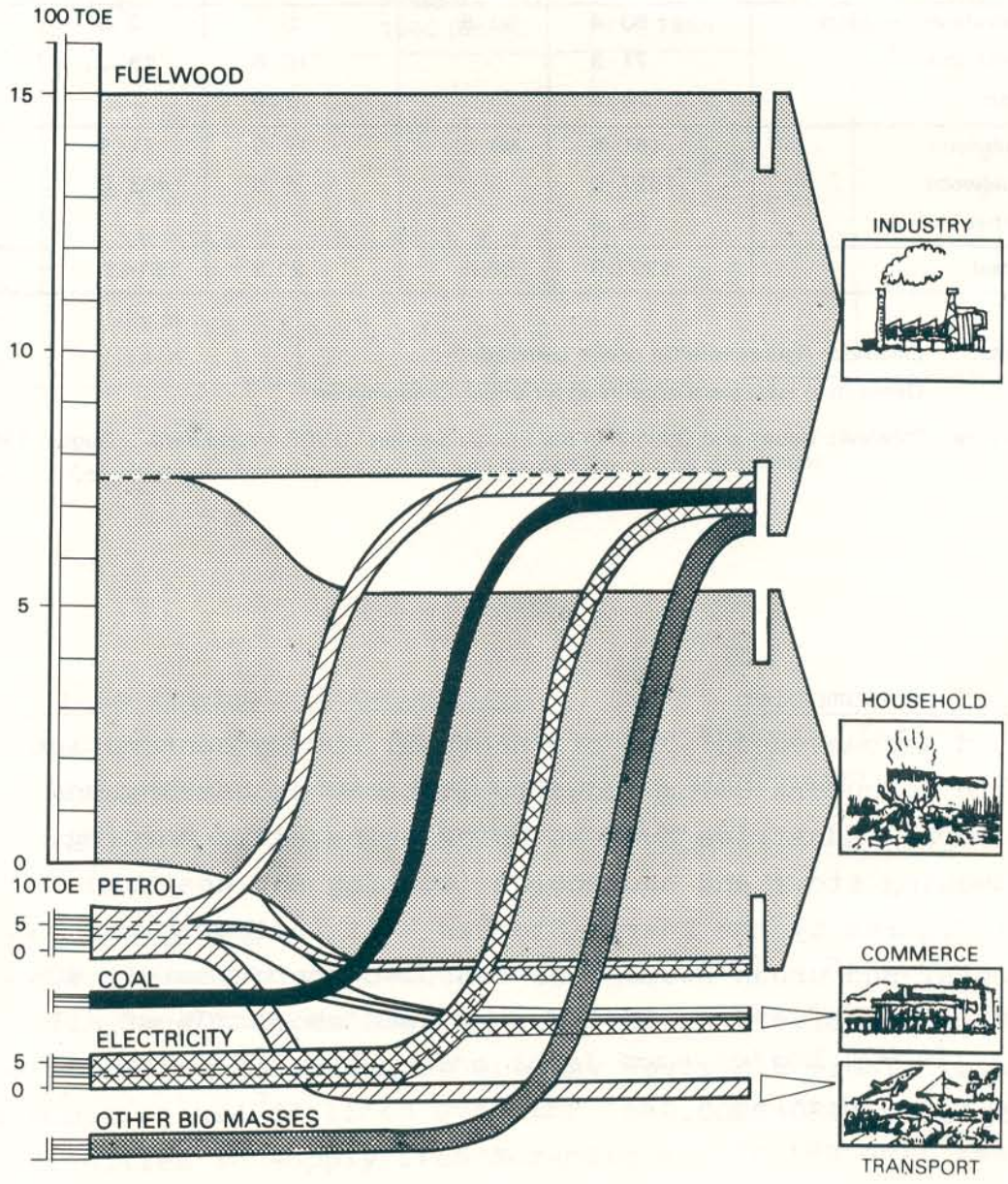


Figure 8-2: ENERGY FLOW 1980

Table 8.4
Sectoral Energy Consumption 1980 (thousand toe)

Source	Industry	Trans-port	Commerce	House-hold	Total
Petroleum products	60 .4	80 .6	0 .1	6 .3	147 .4
Electricity	71 .5	-	10 .6	15 .6	97 .7
Coal	29 .6	-	1 .6	-	31 .2
Sub-total	161 .5	80 .6	12 .3	21 .9	276 .3
Fuelwood	1527 .0	-	9 .0	1493 .0	3029 .0
Other biomass	83 .4	-	-	-	83 .4
Total	**1771.9**	**80.6**	**21.3**	**1514.9**	**3388.7**

Note: Electricity figures refer to power generation .
Generation losses are accounted for under Consumption

Source: "Malawi: Issues and Options in the Energy Section" UNDP/World Bank . August 1982 .

Fuelwood consumption

Fuelwood accounted for 89% of the total energy consumption, the main consumers being industry (tobacco processing and other rural industries such as brickmaking, lime burning, fish smoking etc.) and households (cooking and heating). Recent figures by the Energy Studies Unit indicate that in 1984 rural and urban households consumed approximately 60% and 10% respectively while industry used about 30% of all fuelwood. Table 8.5 gives various estimates of fuelwood consumption, 1980-2000.

There are slight differences in the various estimates, but they all indicate that demand will exceed supply throughout the year.

Table 8.5
Fuelwood Consumption, 1980-2000 (mM^3)
VARIOUS ESTIMATES

Year	Fuelwood & Poles Project. M.o.A. 1978	Environmental Effects of Development Phase II F.A.O. 1985 (Brunt)	Word Bank Forestry Sub Sector Study Malawi 1984	Energy Study Unit M.o. Forestry 1985
1980	11 .7	-	-	-
1981	-	9 .4	-	-
1984	-	-	8 .9	8 .93
1985	13 .0	-	-	9 .2
1990	11 .3	11 .3	-	-
1994	-	-	11 .9	-
1995	12 .4	-	-	-
2000	14 .5	14 .0	-	-

Source: Compiled from Ministry of Forestry and Natural Resources information .

Petroleum Products Consumption

The main consumers are transport and industry. Imports of petroleum products have declined since 1980 partly because of increased ethanol production locally.

Coal Consumption

The main consumer of coal is industry (95%). Portland Cement near Zomba and David Whitehead in Blantyre together account for about 50% of the total consumption. Coal consumption had declined over the last 2 years because of difficulties in supply from Mozambique. In the next year or two, however, coal will be available locally.

8.4 ENERGY FOR THE FUTURE

According to estimates made by the Fuelwood and Poles Project, households and tobacco smallholders will experience a supply shortage of 6.4 million m^3 of fuelwood in 1990, increasing to 10.8 million m^3 in year 2000 compared to a deficit of 2.8 million m^3 in 1980, based on sustained yields. The estimate assumes that the tobacco estates will become self-sufficient by 1990 and existing trends will continue.

By 1990 all the districts in the Southern and Central Regions, with the exception of Nkhotakota, will be in short supply; and the Northern Districts will still maintain a surplus, except that by 1990 Mzimba will be short of supply. By the year 2000 shortages will still be experienced in all the districts in the Central and Southern Regions; and Karonga, Rumphi and Mzimba in the North. The only districts which will be self-sufficient by 2000 are Chitipa and Nkhata Bay.

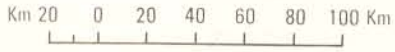
Appendices 8.1-8.5 give the full breakdown per district for the years 1980, 1985, 1990, 1995 and 2000. Map 8.2 illustrates the geographical distribution of surpluses and deficits in the supply of fuelwood by 1985 and 2000.

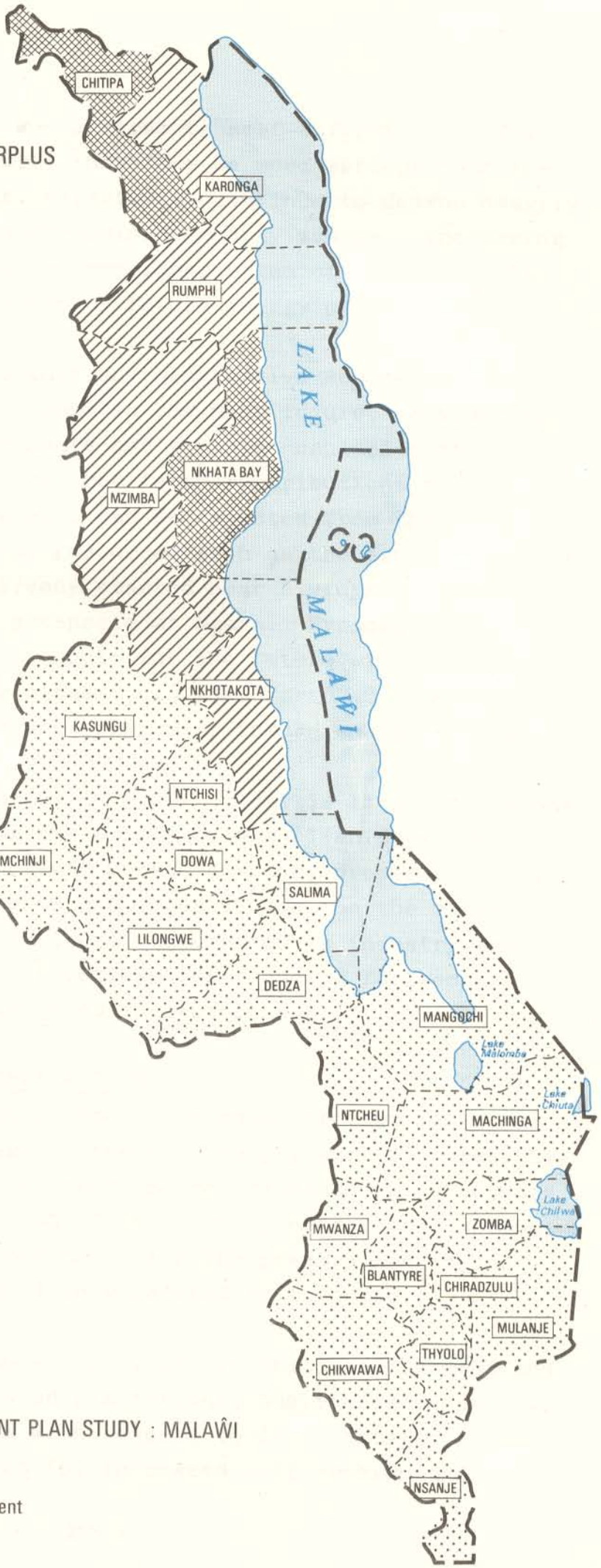
Appendix 8.6 gives the chronological order in which the districts will become deficient in fuelwood. It shows clearly that by 1990 except for Mzimba only the Northern Region will still be self-sufficient, and that by the year 2000 only the districts of Chitipa, Karonga and Nkhata Bay will be self-sufficient.

It is not likely, however, that the tobacco estates will become self-sufficient by 1990 considering development trends in the tobacco estates. For example, more and more flue-cured tobacco estates are being established (total now is 400) and the majority rely almost entirely on wood from customary lands. Very few of the estates, if any, have embarked on large-scale afforestation programmes that

FUELWOOD DEFICITS AND SURPLUS IN 1985 AND 2000

Map 8-2





Key

- DISTRICTS WITH DEFICITS IN 1985
- DISTRICTS WITH SURPLUS IN 1985 BUT DEFICITS IN 2000
- DISTRICTS WITH SURPLUS IN 2000

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can take them any where close to self-sufficiency. The future situation will therefore be more serious than the forecast indicates. Malawi will continue to depend heavily on fuelwood as its predominant energy source. Increasing the supply or reducing the consumption of fuelwood will remain a major concern of future energy policies.

It is not expected that any alternative sources of energy will have a great impact in the near future, considering the on-going experiments and the high capital cost requirements. The most realistic contributions to the energy sector, however, can be expected from the development of local resources such as the exploitation of coal, which has already started near Livingstonia (Kaziwiziwi), and prospects at Ngana. Proposals to augment electricity supply for the future will also improve the energy situation. (See Part 7.5). Map 8.3 shows the location and origins of future energy sources.

The solution for Malawi's fuelwood crisis lies, on the one hand, in increasing the supply by establishing woodlots and plantations wherever possible and by properly managing the existing woodlands and forests; and, on the other hand, by reducing fuelwood consumption in industry and households. Possible options for reducing fuelwood consumption are discussed in Section 8.5.

8.5 CONCLUSIONS AND IMPLICATIONS

Malawi's energy sector faces two major problems: (a) an anticipated shortage of fuelwood supply and (b) unreliable supply lines for its import petroleum products. Fuelwood, which accounts for 90% of the country energy consumption, is of particular importance for the preparation of the N.P.D.P., as it is closely related to land use.

If no counter measures are taken in the establishment and management of fuelwood plantations, the consequences will become very serious with respect to (a) shortages in fuelwood, supply and (b) increased soil erosion and

flooding and disruptive impact on water catchment areas and steep slopes. The government is aware of this but the general public still considers the indigenous woods as a never-ending source of free firewood, not realising the deleterious effects of indiscriminate tree felling.

It is generally recognised (a) that the urban areas will be the first and the worst affected by the shortages because of their reliance on wood-charcoal; and (b) that special measures have to be taken to cope with the urban situation. The World Bank Study recommends, for the urban areas,

- establishing plantations in the urban periphery on marginal land

- encouraging farmers around the urban areas to grow fuelwood for the urban market

- improving existing technologies to convert fuelwood into charcoal and

- introducing charcoal efficient stoves.

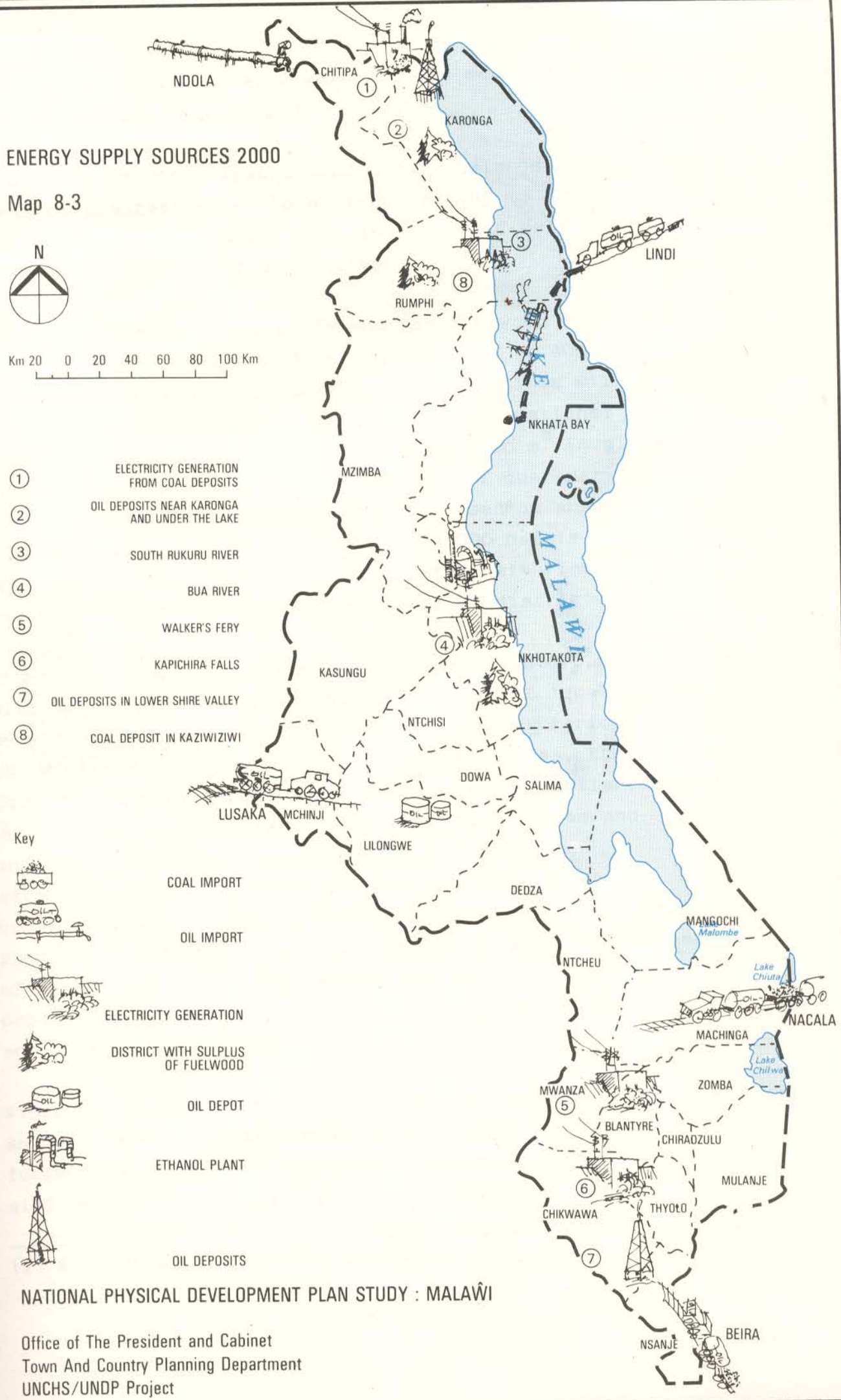
For the rural areas the recommendations are:

- intensifying extension work in order to improve the efficiency in the use of fuelwood for household as well as smallholding tobacco curing and

- encouraging farmers to grow their own fuelwood and poles

- improving management of Customary land, forests and their conservations

The World Bank sponsored "Wood Energy Project" incorporates the above mentioned approaches, which could have a significant effect within the next ten to fifteen years, but



ENERGY SUPPLY SOURCES 2000

Map 8-3

1. ELECTRICITY GENERATION FROM COAL DEPOSITS
2. OIL DEPOSITS NEAR KARONGA AND UNDER THE LAKE
3. SOUTH RUKURU RIVER
4. BUA RIVER
5. WALKER'S FERY
6. KAPICHIRA FALLS
7. OIL DEPOSITS IN LOWER SHIRE VALLEY
8. COAL DEPOSIT IN KAZIWIZIWI

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a critical situation may develop in the meantime in areas already experiencing supply shortages.

To satisfy the anticipated demand for fuelwood considerable areas of plantations would be required (up to 40% of available arable land in some districts) if self-sufficiency by the year 2000 is to be achieved.

To satisfy the anticipated demand for fuelwood considerable areas of plantations would be required (up to 40% of available arable land in some districts). This will have considerable implications for land use allocations. For example, a supply or deficit of 2.0 million m^3 involves cutting all trees on about 50,000 ha. of customary land, but to make up for the same deficit, based on annual yield of 15 m^3/ha.,a plantation area of 133,000 ha. is required(1). Part 5 deals in more detail with land requirements for fuelwood plantations by district.

Tremendous competition with agricultural and urban land uses will demand physical planning of the highest 'quality' to ensure optimum development. The Ministry of Agriculture, the Ministry of Forestry and Natural Resources, the Town and Country Planning Department and the newly-established Energy Unit should jointly discuss the preceding issues and undertake locational studies with regard to the establishment of fuelwood plantations, taking into consideration the geographical distribution of settlement population and tobacco productive areas; and also the needs of the country's growing population for land for food production, housing, industrial and other productive activities.

Wider use of electricity and local coal combined with solar and wind energy, would reduce the reliance on scarce fuelwood and imported petroleum products but the reduction will be very little during the next fifteen years.

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(1) According to estimates by Energy Study Unit.

Unreliable supply lines for Malawi's import of petroleum products have forced the government to explore alternative routes. The most probable alternatives are land transport corridors from Tanzania and Zambia (See Part 7.4) while establishment of strategic storage reserves would reduce the dependency on irregular supplies. In both cases land has to be secured.

APPENDIX 1 : NATIONAL PHYSICAL DEVELOPMENT PLAN PROJECT TEAM

The Project Team which prepared the Plan was made up of international professionals and national counterparts with backgrounds in economics, engineering, architecture, geography, social science, urban management, law, land use and physical planning. The team consisted of the following:

J.J. Matope	Commissioner for Town and Country Planning; National Cooordinator of NPDP Project
R.Acquaah-Harrison*	UN Team Leader/Project Manager
C.M. Kayuza	Senior Country Planning Officer; Counterpart Team Leader
A. Askari	UN Volunteer : Physical Planner
G. Chiusiwa	TCPD; Country Planning Officer
A. Erhard	UN Assoc. Expert: Geographer/Planner
O.S. Ertur	UN Expert : Economist/Planner
A. Jones	TCPD; Transportation Planner
A.J.C. Kawonga	TCPD; Sr. Country Planning Officer
C. Kjorneberg	UN Assoc. Expert; Architect/Planner
P.O. Lefvert**	UN Project Manager
J.P.W.B. McAuslin**	UN Consultant; Planning Legislation
G. Munyambate	TCPD; Country Planning Officer
E. Neubauer**	UN Consultant; Economist/Planner
E.D. Nhlane	TCPD; Country Planning Officer
T.N. Phiri	TCPD; Country Planning Officer
T.M. Potocki	UN Expert; Architect/Planner
R.T. Steele	UN Volunteer; Geographer/Planner
K. Twumasi**	UN Consultant; Economist/Planner
J. Williams	TCPD; Town Planning Officer
N. Zahedi	TCPD; Country Planning Officer
F. Zambezi	TCPD; Country Planning Officer
I.G. Zijlma*	UN Expert; Infrastructure Engineer

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* Long-term service

** Short-term service

APPENDIX 2.1

POPULATION PROJECTIONS : METHODOLOGY AND ASSUMPTIONS

HIGH GROWTH PROJECTIONS

Given the uncertainty of estimating the future levels of population, the two distinct methods of projections presented in this study should be regarded as the two probable ranges of population growth. The high projection is taken from the World Bank's "Demography of Malawi" and uses the cohort-survival method with no allowance for out-migration.

Methodology

- The population was divided into cohorts-males separated from females and each sex divided into five year age groups to give a population structure for the base year of the forecast.

- The forecasting calculation began with the female population, and specifically with the age groups of child-bearing age. The appropriate fertility rate was applied to each of these cohorts.

- The separate calculations for each of the fertile cohorts were then totalled to give a total number of babies. These were then "sexed" - divided into males and females in the assumed proportion (See the assumptions below), and the survival rates applied. The female and male babies were the first cohort in the next iteration of the forecast.

- The number of females who survived the first forecast period was calculated by applying to each cohort the assumed survival rate.

- The female population remaining after the application of the survival rates was then "aged" i.e. moved into the next cohort.

- Survival rates and "aging" was applied to the male

population.

- The whole process was repeated, in the case of this projection, five times (1977-2000) although it could be continued for any given number of five-year periods.

Assumptions

Male : Female Birth Ratio

- Male-Female birth ratio of 103 males per 100 females is assumed. This ratio is the one usually assumed for African populations, since there is evidence that the sex ratio is below the usual range of 104-107 found in developed countries' populations. No sex ratio at birth as low as 100 has ever been recorded for a large population.

Fertility

- An overall fertility rate of 7.75 births per female was used. This would remain stable throughout the life of the projection. The overall fertility rate was based on a combined age specific fertility rates using a standard age/fertility schedule.

Mortality

- The "Coale-Demeny South model family" life tables were used to calculate the survivorship rates. These tables are a standard set of life tables commonly used by demographers in cohort survival projections.

  The tables were modified to take into account an assumed decline in mortality in accordance with international trends. The World Bank in its paper presented 8 alternative projections based on varying fertility and mortality assumptions. However based on Malawi's experience it was considered that the stable fertility rate and slowly declining mortality rate would represent the most likely development resulting in high growth.

LOW GROWTH PROJECTIONS

Methodology

- A 2.6% annual rate of population growth was used. This percentage is derived from the Population Change Survey 1970-1972.

- The 1977 Census total was taken as the base population figure.

- Population totals for the 5 years periods 1080 to 2000 were obtained by applying the percentage growth rate.

- As the National Physical Plan is interested in the age structure of the population as well as totals for planning purposes, the total population was disaggregated into 5 year cohorts and male and females using the age structure found in the Maximum Projection.

Assumptions

- The adjusted annual growth rate of 2.6% will continue in future.

- The age structure of the population will be similar to that found in the High Growth Projection

APPENDIX 3.1.1

METHODOLOGY FOR PROJECTION EMPLOYMENT

Year 2000 Total Employment Forecast

Analysis of the population carrying capacity of land (1) shows that the land can accommodate the farming activities of 11,906,276 rural population by the year 2000. This number is greater than the year 2000 natural increase rural population of 9,261,500. This means that the land can provide agricultural employment more than the requirements of the rural population. Consequently, the non-agricultural and urban employment is forecast first and the rest of the gainfully employed labour force is assumed to be absorbed by the agricultural and rural sectors.

Non-agricultural Employment Forecast : Year 2000

The forecast is based on three different employment elasticity assumptions and the GPD projections made by the Department of Economic Planning and Development of the OPC, for the period 1986-1990.

The three different employment elasticity asumptions are: (a) employment elasticity of 1.3 under the medium employment growth assumptions; (b) elasticity of 1.5 under high growth, and (c) employment elasticity of 2 under low employment growth assumption, respectively (2). The medium growth assumptions, based on development trends between 1970 and 1983, imply the continuation of the labour-intensive technology while the high and low employment assumptions imply the application of technologies with higher and lower labour intensities repectively.

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(1) The land carrying capacity is discussed in Section 2.1

(2) For the calculaton of the employment elasticities, see NPDP Background Study report on Employment.

Non-Agricultural Employment Forecast Under Medium Employment Growth Assumptions

On the basis of the medium employment elasticity of 1.3 and the projected GPD growth rate of 3.9% [1], the future non-agricultural employment growth rate is estimated at 5.1% (i.e 1.3 x 3.9% = 5.07%). Using 5.1% growth rate to apply to the 1977 non-agricultural employment of 309,300[2] the year 2000 non-agricul- tural employment is projected to be 971,100.

Non Agricultural Employment Forecast Under High Employment Growth Assumptions

On the basis of the high employment elasticity of 1.5 and the projected GDP growth rate of 3.9%, the future non-agricultural employment growth rate is estimated at 5.8% (i.e. 1.5 x 3.9 = 5.85%) will be 1,131,200 by the year 2000.

Non-Agricultural Employment Forecast Under Low Employment Growth Assumptions

The forecast bases are : (a) Non-agricultural sector employment elasticity of 1 and (b) GDP growth rate of 3.9% yielding a non-agricultural employment growth rate of 3.9% (i.e. 1 x 3.9%) and consequently year 2000 non-agricultural employment of 745,700.

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(1) The Non-agricultural sector GDP is forecast by the DEPD to increase from K568M in 1986 to K662M in 1990, thus yielding an annual GPD growth rate of 3.9%. See Economic report 1985 p.101, Table 13.2 (Figures own calculation). This GDP growth rate is assumed to hold for the Year 20000.

(2) 1977 non-agricultural employment is obtained from the 1977 Population Census Report Vol.2. See also NPDP Background Study Report on Employment.

Of the three different employment forecasts, the medium assumption, non-agricultural employment of 971,100 is taken for all future considerations since this is in accordance with the current level of technology.

Agricultural Employment Forecast(1)

Considering that the rest of the future labour force can be absorbed in agriculture bacause of land availability, and on the assumption that the 1977 labour participation rate of 0.98 will hold for the year 2000, the total agricultural employment is forecast at 3,812,200, that is (0.98 x 4,881,000) - 971,100 = 3,812,200.

Urban Employment Forecast

The same medium employment elasticity of 1.3, used for the non-agricultural employment is assumed to hold for the urban employment as these two types of employment are about the same. This employment elasticity is again applied to the DEPD projected growth rate of 3.9% to yield on urban employment growth rate of 5.1%. Applying this to the 1977 urban employment of 231,900 the year 2000 urban employment is estimated at 728,100.

Rural Employment Forecast

As in the case of the agricultural employment forecast, the rural employment forecast is done on the assumption that after considering the urban employment in year 2000, the rest of the labour force will be in the rural areas, having regard also to an assumed labour participation rate of 0.98 thus year 2000 rural employment will be: (0.98 x 4,881,000) - 728,100 = 4,054,900.

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(1) See Footnote (1), Section 2.4.1 first page

APPENDIX 3.2.1

METHODOLOGY EMPLOYED IN ESTIMATING THE POPULATION-CARRYING CAPACITY OF THE LAND

A composite of three agricultural suitability maps[1] , each covering a region of Malawi was prepared and enlarged photo-mechanically to the scale of 1:500,000. Each of the maps showed (under common classification) areas of high, medium, low and very low potential for agriculture; and marginal and unsuitable areas for agriculture. The NPDP team superimposed on this map, maps, showing areas designated for non-agricultural uses such as forest reserves, national parks and game reserves etc., and area with physical constraints such as steep slopes (with gradients of 12% and above) and marsh. These areas were eliminated and the remaining areas were measured and tabulated by class of suitability for agriculture and by district. (See column 2,4,6 and 8 in Table 3.2.3).

The minimum land requirement for food production for an average-size family (4-5 persons) was determined on the basis of:

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(1) Source: - "The Physical Environment of Northern Nyasaland: with Special Reference to Soils and Agriculture". Anthony Young and Peter Brown. Government Printer, Malawi. 1986.

- "The Physical Environment of Central Malawi with Special Reference to Soils and Agriculture". Anthony Young and Peter Brown. Government Printer, Malawi.

- "The Soils of Southern Malawi" by Alan Stobbs 1966. Directorate of Overseas Services.

(a) Staple food production for family consumption;

(b) cash crop production (for selling to the urban population, for local processing and/or export);

(c) crop yield statistics for maize production obtained from the Land Husbandry Department, MOA and from NSSA;

(d) the calorific requirements of maize for a family to obtain self sufficiency in food. The requirement of 2000 calories which was obtained from the MOA results in an annual requirement of 219 Kg of maize per capita; and

(e) on the assumption that current farming practices will not change much during the plan period.

The required minimum land holding sizes were obtained as follows:

0.73 ha. on high potential soils
1.56 ha. on medium potential soils
2.19 ha. on low potential soils

The assumed yields per ha. for maize are:

high potential soils	15 bags per ha. or 135 ton/Km^2
medium potential soils	7 bags per ha. or 63 ton/Km^2
low potential soils	5 bags per ha. or 45 ton/Km^2

In the year 1980/81, the average cash income for a rural family from agricultural production amounted to K57.83 (NSSA). Allowing for inflation of 15%, the equivalent cash income for the year 1986 is estimated to be K120. Allowing for at least the same cash income, the additional land areas required for cash crops are:

0.73 ha. on high potential soils
1.56 ha. on medium potential soils
2.19 ha. on low potential soils
(0.73 ha. of high potential soil can grow 11 bags of maize, which is 990 Kg at 12.22 tambala per Kg, amounting K120.98).

The minimum holding size for a rural family of 4-5 is therefore estimated to be:

1.46 ha. on high potential soils
3.12 ha. on medium potential soils
4.38 ha. on low potential soils

Based on the minimum holding sizes per family and the avaialable arable soils per district, the rural population carrying capacities of land have been calculated and tabulated (Section 2.1 Table 2.1.2, Columun 9). Analysis of these figures, shows that the rural population carrying capacity of the land for the whole country is 11,906,276; i.e. 2,658,000 in excess of the projected rural population of 9,248,300 people.

Comparing the land carrying capacity of the population with the future rural population (natural growth) by district, an indication is obtained as to the districts in which the future rural population will exceed the land carrying capacity of the population. The rural population per district is calculated by subtracting planned urban population from the district's total population due to natural growth (Appendix Table 2.2.1).

APPENDIX 4. THE IDENTIFICATION OF URBAN AREAS CENSUS DATA: 1966 AND 1977

According to the census definition of "urban", there were 203,303 persons residing in the urban areas of the country in 1966, representing approximately 5% of the total population of 4 million persons in the year. The 1977 census results on the other hand, indicate that there were 470,659 persons living in urban areas, representing 8.5% of the national population of 5,547,460. There was, therefore, an urban population growth rate of 8% per annum between the two census periods. Assuming that the national natural population growth rate of 2.9% also holds for the urban areas, the 8% annual urban growth rate entails a recognizable level of rural-to-urban migration between 1966 and 1977.

Adjustments in Census Information

In order to estimate past urban growth rate and future urban population for physical planning purposes, this study has made adjustments in the census data which give the number of urban places existing in 1966 to be the same as in the 1977 census data. This study has taken into consideration two growth/development factors in making the adjustments: First the boundary changes of urban built-up areas which had occured between 1966 and 1977 (Table 4.4); and secondly the number of rural settlements which experienced growth/development during the 1966-77 period and thus acquired urban characteristics.

The latter were identified on the basis of the results of the Central Place Survey of the types and levels of all existing services/facilities in the country. (Report not yet released).

A third reason for the adjustments made in this study is the definition of "urban" in the introductory page of this study. After identifying all urban areas in the country, detailed 1977 census results were used to estimate the size of the urban population. The 1966 urban areas listed in Table 4.4 with adjusted population have been taken as given and have been compared to the expanded 1977 urban place list with appropria-

tely adjusted urban population.

There is no universally accepted definition of "urban" in the academic sense or in the field of planning and public administration, although cities and towns are generally considered as urban places. Some demographers, planners and administrators define "urban" on the basis of a certain range of size of population. For example, in Kenya a town is defined as a population centre inhabited by 2,000 people or more. Others define "urban" on the basis of the level of non-farm activities and social/ physical infrastructure existing in a particular settlement, even though that settlement may have a relatively small population of say 500 or 1,000 perons. In this study the basis for identifying urban areas is the types and levels of non-farm activities, services and infrastructure existing in a locality as defined (Page 1).

APPENDIX 6.1

CALCULATION OF HECTARAGES:

GENERAL LAND USE AND NATIONAL PHYSICAL CONSTRAINTS

The data presented in Table 6.2 were compiled from information obtained from the Lands Department, Land Husbandry Division, M.O.A, Survey Department and topographical maps at the scales of 1:50,000; 1:1,000,000 and 1:250,000. Calculations from the maps were made by the use of planimeter. The NPDP team worked in close collaboration with the Land Husbandry Division to obtain the land use hectarages under columns 3,4, 9 and 10.

Total Land Area of Malawi (Column 2)

The data on the total land areas of Malawi and each of the 24 districts were obtained from the Survey Department and the Final Report of the 1977 Population Census. The total land area of 94,274 Km^2 does not include the areas covered by Lakes Malawi, Malombe, Chiuta and Chilwa.

Estates and Small Holdings
Under the Smallholder Agricultural Project

The area occupied by estates (Column 3) and small holdings under the Smallhoder Agricultural Project (Column 4) were calculated from 1:50, 000 scale maps obtained from Lands Department and the Development Division of the Ministry of Agriculture.

Scattered Settlements and Nucleated Settlement Gardens

Estimate of the area of land under scattered settlement gardens (on-farm human settlements) was made as follows: The number of the rural scattered population (given in Table 3.1.3) was multiplied by the mean holding size of land required to support a household and divided by the average household size. The mean holding size and average household size were obtained from the National Sample Survey of Agriculture 1980/81.

The methods used to obtain the area of Land under nucleated

settlement gardens was similar to the preceding. The only difference being that the population used was that of the nucleated villages and towns. It was assumed that in all human settlements in Malawi, with the exception of households in the urban areas of Mzuzu, Lilongwe, Zomba and Blantyre, every household has a garden for cultivation whether or not they have a non-farm employment. Even though some households in the above-mentioned places may have gardens, these are usually within the boundaries of the urban area. Counting the hectarages of the gardens, therefore would have involved a double counting as those gardens are part of the urban hectarage.

Land Area Covered By Nucleated Human Settlement(1) (Column 7)

The built-up areas of nucleated human settlements were identified from aerial photographs (Scale 1/25,000) covering 19 urban places in Malawi. The area covered was cross-checked on the corresponding land use zoning plans or schemes and actual measurements of land area were taken from the plans. For those nucleated settlements without aerial photograph or zoning plans/schemes estimates were made on the basis of comparable size of population and levels of non-farm uses. For example Kamwendo Population 1,000 is a rural market centre (in Machinga District) and is covered by aerial photographs. Sinyala (in Lilongwe District) has about the same population and level of non-farm uses but no aerial photo coverage. It was therefore assumed that the built-up area of Sinyala would be about the same as that of Kamwendo.

INFRASTRUCTURE : COLUMN 8 OF TABLE 6.2

Areas covered by major infrastructure considered here included the total right of way or way-leave of roads, railways and electricity, and areas covered by airfields/airstrips. The total area of the roads was calculated from data on road reserve

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(1) Nucleated human settlements include urban areas and village clusters. The latter is used to distinguish between nucleated villages and scattered rural settlements as defined in Section 6 of Land Use.

or right of way given in the Road Act. Data on way-leave for electricity transmission were obtained from ESCOM and those for railways were obtained from Malawi Railways Limited.

Way-leave for roads and power transmission within the urban areas of Blantyre, Lilongwe, Zomba and Mzuzu were exclude because they were calculated as part of the urban hectarage.

SWAMP FLOOD PLAINS, DAMBOS (COLUMN 11)

The areas covered by swamps and flood plans were calculated from topographic maps at the scale of 1/250,000.

STEEP SLOPES (COLUMN 12)

The areas covered by steep slopes with a gradient of 12% and over were calculated from topographic maps at the scale of 1/50,000. The areas were mapped by the Land Husbandry Division of the Ministry of Agriculture. The Ministry of Agriculture does not recommend areas with such slopes to be used for farming.

Trends in the Physical Development of Major Human Settlements

Urban land use data on changes in built-up areas reflect trends not only in urban development but also in socio-economic development. To determine the rate of growth as reflected in changes in built-up areas, existing land use hectarages in all small farms, large towns and the two cities of Lilongwe and Blantyre were calculated and compared to existing land use hectarages about ten years later.

Land use information was transfered from aerial photographs to outline zoning plans and the hectarages were measured. The base year varied because the aerial photographs were not taken during the same year for all the urban areas, as can be seen in Table 6.4. A meaningful comparison nevertheless, can still be made between for example, physical development trends in Balaka from 1973 to 1982 and Ngabu from 1972 to 1982. The annual increases

in the built-up areas were very negligible in 94% of all the small towns, large towns and cities.

As the study deals with existing land use, calculations of hectarages are based on the built-up areas or man-made physical environment. For example, the land designated for residential use in an urban area may be 50 Km^2 but the existing residential use or built-residential land may be 15 Km2.

TABLE A.6.1

AREA COVERED BY MAJOR INFRASTRUCTURE

DISTRICT	ROADS (KM^2)	RAILWAYS (KM^2)	ELECTRIC POWER LINES	AIRFIELDS (KM^2)	TOTAL AREA (KM^2)	TOTAL %
CHITIPA	15.01	-	-	1.19	16.20	2.86
KARONGA	11.36	-	-	0.38	11.74	2.07
RUMPHI	21.97	-	0.05	0.10	12.12	2.14
NKHATA BAY	10.62	-	3.41	0.33	14.36	2.54
MZIMBA	60.84	-	0.95	0.27	62.06	10.96
NORTHERN REGION	119.80	-	4.41	2.27	126.48	22.34
KASUNGU	27.56	-	1.30	0.24	29.10	5.14
NKHOTAKOTA	11.85	-	5.21	0.19	17.25	3.05
NTCHISI	10.25	-	-	0.11	10.36	1.83
DOWA	23.05	2.56	1.54	-	27.15	4.80
SALIMA	12.90	3.72	3.17	1.67	21.46	3.80
LILONGWE	29.06	5.55	2.34	11.62	48.57	8.58
MCHINJI	17.28	3.90	0.72	0.25	22.15	3.91
DEDZA	30.39	2.38	2.39	0.66	35.82	6.33
NTCHEU	23.02	4.27	5.40	0.08	32.77	5.79
CENTRAL REGION	185.36	22.37	22.07	14.83	244.63	43.22
MANGOCHI	31.48	-	1.73	0.41	33.62	5.94
MACHINGA	18.17	15.33	1.96	-	35.46	6.26
ZOMBA	13.75	0.43	0.73	0.43	15.34	2.71
CHIRADZULU	7.04	-	0.61	-	7.65	1.35
BLANTYRE	12.99	3.41	5.64	1.37	23.41	4.14
MWANZA	11.50	-	0.98	0.03	12.51	2.21
THYOLO	11.01	2.74	0.49	0.06	14.30	2.53
MULANJE	14.48	-	0.70	-	15.18	2.68
CHIKWAWA	20.03	-	1.60	0.13	21.76	3.84
NSANJE	11.15	3.20	1.14	0.24	15.73	2.78
SOUTHERN REGION	151.60	25.12	15.58	2.66	194.96	34.44
MALAWI	456.76	47.49	42.06	19.75	566.07	100.00

Appendix 8.1
Fuelwood and Poles Balance — 1980

District	Supply m^3	Demand m^3	Balance m^3
North			
Chitipa	588,482	122,593	465,889
Karonga	437,482	160,827	276,655
Nkhata Bay	821,920	177,240	644,680
Rumphi	308,755	101,955	206,800
Mzimba	2,449,674	561,210	1,888,464
Total	**4,606,315**	**1,123,825**	**3,482,488**
Central			
Kasungu	601,869	244,098	357,771
Nkhotakota	264,347	101,487	162,860
Ntchisi	230,538	310,383	(79,845)
Dowa	325,583	689,550	(363,967)
Salima	188,062	135,956	52,106
Lilongwe	214,217	1,924,655	(1,710,438)
Mchinji	370,477	158,572	24,905
Dedza	391,593	359,120	32,473
Ntcheu	373,370	266,436	106,934
Total	**2,960,056**	**4,190,257**	**(1,230,201)**
South			
Mangochi	247,784	329,504	(81,720)
Machinga	128,101	170,276	(242,175)
Zomba	84,442	423,763	(339,321)
Chiradzulu	67,971	189,765	(121,794)
Blantyre	64,471	472,940	(408,460)
Mwanza	146,380	82,998	63,382
Thyolo	148,034	563,041	(415,007)
Mulanje	297,634	628,253	(330,619)
Chikwawa	184,380	253,329	(168,949)
Nsanje	11,567	138,649	(127,082)
Total	**1,380,764**	**3,452,510**	**(2,071,754)**
Malawi	**8,947,135**	**8,766,592**	**180,533**

Notes: 1) Supply and Demand figures are derived from information from "Malawi Fuelwood and Poles Project: IBRD/FAO - 1978" and "Wood Energy Project - Staff Appraisal Report ." World Bank - 1980 .

2) Demand figures are according to Malawi Fuelwood .

Appendix 8.2
Fuelwood Balance - 1985

District	Supply m^3	Demand m^3	Balance m^3
North			
Chitipa	617,187	141,676	475,511
Karonga	512,300	183,931	328,369
Nkhata Bay	852,411	202,569	649,842
Rumphi	347,892	116,539	231,354
Mzimba	2,340,968	634,809	1,706,159
Total	**4,670,759**	**1,279,524**	**3,391,235**
Central			
Kasungu	157,258	325,456	(168,198)
Nkhotakota	290,319	117,203	173,116
Ntchisi	117,207	325,685	(208,478)
Dowa	72,778	732,136	(659,358)
Salima	34,002	157,088	(123,086)
Lilongwe	213,851	1,982,044	(1,768,193)
Mchinji	85,395	216,167	(130,772)
Dedza	166,615	409,451	(242,836)
Ntcheu	122,425	306,059	(183,634)
Total	**1,259,750**	**4,571,289**	**(3,311,439)**
South			
Mangochi	75,240	379,665	(304,425)
Machinga	128,101	426,727	(298,626)
Zomba	84,102	496,154	(402,052)
Chiradzulu	5,923	219,207	(213,284)
Blantyre	64,471	544,361	(479,890)
Mwanza	81,772	96,033	(14,261)
Thyolo	22,242	623,512	(601,270)
Mulanje	66,722	713,683	(646,961)
Chikwawa	14,076	288,985	(274,909)
Nsanje	11,567	158,705	(147,138)
Total	**554,216**	**3,937,032**	**(3,382,816)**
National	**6,484,725**	**9,787,845**	**(3,303,120)**

Appendix 8.3
Fuelwood Balance - 1990

District	Supply m^3	Demand m^3	Balance m^3
North			
Chitipa	651,405	161,825	480,580
Karonga	550,539	210,224	340,315
Nkhata Bay	890,690	230,474	660,218
Rumphi	394,403	133,683	260,720
Mzimba	646,880	722,030	(75,150)
Total	**3,133,919**	**1,456,236**	**1,675,683**
Central			
Kasungu	157,258	453,245	(295,987)
Nkhotakota	280,955	135,840	145,115
Ntchisi	100,691	370,499	(269,808)
Dowa	72,778	834,327	(761,549)
Salima	34,002	181,079	(147,077)
Lilongwe	211,331	2,258,757	(2,047,426)
Mchinji	85,395	260,899	(175,504)
Dedza	142,424	472,204	(329,780)
Ntcheu	103,389	352,734	(249,345)
Total	**1,107,223**	**5,319,584**	**(4,149,361)**
South			
Mangochi	76,524	448,716	(372,192)
Machinga	128,101	493,472	(365,371)
Zomba	84,102	565,838	(481,736)
Chiradzulu	5,923	253,665	(247,742)
Blantyre	64,471	628,816	(564,345)
Mwanza	81,722	110,686	(28,964)
Thyolo	22,242	697,741	(675,499)
Mulanje	66,722	815,194	(748,472)
Chikwawa	14,076	329,605	(315,529)
Nsanje	11,567	181,859	(170,292)
Total	**555,550**	**4,525,692**	**(3,970,142)**
National	**4,859,692**	**11,303,512**	**(6,443,820)**

APPENDIX 8.4 FUELWOOD BALANCE - 1995

District	Supply m^3	Demand m^3	Balance m^3
North			
Chitipa	692,990	184,789	508,181
Karonga	597,505	241,658	355,847
Nkhata Bay	268,347	262,080	606,267
Rumphi	387,303	152,153	225,150
Mzimba	646,880	818,927	(172,047)
Total	3,193,005	1,659,607	1,533,398
Central			
Kasungu	157,258	582,648	(425,390)
Nkhotakota	186,497	156,439	30,058
Ntchisi	101,799	363,323	(261,524)
Dowa	72,778	839,862	(767,084)
Salima	34,002	181,878	(147,876)
Lilongwe	193,799	2,315,375	(2,121,576)
Mchinji	68,879	285,339	216,460
Dedza	175,195	536,350	(361,163)
Ntcheu	104,497	405,037	(300,540)
Total	1,094,704	5,666,260	(4,571,556)
South			
Mangochi	76,104	486,027	(409,923)
Machinga	128,101	568,632	(440,531)
Zomba	84,102	639,520	(555,418)
Chiradzulu	5,923	290,979	(285,056)
Blantyre	64,471	720,210	(655,739)
Mwanza	81,772	127,069	(45,297)
Thyolo	22,242	773,763	(751,521)
Mulanje	66,722	925,014	(858,292)
Chikwawa	14,076	377,159	(363,083)
Nsanje	11,567	209,136	(197,569)
Total	555,080	5,117,509	(4,562,429)
National	4,842,789	12,443,376	(7,600,587)

APPENDIX 8.5 FUELWOOD BALANCE - 2000

District	Supply m^3	Demand m^3	Balance m^3
North			
Chitipa	669,546	213,339	456,207
Karonga	179,225	296,861	(117,636)
Nkhata Bay	523,326	299,093	224,233
Rumphi	55,311	174,404	(119,093)
Mzimba	646,880	932,623	(285,743)
Total	2,074,288	1,916,320	157,968
Central			
Kasungu	157,258	795,514	(638,256)
Nkhotakota	167,857	180,928	(13,071)
Ntchisi	101,799	414,154	(312,355)
Dowa	72,778	958,823	(886,045)
Salima	34,002	240,487	(206,485)
Lilongwe	194,804	2,602,854	(2,408,050)
Mchinji	72,050	341,761	(269,711)
Dedza	175,524	618,353	(442,829)
Ntcheu	104,497	466,606	(362,189)
Total	1,080,569	6,619,560	(5,538,991)
South			
Mangochi	53,255	596,462	(543,207)
Machinga	128,101	657,890	(529,789)
Zomba	84,102	744,169	(660,067)
Chiradzulu	5,923	337,640	(331,717)
Blantyre	64,471	831,712	(676,241)
Mwanza	81,772	146,763	(64,991)
Thyolo	22,242	871,331	(849,089)
Mulanje	66,722	1,060,135	(993,413)
Chikwawa	14,076	432,649	(418,573)
Nsanje	11,567	240,533	(228,966)
Total	532.231	5,919,284	(5,387,053)
National	3,687,088	14,455,164	(10,768,076)

REPUBLIC OF MALAWI

OFFICE OF THE PRESIDENT AND CABINET
DEPARTMENT OF TOWN AND COUNTRY PLANNING

NATIONAL PHYSICAL DEVELOPMENT PLAN

VOLUME II - BACKGROUND STUDY REPORT

NATIONAL PHYSICAL DEVELOPMENT PLAN PROJECT
UNDP/UNCHS(HABITAT) PROJECT MLW/79/012

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