"THE RELATIONSHIP OF MOSHI'S INDUSTRIAL SECTOR WITH ITS IMMEDIATE HINTERLAND"

By

FRATRES STONEHOUSE KUTOLIE

DIP. ED. (DSM), B.A. (ECON.)(HONS.) DSM.

A THESIS PROJECT SUBMITTED IN "PART" FULFILMENT OF THE REQUIREMENT FOR THE DEGREE OF MASTER OF ARTS IN PLANNING IN THE UNIVERSITY OF NAIROBI.

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D E C L A R A T I O N

This Thesis is my original work and has not been presented for a degree in any other University.

KUTOLIE, F.S.
(Candidate)

This Thesis has been submitted for examination with my approval as University Supervisor.

Subir K. Saha
(Supervisor).

A C K N O W L E D G E M E N T

I am greatly indepted to the United Republic of Tanzania, especially the Ministry of Lands, Housing and Urban Development for sponsoring my studies at the Universit- of Nairobi, 1979/81.

Special thanks and gratitude are directed to my supervisor, Mr. Subir Saha, for his wise guidance, constructive criticisms and continuous encouragement. I am extremely grateful to Prof. A. Subbakrishniah for having helped me in conceptualizing the topic in the initial stages.

Many thanks also go to various officers who assisted me in various ways especially Mr. Mwakanki and Mr. Peter Mushi of T.C.C.C. Ltd., Moshi, Mr. Baruti, Regional Town Planner, Moshi and Mr. Alute of Coffee Authority of Tanzania, Moshi.

I gratefully acknowledge Mr. Joseph Masao of Uru Secondary School and his students who assisted me in the field work.

Lastly,but not least,I express special gratitude to my wife, Balbina for her encouragment and prayers who gave me inspiration to accomplish this work. I congratulate her for her courage and determination in running our house on her own while I was away in Nairobi for postgraduate studies. Also special thanks go to her sister - Angela typing the work.

D E D I C A T I O N

This Thesis is dedicated first and foremost to my parents Morris Mushi and Aurelia Mchomba. It is also dedicated to my young children who persevered my long absence. Let them inherit the spirit of academic struggle as they grow up.

A B S T R A C T

This study examines the relationship of Moshi's industrial sector with its immediate hinterland. The aim is to find out the concrete relationships between the two sectors in terms of economic linkages, both forward and backward, and development disparity.

An analysis of the town is made by examining the historical development of the town, its population and its various land uses with an emphasis on the industrial sector and whether prospects of further industrialization do exist.

The study discusses the hinterland's economic infrastructure, demographic and physical aspects as well as the resource base. The latter parameter is examined to see how far it has been exploited by the establishment of industries in the town linked to the resource hinterland.

This study has found out that there is development gap between the town and the hinterland. Further, the industrial linkages that exist are weak and for the most part are not geared towards the development of the hinterland; rather the town is parasitic on the latter. The established industries are more externally-oriented with external linkages rather than internal. Although

the growth of the town has depended mainly on the resource hinterland, the former gives little in return. These problems are common to most industrial towns in Tanzania whereby they simply act as a link between their respective hinterlands and an external economy.

The study has provided a number of proposals which, if implemented, will significantly alleviate the problems discussed. The suggestions put forward call for a change in the agricultural system, which is mono-cultural, and to effect population resettlement in the less densely populated areas of the region. To reduce unemployment and under-employment, industrial investment, in addition to increased agricultural productivity is necessary. In the town, the kind of industries to be established are those that improve the industrial linkages and have direct relatio ships, as far as possible, to the resources of the hinterland. It is through this way that an integrated and balanced growth of the town and the hinterland can be effected. The recommendations can be attained through deliberate government initiative and the will and co-operatic of the people. It is hoped that this study will go a long way in giving guidelines to alleviate problems of the kind discussed here not only in Kilimanjaro area, but also in all areas facing similar problems in Tanzania, in particular, and the Third World in general.

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CHAPTER ONE

1:0:0 INTRODUCTION:

1:1:0 Introduction:

Mothi town is one of the designated growth centres in Tanzania. The declared policy is that it is supposed to act as a focal point of development with associated spread effects to the immediate hinterland, Kilimanjaro Region, a basically rural area. Under this policy industries established in the growth centres must have positive economic effects upon the surrounding rural areas by promoting rural growth, reduce rural-urban inequality generate employment and in general improve overall standard of living. Furthermore this policy was also geared towards the reduction of the gravitational force that Tanzania's principal urban centre, Dar-es-Salaam, had as well as helping in dispersing investment opportunities throughout the country and thereby creating a more equitable development throughout the country.[1]

This study focuses on the relationship of Moshi's industrial sector with the immediate

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1. Government of Tanzania, Third Five Year Plan 1976/81, p. 43.

hinterland in terms of economic linkages. As far as rural-urban differentials are concerned as well as the nature of investments in colonial and neo-colonial type of economies such as Tanzania most industrial investments are located in urban centres. The production of raw materials however is carried out in rural areas (HINTERLAND) while investments are done in towns (GROWTH CENTRES). In economic terms there should be growth zones, growth centres, with powerful agglomerated industries having effective linkages to the rural areas thereby taking advantage of agglomeration economies, including backward and forward linkages.[2]

Moshi's main industries will be examined: Moshi Coffee Curing Works, Kibo Match Factory, Timber Utilization Factory, Tanneries Factory (hides and skins), Tanzania Bag Manufacturing Factory, all of these are located within the urban area mostly in the industrial area. Another agro-based factory is the sugar factory that is located 20 kilometres away from the town. The linkages that

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2. Hansen, N.M., Challenge of Urban Growth, 1975, p. 1.

these industries have with the rural hinterland will be ascertained in terms of raw materials utilization, employment and incomes, transportation links, resource exploitation etc.

1:2:0 Identification of the Problem:

In accordance with the policy of Tanzania's Ujamaa (Tanzania's socialism) industrial establishments in growth centres (i.e. urban areas) are supposed to promote rural development through the trickling down effects[3] thereby reducing rural-urban inequality and divergence. In developed countries (i.e. D.C.'s) such a policy has been pursued with very encouraging results; however in developing countries (i.e. L.D.C.'s) such as Tanzania the establishment of industries in urban areas (growth centres) has led to the under-development of the hinterland (or development of underdevelopment) - in other words the urban centres acting as core areas siphon off more resources than they can repatriate to the rural areas. This has caused rural-urban inequalities leading to a gap in development between the rural areas (HINTERLAND)

3. Keeble, D., Industrial Location and Planning in U.K. 1976, p. 5.

and urban centres (GROWTH CENTRES) in favour of the latter. This is particularly true of towns/cities that have developed out of external contradictions and characterized by an external imposition of an external economy that affects both the hinterland and the location of the town. Moshi town and its immediate hinterland is no exception to this principle.

Moshi town was established to exploit the potential resources of its rich hinterland not for the benefit of the latter but for the benefit of an external economy, the colonial power. Thus Moshi simply served as a centre in the export enclave, an area mainly specializing in the growing of coffee for export. The problem has further been aggravated because of the fact that the market for coffee is foreign and not local which is again, a basic feature of ex-colonial countries. Despite the fact that Moshi has been a designated growth centre for a long time[4] it has not been, to a significant extent, able to reduce the rural-urban differentials neither has the policy led, to an effective industrial

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4. Government of Tanzania, op. cit., p. 73.

linkage.[5] Furthermore problems of unemployment, migration, underdevelopment, inadequate infrastructural facilities and low incomes have tended to proliferate rather than being alleviated.

1:3:0 Aims and Objectives of the Study:

Having identified the problems, the study is therefore aimed at determining the existing economic linkages in spatial space between Moshi's industrial sector and its immediate hinterland. In general the objective is to appraise the extent in which Moshi town has effectively served as a growth centre. The main objective can be summarized as follows:-

1. To determine the existing linkages between Moshi's industrial sector and the hinterland.

2. To find out the divergences between the urban centre and the rural areas.

3. To find out what methods and policies that can be used to reduce the gap in development in the area under study.

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5. Hirshman, A.O., The Strategy of Economic Development 1958.

4. Applicability of the determined methods in a case study of Moshi Coffee Curing Works. This is the implementation phase.

With these objectives at hand it is hoped that proper and appropriate suggestions and proposals will be made in trying to promote a balance between the hinterland's resource base and the town's industrial base. This will lead to a stable and a more balanced growth of the town in relationship to its hinterland. Implied in these objectives is the fact that emphasis will be made on the examination of the functions and growth of Moshi town both as a growth and service centre; similarly the functions, and the resource patentialities of the hinterland will be analysed.

1:4:0 Assumptions:

In carrying out the study several assumptions have been taken into consideration as far as the identified problem is concerned. These are:-

1. It is assumed that there is a gap between Moshi town and the hinterland in terms of development.

2. It is assumed that, Moshi's growth and expansion has been primarily associated with the resource hinterland.

3. It is assumed that if rural-urban development gap is to be reduced then there should be integrated development of the urban industrial sector and the resource base of the hinterland.

It is hoped that this study will bring forth guidelines and proposals to help the government and other authorities interested in the development of the people to arrest or to reduce the rural-urban differentials on the bases of physical, demographic, economic and particularly industrial location considerations.

1:5:0 The Study Area:

The study area centres on the industrial activities of Moshi town and the related various land uses within the urban growth centre. Furthermore the economic and social infrastructure of the town will be considered. This has become significant because of the necessity to establish a balanced

growth of the urban centre through which spread effects should accrue and reach the surrounding areas for which it is supposed to serve.

The study discusses, interalia, the hingerland's economic infrastructure, demographic and physical aspects. In this view, therefore, the area under consideration will be Moshi town and its immediate hinterland which, for the purposes of this work, will be the areas on the slopes of Mr. Kilimanjaro and the Pare Hills. Together these areas form one administrative region known as Kilimanjaro. The Regional Headquarters is at Moshi town.

The hinterland region produces coffee, sugar, bananas, maize, wheat, timber, fingermillet, beans, sisal, hides and skins and cotton. However the main commercial crop in terms of monetary returns is by far coffee. Some of these products are used as inputs raw material inputs for the industries in Moshi town.

The region is polarized around Moshi urban centre. The area constitutes a suitable regional entity whose delimitation is based on several parameters such as population density,

distribution pattern and migration characteristics; physical and ecological factors; ethnic homogeneity and even cultural values.

That Moshi's hinterland is more or less, equivalent to the Kilimanjaro administrative region is strengthened by the definition of hinterland itself. The hinterland may be defined as the area of effective influence of the town.[6] In this particular assertion Moshi town already constitutes a dominant core for the whole of Kilimanjaro Region with commercial connections reaching every part of the region. A comparatively well-developed road-network radiating from the town to the various parts of the region further strengthens the view that the town is a core area. Hierarchical position of Moshi as a service centre is about seven times higher than one of the next biggest service centre in Kilimanjaro Region.

The region encompasses the areas whose economic activities such as banks, insurance, storage

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6. Bendavid, A., Regional Economic Analyis for Practitioners.

depots and wholesale trade among others are directed towards Moshi rather than towards other central places of the same order such as Arusha and Tanga. However the importance of Moshi as the core area from which development is to spread is a great question mark and this work hopes to show through the nature and strength of the identified relationships between the core and the periphery.

Therefore for the reasons given above the study area covers the Moshi urban centre and its hinterland which, in this particular case, is the Kilimanjaro Region, Moshi town as the core area and the hinterland as the periphery. Moshi Coffee Curing Factory was selected as a special case for deep study.

1:6:0 Research Methodology:

In the collection of data necessary for the study various data gathering tools were employed. These were the questionnaire, interviews and secondary sources of data utilising published and unpublished documents.

The purpose of administering the questionnaire is to determine income levels of both urban and rural

areas, employment characteristics and economic linkages between Moshi town and the hinterland. The questionnaire was administered to the workers of Moshi Coffee Curing Factory and to the farmers of two divisions namely Kibosho and Uru within the hinterland using statistical sampling techniques.

Interviews were carried out with various government and parastatal institutions to get current information as regards production, employment, income, capacity utilization of the factories, ownership of establishments as well as industrial inputs. In this case the following were consulted:-

(a) Regional Agricultural Officer

(b) Regional and District Trade Officers

(c) Regional Town Planner

(d) Office of the Prime Minister

(i) Regional Development Director's Office.

(ii) Officer in charge of Nationalised Coffee Estates in Kilimanjaro Region.

(e) Bureau of Statistics

(f) Kilimanjaro Uremi Ltd. (successors to the dissolved Kilimanjaro Co-operative Union).

(g) Tanzania Coffee Authority Headquarters at Moshi.

(h) Moshi Town Council

(i) Offices of the following factories:-

Moshi Coffee Curing Works, Tanzania Tanneries Ltd., Kibo Match Corporation, Bag Corporation Ltd., Tanganyika Planting Company (sugar refinery) and Brewery Battling Plant.

These factories were selected because they are the biggest in Moshi in terms of employment and output. The interviews were carried out extensively in the urban area. However it was not possible to visit every division in the hinterland due to its large size; therefore only two divisions were selected for personal interviews, while the coffee estates located in these divisions were visited for the purpose of finding out production level, employment, income and transportion links to the town.

For other information published and unpublished documents were consulted to provide background knowledge on the role of an industrial town, growth centre concept, the idea of core and periphery as well as relevant information that could not be found from the field research.

The analysis of Moshi town will be centred upon the population in terms of composition, sex ratio, growth rates, population projections for 1980, 1990 and 2000, employment projections for similar periods and number of households. In relation to this industrial location will be considered and other aspects of the economic base such commercial activities, infrastructural facilities and the various land uses. The analysis of an urban area is never complete unless the physical characteristics are given due emphasis. Examination of the existing space standards will be made with a view of giving recommendations for the projected land uses. Finally the relationships that the industrial sector has with the immediate hinterland will be identified.

As far as the hinterland is concerned the following important aspects will be considered: The physiographic characteristics such as topography, orography, soils and hydrology will be analysed- other

factors include the resource base, population characteristics, employment trends, infrastructure and the main economic linkages that the hinterland has with the town. Such linkages are: forward and backward production linkages, distribution linkages. Commercial and service linkages data analysis techniques particularly location quotient (L.Q.) and correlation coefficient will be employed.

The following maps are essential for the study: location maps, existing and potential land use maps for both the urban and the interland areas; and a map showing industrial activities and their relationships to the hinterland.

The digested findings of this works will be applied in a case study of Moshi Coffee Curing Factory which is one of the largest factories in Moshi. The aim here is to see how far the recommendations are applicable in a real situation exercise.

1:7:0 Scope and Limitation:

As discussed earlier the main focus of my study is to relate Moshi's industrial sector to the immediate hinterland. The idea is to analyse Moshi's industrial sector with respect to industrial production, size and number of industrial establishements as well as

the town's population trends and other ~~land~~ related land uses. Definitely industrial land use will be given prominence. Furthermore, the emphasis will be directed towards the analysis of the hinterland in terms of resources, population and employment and infrastructure.

In the urban area of Moshi only the main industries will be considered since field survey for every industrial establishment could not be carried out due to time and financial constraints. In the rural area (hinterland) only several divisions (Uru and Kibosho) were visited. Another serious limitation for the study was the fact that some officials consulted simply refused to co-operate; or where they marginally co-operated the data given was not reliable.

CHAPTER TWO

2.0.0. ANALYSIS OF MOSHI TOWN

2.1.0 Historical Background of Moshi

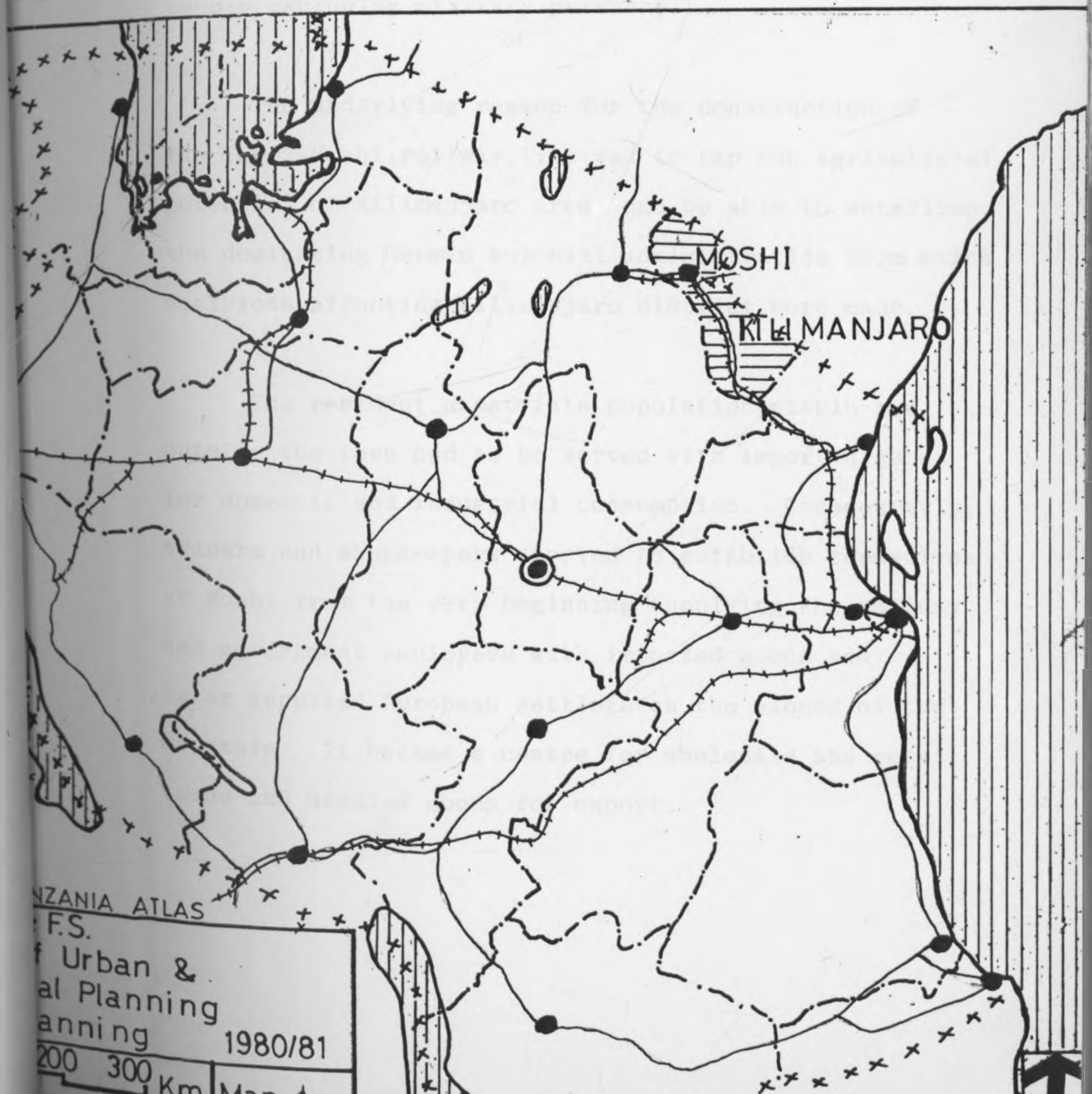
The tribe that is within the vicinity of Moshi town area is the Chagga who have inhabited the western, southern and eastern Kilimanjaro mountain region for more than five hundred years. By 19th century, this area was ruled by many sovereign and independent Chagga Chiefs. One of the chiefdoms was known as Moshi which was founded by the then famous Chief Mandara's grandfather.

The Germans established the first military post in the 1890's on the slopes of the mountain at Moshi, now known as Old Moshi. Since 1911, with the arrival of the Tanga Railway that kept to the lower plains 10 kilometres from Old Moshi, the present Moshi township began to grow up. For about 18 years, Moshi was the terminus of the Tanga railway which was then finally extended to Arusha in 1929 under the British trusteeship. The British made Moshi town as the administrative headquarters of the Moshi District, then part of Northern Province, and became by and large, the commercial and industrial centre of Kilimanjaro area now known as Kilimanjaro Region, one of the 20 regions of Tanzania mainland.

MOSHI NATIONAL SETTING

LEGEND

- NATIONAL BOUNDARY
- REGIONAL BOUNDARY
- REGIONAL HQTS
- CAPITAL
- MAIN ROAD
- RAILWAY
- STUDY AREA
- WATER BODIES



NZANIA ATLAS
F.S.
f Urban &
al Planning
anning 1980/81
200 300 Km Map 1

In the 1930's, the British layout plans outlined the to-day's landuse charateristics of Moshi town. There was a high density grid-iron pattern area for native people, a commercial area for Asians, (particularly Indians) and a dominant boma area, with military barracks, and low density residential area for Europeans in its surroundings. Estimated on the basis of an aerial photograph in 1937, Moshi town had a population of 1000 people excluding military personnel.

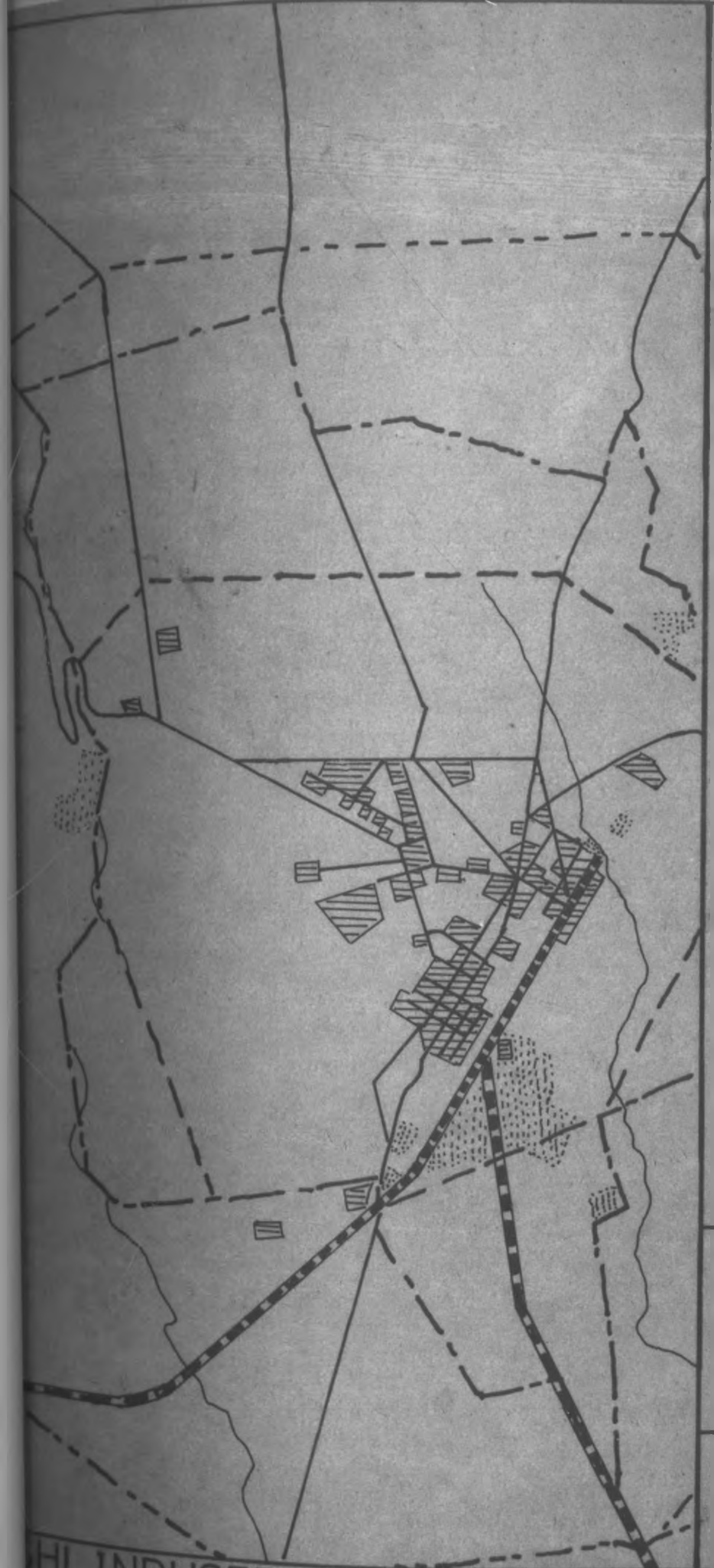
The underlying reason for the construction of the Tanga-Moshi railway line was to tap the agricultural potential of Kilimanjaro area and be able to establish the dominating German colonial administration from which decisions affecting Kilimanjaro district were made.

The resident expatriate population within and outside the town had to be served with imported goods for domestic and industrial consumption. Consequently, traders and shopkeepers started to establish themselves at Moshi from the very beginning supplying the railway and government employees with imported goods and later supplied European settlers on the slopes of the mountain. It became a centre for wholesale and retail trade and handled goods for export.

Later, numerous small-scale industries sprang up within the township. These were repair workshops, garages, bakeries, flour milling, laundries and beverage bottling to serve the resident population and the people living in the hinterland. Most of these small industrial establishments were located in the town centre and owned by Asians.

After independence, Kilimanjaro Region was carved out of the giant Northern Province and the headquarters of the new region became Moshi, strengthening further its importance as an administrative, commercial,industrial and social centre for the region. In pursuance of this view several national industries were established in the late 1960's and early 1970's - backed by strong public investment policy. With increased provision of infrastructure facilities and services over the years, the town has become an attractive centre to which people from all parts of the region converge for a variety of reasons, such as recreation, business, education and health.

In summary, since the early part of this century, Moshi town has progressively grown from a German military and administrative post and a railway station to a modern commercial, industrial and administrative centre for Kilimanjaro Region.



MOSHI

TOWN GROV

LEGEND

- Developed are
- Old boundary
- New boundar
- Extended bo
- Main road 1
- Railway
- Industrial a

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M A Planning 198

MAP NO 3

HI INDUSTRIAL SECTOR

2.1.1. Location

The total town area is 86.8 sq. km. which includes the proposed extensions of the town. The town itself is situated just south of 3^{o} south of the Equator and just east of the 37^{o} longitude east of Meridian of Greenwich. Moshi is a twin-sister town of Arusha and connected to it by the Nairobi-Dar-es-Salaam highway; the Moshi - Arusha section of the highway has the highest daily traffic flow on the rural roads in Tanzania according to the traffic counts carried by the Ministry of Works in 1973. This is due mainly to the dense population on the slopes of Mt. Kilimanjaro and Mt. Meru which generate much traffic to Moshi and Arusha towns. In fact, some workers reside in one of the two towns while working in the other due to the close proximity.

Internal and international air traffic use the Kilimanjaro International Airport (K.I.A.) located between Moshi and Arusha and serving both towns.

Before the closure of the Kenya/Tanzania border in 1977, Moshi was linked to Mombasa by both road and railway then generating goods and passenger traffic between the two towns. Since the closure of the boarder, this traffic has virtually stopped.

Apart from the fact that Moshi is located in such a way that it is linked to most parts of the country and other countries by road, railway and air, Moshi, in conjunction with Arusha, is the gate-way to the most famous tourist attractions in East Africa including Mt. Kilimanjaro National Parks, Ngorongoro Crater, and Serengeti National Park among others. One might say that this location factor by itself, has acted as an inducement to the faster growth of the town and that the people including those in the hinterland have greatly benefitted. However, it is not an objective of this study to go deep into reasons why Moshi was located where it is.

2. 2.0 Physical Features of Moshi Town

Moshi town, centre of Kilimanjaro Region, is situated on the southern slopes of the Mt.. Kilimanjaro. The altitude of the northern area of the town is about 950 m (3107 ft) above sea-level while in the southern parts, it is about 750 m (2457ft) above sea level. Despite the fact that the town has an altitude difference of 200 metres, the inclination of the slope on the average is about 1:40 only, giving a satisfactory terrain which is not too steep for building purposes.

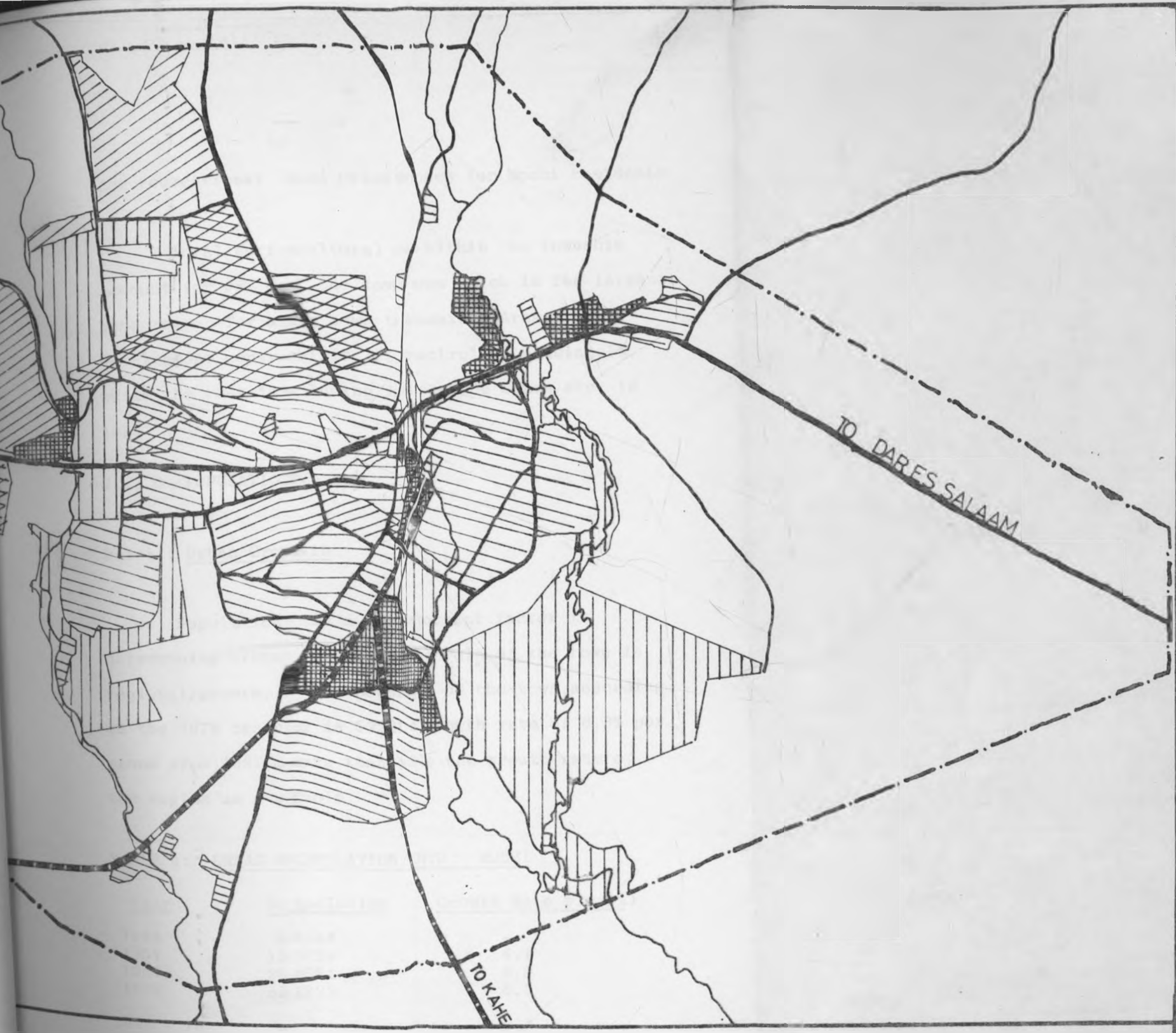
There are two main streams which pass through the town. One, Karanga River, is on the western part of the town, while Rau River, the bigger of the two, is on the eastern sides. Both originate on the upper slopes of the mountain whereby they are joined by numerous other streams before they reach the lower slopes. There is a brook which passes near the town centre but whose origin is within the boundaries of the town.

2.2.1 Soils and Water

The soils within the township are greyish silty types which have developed by weathering and redecomposition of the weathering products. Such type of soils is sticky when exposed to water, but does not render building difficult. On the southern corner of the town there is a swampy area which can be drained. On account of the fact that the town is situated on the plains, storm water which flows down the slopes during the heavy rains can be disastrous to the residents as it has happened on several occasions.

2.2.2. General Land-use

There arescattered woods throughout the town area. There exists a well-preserved Rau forest situated just to the south-east from the town with an area of about 410 hectares. In future, this can be of great value



MOSHI INDUSTRIAL SECTOR AND HINTERLAND

TOWN LAND USE 1980

LEGEND

- TOWN BOUNDARY
- RESIDENTIAL
- INDUSTRIAL
- EDUCATIONAL
- RECREATIONAL & NATURAL PARK
- PUBLIC PURPOSE
- COMMERCIAL
- NATIONAL HIGHWAY
- OTHER ROADS
- RAILWAY

SCALE 1 20000

0 1 2 KM

KUTOLIE F.S.
M.A. PLANNING
UNIV. OF NAIROBI
1980/81

MAP NO 4

for recreational and other purposes for Moshi residents.

Total agricultural areas within the township account for 68% of the town's area which is the largest proportion for any town in Tanzania. Area under development control is 17%, uncontrolled housing 1%, while the rest including forests, open space etc. is 14%.

2..3.O POPULATION

2.3.1 Urban Growth

Population is a very important factor in determining urban growth and the role of the town in regional growth. The population of the town, according to the 1978 census is 52223, a growth rate of 6.3% per annum from 1967, more than double the growth rate of the region as a whole.

TABLE 1: URBAN POPULATION GROWTH: MOSHI

Year	Population	Growth Rate p.a.(%)
1948	8048	-
1957	13726	6.1
1967	26864	6.9
1978	52223	6.3
1948 - 78	-	6.4

Source: Population Census 1948-1978.

Moshi experiences a relatively rapid population growth during the period 1957 to 1967 at 6.9% per annum. This was mainly due to the greater concentration of economic activities, particularly in the early years of indepe-ndence and the fact that there were no more restrictions as to movement to towns imposed by the colonial govern-ment.

The growth rate for 1967/78,6.3% per annum was less than that experienced in 1957/67 although Moshi was then a designated industrial growth centre.[1,2]

The rank order of towns in Mainland Tanzania is another parameter that can be used to measure Moshi urban growth. The town has changed its position in terms of population from 8th in 1948 and 1957, 5th in 1967 and 9th in 1978 while Dar es Salaam has always re-mained the first. At the national level, Moshi's position has declined. Looking at the 1978 census, most towns have experienced a massive increase in population. The main reason for such a rapid increase was due to the large immigrants to towns as a consequence of the nation-wide ruralisation programme that affected

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1 - Tanzania, Second Five Year Development Plan, 1969/74 Vol. I, pp. 180-181.

2 - Egero, B., Population of Tanzania, Bureau of Statistics 1973, p. 81

most of the rural population; however, Moshi's hinterland was only slightly affected in the sense that there was no significant movement of people from the traditional villages to the Ujamaa villages. Rank order of the first 11 Tanzanian towns can be seen in Table 2 for comparative purposes.

Although the rank of the towns depends on the size of the town and the rate of growth,in most cases, the increase in the population of the towns has been more due to the rate of growth than the extension of town boundaries.[3] Furthermore, the rate of growth is due to the natural increase and an influx of immigrants.

2.3.2 Inmigration and the growth of Moshi Town

On the basis of 1967 population data, the growth of the population of Moshi town has largely been due to inmigration.[4] Of the total urban population, approximately one third are born in Moshi

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3 - Egero, B., Ibid, p. 81

4 - Tanzania, 1967 Population Census Vol. 2, Bureau of Statistics, p. 28

TABLE 2: TANZANIA MAINLAND POPULATION AND RANK ORDER OF THE FIRST 11 TOWNS

Position	1948 Town Population		1957 Town Population		1967 Town Population		1978* Town Population	
1	DSM	69227	DSM	128742	DSM	272821	DSM	757346
2	Tanga	20619	Tanga	38053	Tanga	61058	Mwanza	110611
3	Tabora	12768	Mwanza	19877	Mwanza	34861	Tanga	103409
4	Mwanza	11296	Kig/Ujiji	16255	Arusha	32452	Mbeya	76606
5	Dodoma	9414	Tabora	15361	Moshi	26864	Tabora	67392
6	Lindi	8577	Mtwara/Mik	15266	Morogoro	25267	Morogoro	61690
7	Morogoro	8173	Morogoro	14507	Dodoma	23559	Iringa	57182
8	Moshi	8048	Moshi	13726	Iringa	21746	Arusha	55281
9	Iringa	5702	Dodoma	13435	Kig/Ujiji	21269	Moshi	52223
10	Arusha	5320	Lindi	10315	Tabora	21012	Kigoma	50044
11	Bukoba	3247	Arusha	10038	Mtwara/Mik	20413	Mtwara	48510
							Dodoma	45703
							Musoma	32058

Sources: 1. Recorded Population Changes 1948 - 67, Tanzania, CBS, 1968.
2. Population Census, Vol. 2 Dar es Salaam, 1970
3. 1978 Census Preliminary Report, C.B.S., 1980
* 1978 Population Census Analysis incomplete so far

Kig/Ujiji - Kigoma - Ujiji
Mtwara/Mik - Mtwara - Mikindani.

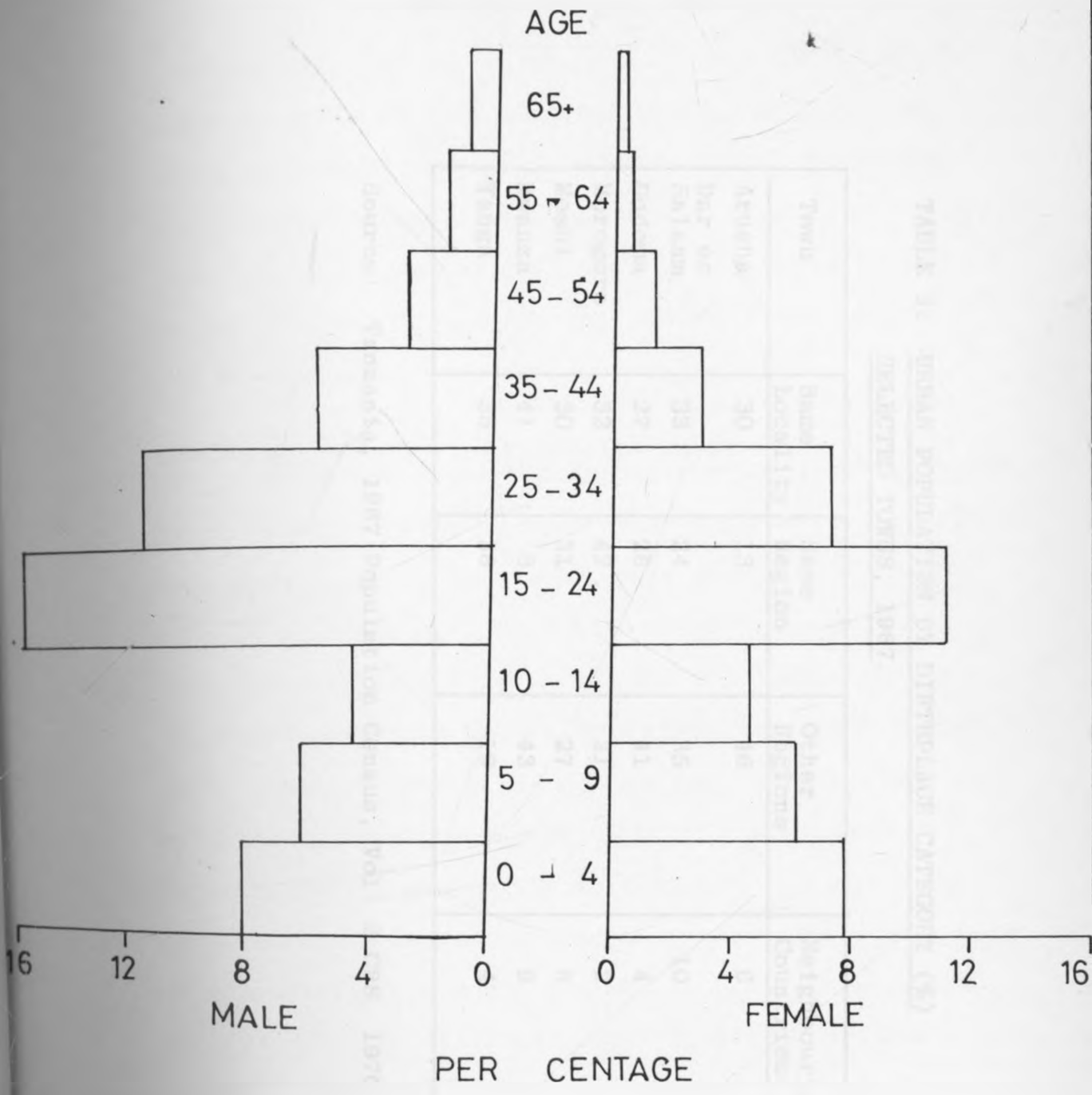
town (30%), 31% in Kilimanjaro Region and 39% in other areas. In other words, two main types of immigrants can be distinguished: those from Kilimanjaro Region in which Moshi is located and those coming from other areas resulting in a proportion in favour of the former category. However, the ratio of immigrants to those born within the town is 7:3 (70:30) signifying the importance of immigrants to the growth of the town.

Significant role of the distance factor can be highlighted when we look into the sources of migrant recruitment. This can be done by grouping recruitment regions into same Region, Neighbouring Regions and Remaining Regions. The movement to the town from each of the above categories declines respectively thus showing that the region surrounding the town is by far the most important source of immigrants. Table 3 shows how the above analysis has been derived.

Kilimanjaro Region is one of the regions identified with many migrants to urban areas amounting to 7% of the national urban migrants. However, Moshi town, according to the 1967 data, retained only 30% of these! Most of Kilimanjaro's migrants went outside the region mainly to Arusha and Dar es Salaam in search of employment

CHART I

MOSHI TOWN



POPULATION PYRAMID

TABLE 3: URBAN POPULATION BY BIRTHPLACE CATEGORY (%) : SELECTED TOWNS, 1967

Town	Same Locality	Same Region	Other Regions	Neighbouring Countries	Other Countries	Total
Arusha	30	13	46	6	5	100
Dar es Salaam	33	24	35	10	4	100
Dodoma	27	26	41	4	4	100
Morogoro	32	42	21	2	3	100
Moshi	30	31	27	8	4	100
Mwanza	41	3	43	9	4	100
Tanga	35	38	19	4	4	100

Source: Tanzania, 1967 Population Census, Vol. 2 CBS, 1970

opportunities[5]. One major conclusion arises from the above analysis in that in areas where opportunities for rural employment are small and where urban employment is limited, migrants from that region tend to go to the towns of other regions. This brings out clearly the negative relationship existing between Moshi town and its immediate hinterland.

Migration, essentially, is spatial redistribution of the population in a given area. In connection with this process, there is a consequent structural change as regards sex and age in the residential population of the receiving area, the town. The population movement largely consists of labour migration and tends to be very selective as regards sex and age which is well evidenced in the population of Moshi town. Here, it is dominated by men in the working age. Also, of equal importance, is the excess of young adults as seen in the Population Pyramid Chart No. 3. This is further amplified by the fact that Moshi's present sex ratio is 128 males per 100 females[6].

According to the 1978 census, there were 13,336 households in Moshi town giving an average size of a household as 3.9 people whereas in 1967, the average

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5 - Tanzania, Third Five Year Plan, 1976/81, 1976 p. 40

6 - Tanzania, 1978, Preliminary Census Report, 1980.

was 3.8 showing that there has been some change as regards the household size. However, the significance of household size factor can be seen when we correlate the urban household size to the rural household size. This will be done in the section attributed to hinterland analysis.

2.3.3 Population Projections for Moshi Town;

Population projection is a very important indicator for future planning purposes. Projected population gives us the size of population at a predetermined time period; on the basis of this estimated population we are able to predict within reasonable accuracy the essential requirements of that population in terms of employment, and the various land requirements for housing, commerce, public utilities, recreation, industry, transportation and community facilities. In projecting the population growth, I have assumed that the future growth of Moshi town is closely related to its past growth and as such I have used the growth rate of 6.3% per annum to project Moshi's population up to the year 2000. Table V (Chart II) shows that at the turn of the century the town's population will exceed 200,000 people.

CHART II MOSHI PROJECTED POPULATION

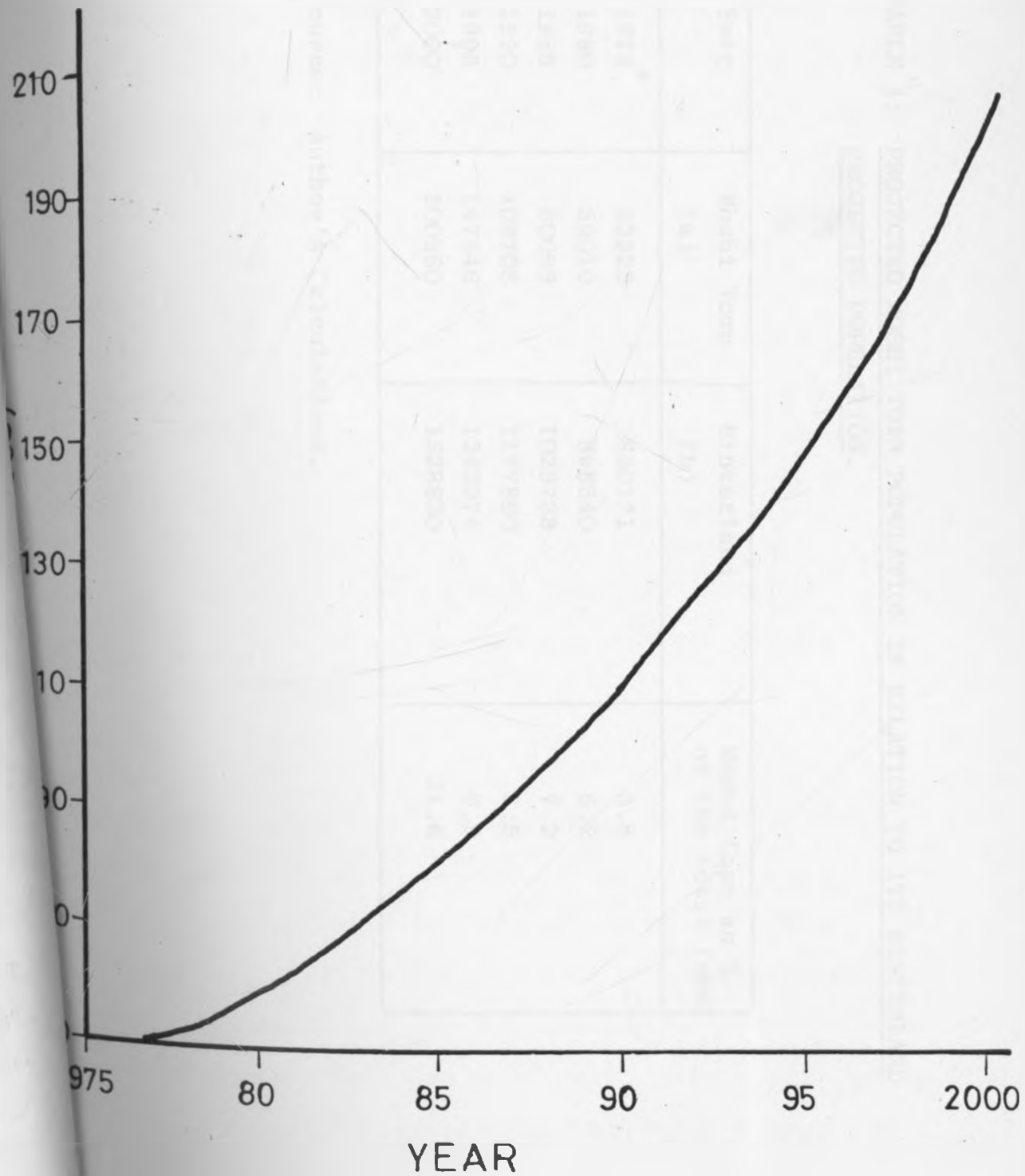

TABLE 4: PROJECTED MOSHI TOWN POPULATION IN RELATION TO ITS HINTERLAND PROJECTED POPULATION.

Year	Moshi Town (a)	Hinterland (b)	Moshi town as % of the total (a+b)
1978*	52223	850171	5.8
1980	59010	898340	6.2
1985	80093	1029738	7.2
1990	108708	1177890	8.5
1995	147546	1343974	9.9
2000	200260	1528820	11.6

Source: Author's Calculations.

2.4.0 EMPLOYMENT - MOSHI TOWN

The general characteristic of the economy of Moshi town is the fact that the primary sector is experiencing a decreasing role indicating an advancing urbanization as the following table indicates.

TABLE 5: EMPLOYMENT BY MAIN INDUSTRIAL SECTORS 1967, 1969, 1971, AND 1973 (%)

Sector	1967	1969	1971	1973
Primary	3.6	2.9	1.9	-
Secondary	50.6	56.6	46.5	49.2
Tertiary	45.8	40.5	51.6	51.8

Source: Survey of Employment and Earnings 1967 - 71 and Planning Team Survey 1973.

The primary sector consists of agriculture, mining and quarying. The secondary sector consists of manufacturing, construction and public utilities whereas the tertiary sector is composed of mainly commerce and transport. Despite the fact that the primary sector has a negligible importance as a source of wage income, it should be emphasised that shamba cultivation has an important role in the economy of private households in

Moshi urban and is under smallholding agriculture. The latter may be looked at as a useful way of employing urban reserve land.

According to the 1967 census, there were 7730 households in Moshi. Comparing this figure with the total employment of 7454, we get an employee/household ratio of one employee per household. However, a closer scrutiny gives rise to observation that 20.6% (or 1750 males) of the male population aged 15 - 44 years were classified as "not economically active", i.e. unemployed, students, sick or otherwise not working! Out of those, 800 were unemployed, which means 9.3% of the labour force. Of the female labour force aged between 15 - 44 years were also "not economically active" and 340 of them were unemployed. Altogether, the number of employed aged between 15 - 44 years was 7.8% of the corresponding labour force.

TABLE 6: EMPLOYMENT SUMMARY STATISTICS

	Year	1967	1969	1971	1972	1973	1978	1980
1.	Wage Employment	7454	9171	9292	9649	10459	14622	16523
2.	% of town's population	28	30	27	26.5	28	28	27.6
3.	% of town's labour force	46.0	47.0	47.5	47.0	46.0	45.0	44.o

Source: Author's Survey, 1980.

The employment figures for Moshi town give an average of 28% of the town's population and, on the average, 46% of the town's labour force.

TABLE 7: COMPARATIVE EMPLOYMENT FIGURES

Town	Urban Employment as % of National total employment	Urban Employment as % of Regional total employment
Dar es Salaam	20.4	83.0
Tanga	3.7	22.0
Arusha	3.1	37.0
Mwanza	2.9	56.2
Moshi	2.6	29.2

Source: 1977 Bureau of Statistics and author's calculations.

The calculations in the above table only considered firms with 10 or more employees; therefore it should be borne in mind that many employees were left out. According to the 1977 Bureau of Statistics figures, Moshi town accounted for 2.6% of national total employment as compared to 20.4 % for Dar es Salaam. Further, Moshi urban employment was 29.2% of total Kilimanjaro region employment implying that

more than two thirds of the region's employment were in the rural areas.

TABLE 8: EMPLOYMENT BY INDUSTRIAL SECTORS - 1973

Sector	Employers		Employees	
	No.	%	No.	%
Secondary	176	12.2	5155	49.2
Tertiary	1261	87.8	5304	41.8
Total	1437	100.0	10459	100.0

Source: Planning Team Survey, Ministry of Lands, Housing and Urban Development, 1973

According to the field survey carried out in 1973[7], there were a total of 10459 wage employees in Moshi. In this survey, all employees were included regardless of what size of firm they were employed in. It can be seen that most of tertiary sector establishments had less than 10 employees each signifying their

7 - Planning Team, Ministry of Lands, Housing and Urban Development.

TABLE 9: EMPLOYERS BY SIZE AND INDUSTRIAL SECTORS, 1973

Category	Secondary Sector		Tertiary Sector		Total	%
	No.	%	No.	%		
Less than 10 employees -	113	64.2	1178	93.4	1291	90.0
10 - 99 employees	50	28.4	72	5.7	122	8.4
100 or more "	13	7.4	11	0.9	24	1.6
Total	176	100.0	1261	100.0	1437	100.0

Source: Planning Team Survey, Ministry of Lands, Housing and Urban Development, 1973.

smallness. There were small businesses like shops, restaurants, lodging and handicrafts largely on a family basis.

In the secondary sector, the significance of large establishments is more conspicuous. There were 13 firms within the sector that had at least 100 employees, out of which 10 were manufacturing firms; these firms contributed to 75.2% of all the employees in the secondary sector. The main capital investment plans were three NDC projects: E.A. Kenaf Industries Ltd., Tanzania Bag Corporation Ltd., and Tanzania Tanneries Co. Ltd. Other big public establishments and large employers included Tanganyika Coffee Curing Co., Forest Timber Utilization, Kibo Match Corporation Ltd., Beer Bottling and Depot, Mosquito Coils Manufacture and Moshi Textile Mills. By 1980, the same firms were still the largest employers in Moshi town.

In projecting the employment to year 2000, the rate of growth of the population in the town has been considered and the general trend of the growth of employment over the past years has been taken into account. In the absence of large capital investments in Moshi town, the increase in employment will be normal if not retarded. Job seekers from the rural hinterland will have to look somewhere else for employment opportunities in view of the fact that Moshi's employment creation opportunities will be lower.

TABLE 10: GROWTH OF WAGE EMPLOYMENT IN MOSHI

Year	Employees	Comments
1967	7454	Actual
1973	10459	Actual
1978	14622	Actual
1980	16523	Projection
1985	22426	Projection
1990	30438	Projection
1995	41313	Projection
2000	56073	Projection

Source: Author's Observations.

2:5:0 RESIDENTIAL LAND USE

The low density residential area is situated in the north-west of the town along the Old Arusha Road while medium density areas are along the New Arusha Road,Uru Road and Tanga Road.

Other residential areas, primarily high density, include Majengo and Kiboroloni sub-urbs, the grid-iron pattern areas for Africans near the centre

of the town such as Kiusa and Arusha Chini streets. In the town centre, residential accommodation is in two or three storey flats while the ground floor is reserved for commercial activities.

However, within the township, there are substantial housing areas of squatter development that have grown and expanded over the years. These include Boma Mbuzi, Pasua, Njoro and Kiboroloni. According to 1967 census data, there were 7730 households living in 13,000 rooms which means that there were 1.68 rooms per household and 0.49 rooms per person. Furthermore, 66.3% of the households and 51.0% of the population were then living in one room dwelling.

The problems facing the residential accommodation are several. One, most of the people are living too overcrowded. Two, many of the buildings particularly those in the high density areas are in bad condition and over-aged.

In comparative terms, Moshi town is better-off than the rural hinterland in terms of provision of water and electricity per household. The majority of the urban dwellers have easy access to these facilities. This diversity in development is more pronounced if the rural housing conditions are considered.

Since 1972 when the government nationalised private buildings, worth TShs.100,000 or more, private house construction has been slowed down to a minimum. The public institutions charged with the construction of residential housing have not been able to fill the gaps; consequently, there is a serious housing shortage in Moshi. An additional problem is the shortage of surveyed building plots. In 1980, residential area occupied about 380 hectares with about 6,000 plots.

The other problem that has befallen Moshi as well as other towns in Tanzania is the fact that there has been a negative attitude towards the towns which is reflected in the absence of the declaration of any towns since independence[8]. In 1972, when the decentralisation programme was effected and the subsequent abolition of all town councils, Moshi urban area was designated a district governed on the same principles like any other rural district. This negative attitude adversely affected Moshi as a town and urban conditions, particularly residential suffered massive deterioration. It should be noted that urban problems are quite different from rural problems and approaches to their solutions are also different.

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8 - Egero, B. et al, op. cit. p. 76.

2.6.0 ECONOMIC BASE

Market factors in industrial location dominated the economy up to 1967, the time of Arusha Declaration[9]. Investors mostly foreigners, could locate industries wherever they thought it was better and optimum for them. This type of laissez-faire industrial strategy meant that industries were located in a few areas where infrastructural facilities and services existed, where the market was likely to be found and in some cases, where the raw materials could be found. Out of this strategy, Tanga and Dar es Salaam benefited the most, although to a lesser extent, Moshi, Arusha and Mwanza had some industries located there too. Moshi is situated in area of export - enclave[10] whose hinterland specialises among other things, in the growing of coffee for export. Initially, there was a large European settler community within the vicinity of Moshi town as well as Asian dukawallas in the town. These provided the market for the industrial products. Secondly, Moshi town was linked to both Tanga and Mombasa ports on the coast

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9 - Nyerere, J.K.: Arusha Declaration, 1967.

10 - Seidman, A.: Comparative Development Stategies in E.A. p. 83.

by the railway. In addition, other infrastructural facilities had already been developed, and therefore, it was relatively easy and profitable to locate industries at Moshi.

After 1967, the Second Five Year Plan was drawn that emphasised state control of the comanding heights of the economy and to decentralise industries away from Dar es Salaam[11]. Nine towns were selected as growth centres within which industrial development was to be concentrated. These were Tanga, Mtwara, Mbeya, Morogoro, Dodoma, Tabora, Mwanza, Arusha, and Moshi. In this policy, it was envisaged that all new industries should be located in these nine urban areas such that rural development may be speeded up. In other words, this policy was geared towards the reduction of urban - rural inequality.

The reasoning behind this plan was both logical and very ideal in the sense that the authorities had realised the inadequacy of rural development. However, the practicability of the policy was a big problem in the sense that decentralisation of industries to regions did not materialise. Dar es Salaam continued to attract a disproportionate share of new large industries, population and social utilities. Some

11 - Tanzania, Second Five Year Plan, op. cit.

reasons were advanced for the failure of the nine growth centre policy, the main one being inadequate infrastructural facilities.[12] However, the authority that was supposed to provide these infrastructural services, that formulated the growth centre policy and that was the main industrial investor was one and the same thing: the government. Inherent in this contradition is the fact that the rural areas have continued to experience lagging development.

The third development plan has designated industrial zones strategy into which industrial investment would be concentrated in the years 1976 - 1981. In selecting the zones, two criteria have been considered, that is, income distribution and existing transportation network. However, the trend has not been as stated on paper and in fact, most of the industrial investments in the third plan have gone to the Eastern Zone; in contrast Moshi has had only one, an on-going machine tools project.[13] This factory, when completed, will be the only one large public industrial investment for the last 10 years.[14]

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12 - Tanzania, Third Five Year Development Plan, op. cit. p. 44

13 - Author's Observations.

14 - The last large-scale public industrial investment was carried out in the early years of Second Plan, 1969/74.

2.6.1 Industrial Sector and Land Use

There are various methods used to classify industries. Some criteria in the classification of industries are size, employment, performance, function, capital and output. In the location of industries, capital/output and labour/capital ratios are invariably used so as to designate areas for heavy industry and light industry as well as which industries are labour intensive and capital intensive. In the case of Moshi, the existing industries can be divided into two main categories: firstly, service industries, mostly engaged in repairs, and services like garages, laundries, bakeries, among others and they serve the daily needs of the urban population; secondly, there are manufacturing industries which include storage and depots.

The numerous small establishments in service industries are mainly located in the town centre. These include bakeries, laundries and small garages. On the way to the Moshi Airport, a small scale industrial estate has been established to manufacture furniture, foundry iron, leather goods, nails, crockery and other similar goods. The industrial estate has of late received

a large financial injection by both the government and foreign grants. In general, the service industries can be allocated relatively close to the residential areas for the convenience of workers and consumers but more so due to the fact that they have a low level of pollution and other environmental health hazards.

Most of the manufacturing firms, depots and storages are located in the area adjacent to the railway station, the industrial area. This area is accessible by rail, and road and most of the industries have a railway siding.The manufacturing industries include the following 7 biggest: Coffee Curing Factory, Tanzania Bag Company Ltd., Timber Utilization Factory, E.A. Kenaf Industries, Breweries Depot and Bottling Plant, Moshi Leather Tannery Works and Kibo Match Factory. These 7 factories have more than 80% of the total employees in the industrial sector. Other industries include the Moshi Textile Mill and the Machine Tools Factory under construction. Several industries are located in Majengo,near Karanga Sisal Estate and near Karanga Prison. All of these industries have been located away from residential areas due to the high incidence of air and water pollution and health hazards. Other factors that have been taken into account are factory extension possibilities on their own

TABLE 11: MANUFACTURING ENTERPRISES BY KIND OF ACTIVITY (NUMBER)

Activity	Enterprises	Employment
Food	10	1,123
Beverages	1	42
Textiles	2	804
Wearing Apparel	1	24
Leather and Leather Products	3	200
Footwear	1	30
Furniture	3	51
Wood and Cork Products	2	84
Printing & Publishing	2	28
Chemicals	3	270
Machinery	1	12
Others	4	60
Total	32	2,733

Source: Statistical Abstract 1974, Bureau of Statistics, 1977.

plot areas, easy access to transportation facilities, avoidance of heavy industrial traffic and special requirements for treatment of industrial waste. Tables 11 - 12 give a broad survey of industries, industrial employment and land use.

TABLE 12: INDUSTRIAL LAND USE AND EMPLOYMENT, 1980

Classification	No. of Employees (1980)	Total Plot Area (hectares)
Service Industry	1,300	14.8
Manufacturing	4,700	71.8
Total	6,000	86.6

Source: Author's Survey, 1980

The increase in industrial employment is mainly due to the expansion programme of Coffee Curing Works, Tanzania Bag Factory, E.A. Kenaf Industries and Leather tannery works. This increase is greatly inadequate in terms of absorbing the existing labour force in the town itself leaving apart job seekers from the hinterland. Failure to create adequate industrial employment opportunities in Moshi town is one of the main factors that have led the hinterland migrants to move to Dar es Salaam, Arusha, and other areas of Tanzania, where employment opportunities are available.

URU

K.C.M.C. HOSPITAL

RAU

OLD MOSHI

KIBOROLONI

MAJENGO

TOWN CENTRE

AIR FIELD

PASUA

KARANGA ESTATE

RAU FOREST

TO DAR ES SALAAM

TO KAHE

MOSHI INDUSTRIAL SECTOR AND HINTERLAND

INDUSTRIAL AREAS & TRANSPORTATION

LEGEND

- TOWN BOUNDARY
- MAJOR ROADS
- RAILWAY
- RIVERS
- BRIDGE
- FOREST
- INDUSTRIAL AREA

SCALE 1: 20,000

0 1 2 KM

KUTOLIE F.S.
M.A. PLANNING
UNIV. OF NAIROBI
1980/81

MAP NO 5

In 1980, total industrial plot area was 86.6 hectares giving employees per plot hectare as 88 and 65 for service and manufacturing industries respectively. The industrial area will for a long time be a manufacturing area for Moshi. The town as a whole has no industrial land requirement problem since there are additional areas within the township for industries such as Pasua, Njoro, Rau, Karanga Sisal Estate and Karanga Prison. The existing and proposed industrial land use can be seen in tables 12 and 13.

TABLE 13: PROPOSED INDUSTRIAL LAND USE BY 2000

Classification	No. of employees in 2000	Total plot area (hectares)
Service Industry	3,700	49.0
Manufacturing	8,500	148.0
Total	12,200	197.0

Source: Projections and Based on Employment Projection Table No. 10

Projected industrial employment is less than 30% of projected total employment by the year 2000; this is because the recent industrial investment trend does not show an increasing role to be played by the industrial sector as far as Moshi is concerned.

TABLE 14

INDUSTRIAL SECTOR INVESTMENT IN RECENT YEARS

	Project	Investment (T.Shs. m.)	Year	Purpose	Fund
1.	Moshi Tannery	-	1976/77	Expansion	Local
2.	Bag Factory	4.0	1977/78	"	"
3.	Kenaf Factory	4.0	"	"	"
4.	Industrial Estate (SIDO)	10.0	"	New Project	"
	"	7.4	1978/79	" "	Foreign /Local
5.	Machine Tools (NDC)	290.0	"	" "	"
6.	Feeds Mill (NMC)	7.6	"	" "	Local

Source: Author's Survey 1980/81.

While projects 1 - 3 have been completed, projects 4 - 6 are in various stages of development from the planning stage to actual site construction. The tannery has been expanded to a processing capacity of 1.35 million hides and skins per year. Let it be reiterated that the above industrial investments

cannot create adequate employment opportunities for the existing job seekers in both the town and in its immediate hinterland which is the most densely populated region in Tanzania. The Third Five Year Plan comes to an end in June 1981 having closed its chapter on the uncompleted machine tools project in Moshi.

TABLE 15:

PLANNED PRODUCTION FOR SELECTED INDUSTRIES

Name of Firm	Unit of Measure	1976 Actual	1977 Planned	1979 Planned	1979 Planned
Tanzania Tanneries (a)	sq. ft.	3627000	13177000	13177000	13177000
Kenaf Industries	Bags	1676500	2475000	2886000	3175000
Bag Corporation	Bags	2042400	3270000	3473000	4457000
Coffee Curing Works (b)	Tons (clean coffee)	45574	300079	38096	-

Source: Tanzania, The Annual Plan 1977/78, 1978/79 and Coffee Factory Returns.

(a) Planned Production for Moshi Tannery 1976 was 9,000,263.

(b) The figures for Coffee Curing Works are ACTUAL & are meant for 1975/76 - 1977/78 seasons.

Since 1975 industrial production has faced a foreign exchange constraint in the sense that imported raw material inputs could not be adequately obtained; secondly there has been a decline in productivity and efficiency leading to production at below capacity.[15] There has been a serious problem of obtaining data from the management of the factories and data used in this analysis is either obtained from official publications or where possible, from those that were co-operative enough to release their figures. Therefore table 11,12 and 15 fall victim of this malady.

However there are a number of economic linkages that occur between the industries in the town and the hinterland in terms of material inputs and output consumption. Linkage of this kind may be classified as "forward" or "backward", depending on whether flows are of outputs to customers or of inputs from other suppliers[16]. The Coffee Curing Factory is an agro-based industry that processes parchment coffee for export. This industry cures all arabica coffee that is produced in Tanzania out of which between 1/3 and 2/3 of the total coffee input comes from the hinterland i.e. Kilimanjaro Region.

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15. Tanzania, Economic Survey 1977/78 Bureau of Statistics, 1979 pp. 75-76.

16. See Article by O.E. Keeble in Town Planning Review Vol. 40 no. 2, July 1969.

The Kibo match factory produces match boxes. Its local inputs include wood for the splints and boxes which is readily available from the hinterland. The Tanzania tanneries factory processes hides and skins into leather. Hides and skins are available from the region itself and the neighbouring regions of Arusha/Tanga. The leather produced is used by other industries into the production of leather products such as shoes, bags and belts. There are a number of small scale industries in both the town and the hinterland that engage in shoe production. Prominent among them is the small Karanga Prison Shoe Factory that produces shoes for the prison personnel and other members of the security forces. The Shah Industries Ltd. located in the industrial area produces various leather goods such as bags, jackets and belts. Thus the tanneries industry has both forward and backward linkages.

The Tanzania Bag Factory (TBC Ltd.) manufactures bags, mainly for local consumption. The main local material input is sisal readily obtainable from the sisal industry. The bags are used by the coffee industry,

among others, at various stages of coffee production. They are used for packing ripe coffee berries to the palperies, for packing dry parchment coffee for curing and finally for packing cured clean coffee for export. The E.A. Kenaf Industries manufacturies kenaf bags from kenaf. A project was started to grow kenaf locally in the lower plains of Moshi but it has not been successful so far. Thus the kenaf factory relies mostly on imported kenaf at the moment. The bags are used in the agricultural industry.

It can be seen that Moshi industries to some extent utilizes locally produced material inputs to manufacture various products that are consumed not only by the region but also for the country as a whole if the product is not meant for export such as coffee. However the hinterland produces a number of products that are yet to be processed industrially. In other words the region has a great potential capacity for industrialization which can generate effective economic linkages in the way of production, employment and incomes. The government which is the main investment authority inclusive of investment decision and location has to take these factors into serious consideration.

2:6:2 Commercial Sector:

The commercial services include retail services such as shops, restaurants, cafes, liquior and coffee bars, hotels, lodging, handicrafts, etc.; wholesale, banking and insurance. This sector is very important in the sense that it provides essential services for the other economic sectors such as agriculture and industry.

In 1980 there were 4 well-developed market places with more than 400 market vendors within the township. One of the market specialises in new and second hand cloth selling. Two of these are located in the town centre, one in Majengo and the last one in Kiboroloni. These markets are accessible to the rural hinterland population to sell their agricultural produce. The products sold include bananas, fruits and vegetables, maize, eggs, cassava, and beans among others. Bananas are available in different forms. The green form is used for cooking food, the ripe form eaten as a fruit and also used as an ingredient in the preparation of the local brew known as "mbege."[17] The selling of this local

17. "Mbege", Chagga word for local brew.

brew is big business in the town.

There are 3 tourist class hotels with 250 beds, altogether, and 3 smaller with 70 beds. All of them, with two exceptions, are located in the town centre (CBD - Central Business District). There are also small numerous lodging establishments with 5 - 10 beds each that have sprung up throughout the high density residential areas.

The retail shops are mainly concentrated in the Central Business District along Kibo, Mawenzi and Kiusa Roads, the first two radiating from the Clock Tower and running parallel to each other. The other retail shops are in Kiboroloni, Majengo, Pasua, Mji Mpya and other high density residential areas.

Total plot area under commercial services was 22.6 and 40 hectares for 1973 and 1980 respectively. Employees working in the commercial sector were 2,200 and 3,500 for 1973 and 1980 respectively. The figure for 1980 is 21% of the town's total employment.

All banking and insurance activities are in the town centre within walking distance from the Clock Tower. The National Bank of Commerce has 3 branches

in the town while there is an existing Post Office Bank.

In general commercial activities occupy about 50 - 75% of the floor area of each block which is within acceptable standard in Tanzania.[18] The rest can be used for other services such as residential.

The 1972 nationalisation of buildings affected commercial ownership greatly-prior to 1972 most of the commercial premises particularly in the Town Centre were owned by Asians. After nationalisation they became rent-payers on their own property and many of them left commercial business altogether either moved to other sectors or left the country for good. Consequently one finds that the local indigenous population is now in complete control of retail business in the Town Centre..

2:7:0 Infrastructure:

In the discipline of physical planning, analysis of existing infrastructural services and facilities is an important area of study which essentially determines the adequacy and inadequacy of such facilities to the community, comparatively

18. Tanzania towns have no universal and accepted set up space and planning standards.

if two areas are rigorously subjected to such an analysis similarities and divergences can be exposed; ways can be sought, subsequently, to reduce the development gap if any. These facilities include, among many, schools, water supply, sewerage, health facilities, electricity and transportation. The provision of such facilities is important particularly for industrial development. Industries require raw material inputs and these must be hauled from a distance and in some cases from very far. In this case there is need to have a sound transportation network for the procurement of the raw materials. Industries require power for their operations and as such provision of electricity is a precondition for the establishment of such industries. Without workers factories cannot operate or produce. Therefore any factory will need a number of workers in various categories skilled, semi-skilled and so on. Before the workers are employed they must have a certain level of training and have had acquired certain industrial skills. This necessitates the provision of educational facilities. The welfare of the workers is an important factor in production and therefore the need for health facilities. Let it be reiterated that the provision of economic and social infrastructure is essential if any industrial strategy is to succeed.

If the industrial growth zones policy[19] goes anywhere towards achieving the objective of decentralisation of industries in Tanzania then the provision of infrastructural facilities in those zones is necessary.

These facilities cannot be provided in isolation of the people. Thus as the population grows in the town, this necessitates industrial and commercial development while simultaneously it prompts the need for the welfare of the community. This is when schools, hospitals, houses, roads, water, electricity and other facilities are provided by the town authorities.

2:7:1 Transportation:

As the principal centre of the region Moshi town attracts much traffic from neighbouring rural areas The main traffic spine is the Dar-es-salaam - Arusha-Nairobi Highway. The traffic flows on this highway between Moshi and Arusha have in recent years been one of the highest in the country due to the dense population on the slopes of Mount Kilimanjaro and

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19. Tanzania, Third Five Year Plan, op. cit. p. 73.

If the industrial growth zones policy[19] goes anywhere towards achieving the objective of decentralisation of industries in Tanzania then the provision of infrastructural facilities in those zones is necessary.

These facilities cannot be provided in isolation of the people. Thus as the population grows in the town, this necessitates industrial and commercial development while simultaneously it prompts the need for the welfare of the community. This is when schools, hospitals, houses, roads, water, electricity and other facilities are provided by the town authorities.

2:7:1 Transportation:

As the principal centre of the region Moshi town attracts much traffic from neighbouring rural areas The main traffic spine is the Dar-es-salaam - Arusha-Nairobi Highway. The traffic flows on this highway between Moshi and Arusha have in recent years been one of the highest in the country due to the dense population on the slopes of Mount Kilimanjaro and

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19. Tanzania, Third Five Year Plan, op. cit. p. 73.

Mt. Meru which generate much traffic to Moshi and Arusha towns. The Ministry of Works Traffic Survey carried out in 1973 recorded 1600 automobiles a day between Moshi and Arusha and 940 a day between Moshi and Himo[20]. From there are good road connections to Singida, Dodoma, Tobora and Mwanza via Arusha, to Mombasa via Himo and to Tanga via Korogwe.

The national highway known as Taifa Road (Barabara ya Taifa), runs through the town by-passing the town centre. In the southern part of the town Kibo, Mawenzi and Arusha Roads are the main arterial roads with connection to the highway. Mawenzi Road is the busiest street in the centre. Arusha Road carries the traffic from Arusha side to the centre. In the northern part of the town Kibosho - Kilimajaro and Uru Roads are connected to the highway. The by-passing traffic from Arusha Chini (sugar Factory) and Kahe (railway junction) as well as from the industrial area to the highway goes through the town centre.

Most streets in the centre are bitumenized so are the main streets in the residential areas. However in some residential areas like Pasua some streets are not satisfactorily constructed.

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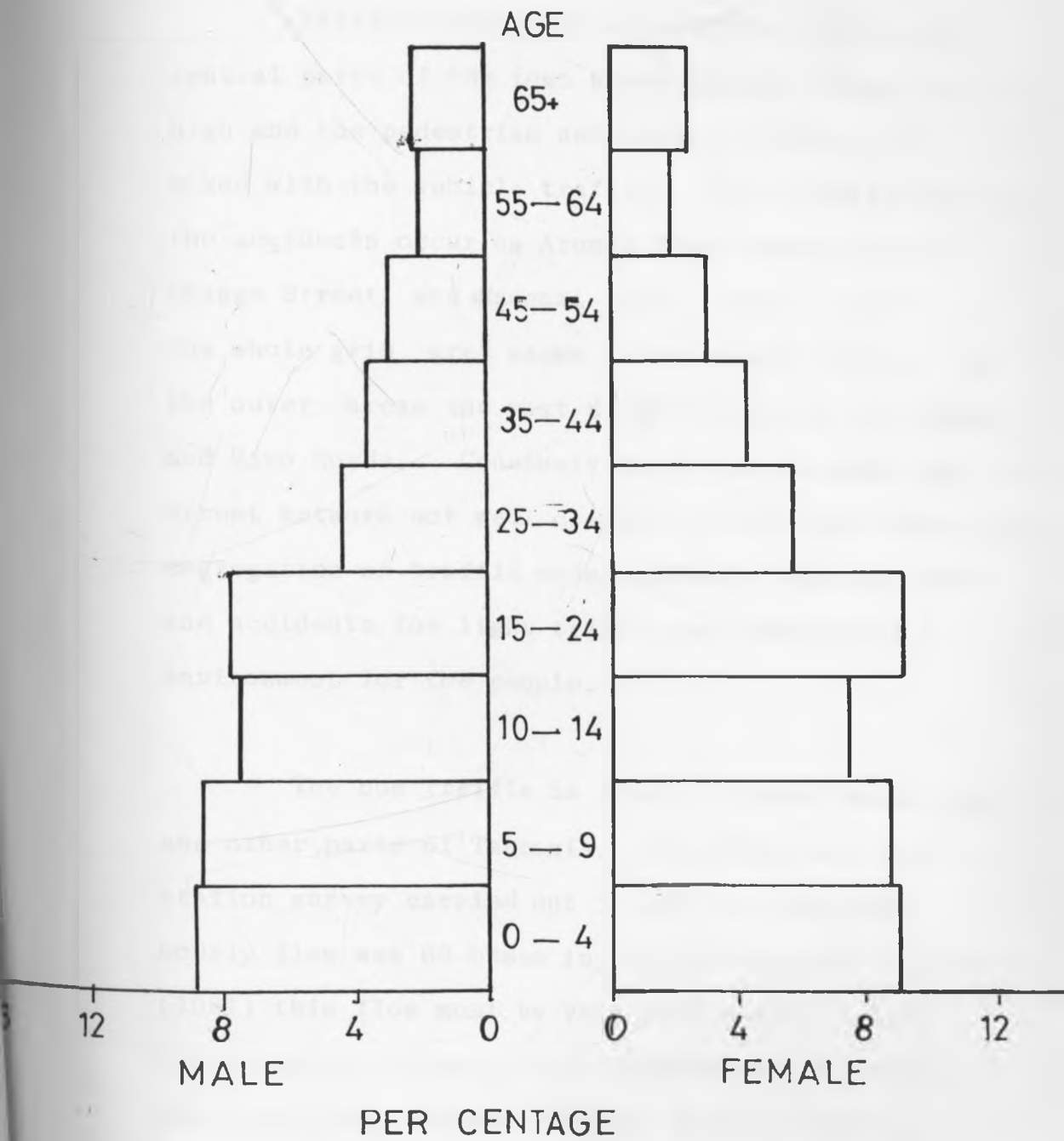
20. Tanzania Ministry of Works Traffic Survey 1973.

CHART IV HINTERLAND



POPULATION PYRAMID

Traffic safety is not satisfactory in the central parts of the town where traffic flows are high and the pedestrian and bicycle traffic are mixed with the vehicle traffic. Consequently most of the accidents occur on Arusha Road, Market Street, Chagga Street, and Mawenzi Road. In the centre the whole grid area seems to be evenly unsafe. In the outer areas the most dangerous roads are Sukari and Himo Roads. Conclusively it can be said that the street network not well classified and with inadequate segregation of traffic modes affects safety risks and accidents for light traffic and unpleasant environment for the people.

The bus traffic is lively between Moshi town and other parts of Tanzania. According to a bus - station survey carried out in 1973 the maximum hourly flow was 63 buses in and 71 buses out. By now (1981) this flow must be very much higher. Long distance bus routes provide connections to Tanga, Dar-es-salaam, Dodoma, Singida, Tabora, Mwanza, Bukoba, Musoma, Mbeya and, before the closure of Kenya/Tanzania border in 1977, to Mombasa and Nairobi. There are daily bus connections to most parts of the hinterland: to Siha, Sanya Juu, Masama, Machame, Kibosho, Uru, Old Moshi, Kirua, Kilema, Marangu, Himo Rombo, Same, and Arusha Chini. The bus station is centrally located having access straight to Mawenzi.

However the capacity of this station is now fully utilized. The extension possibilities can be done southwards, towards the Polic Station and east of Mawenzi Road on the site occupied by Kibo Secondary School. Moshi has a public transport system the third of its kinds in Tanzania.

The emphasis in railway traffic is on goods transport, though passenger traffic is growing fast due to the higher fares by bus and also due to the increasing population. When the proposed plan to construct a new railway line from Arusha to Musoma with ferry connections to Mwanza and Bukoba is realized it will considerably increase the railway traffic through Moshi. Moshi has passenger traffic connections to Tanga and Dar-es-salaam and goods transport connections to Arusha, Dar-es-salaam and Tanga. There are plans to construct a Railway Workshop at Moshi Railway Station. The railway station is centrally located and is mid-way between Clock Tower and Majengo and is near the industrial area. The latter is well served by the railway.

Moshi airfield is located in the south-west area of the town serving the small plane traffic including the "Flying Doctor Service". It does

not cause much nuisance for the surroundings since the bigger aircraft are utilizing Kilimanjaro International Airport (KIA) located halfway between Moshi and Arusha towns.

Conclusively Moshi town has relatively a well developed transportation network inclusive of road, air and railway. Few towns in Tanzania can riral Moshi town with such good transport connections. Transportation infrastructure being an essential prerequisite for industrial development has a good foundation in Moshi but apparently this has not been utilized for the benefit of the people living in he the densely populated rural hinterland.

Table 16

ROAD NETWORK IN KILIMAJARO REGION IN 1980

(KM)

Standard	Trunk Roads	MAINROADS		Total
		Territorial	Local	
Bitumen	208	15	102	325
Earth Roads	-	-	358	358
Total	208	15	460	683

Table 17

EXISTING RAILWAY SERVICES IN MOSHI (1980)

Passenger transport:	
to Dar-es-salaam	twice per week
to Tanga	twice per week
Goods transport :	
to Arusha	once daily
to Dar-es-salaam	once daily and if required
to Tanga	twice daily

2:7:2 Community Facilities: Education and Health:

There are 17 primary schools within the township catering for the primary-school age population. The schools occupy about 43 hectares. This means that there is a primary school for every 3500 people (exactly 3471 people, 1 school). There are 4 secondary schools namely Moshi, Mawenzi, Kibo and Moshi Technical all occupying a total area of 24 hectares. There is also a private International School for primary and secondary educational needs for children of expatriates. Each of the schools has

ample extension possibilities. There are also several, vocational educational institutions including the Police Training Centre and Co-operative College.

Moshi town has 2 big hospitals; there is the well-equipped Kilimanjaro Christian Medical Centre (KCMC) which is one of the 3 consultant hospitals in Tanzania. The other is Mawenzi Hospital situated in the centre of the town. There is also a bedded clinic and several other dispensaries scattered around in the central areas.

2:7:3 Electricity and Water:

Moshi is one of the few urban centres in Tanzania which enjoy both adequate fresh water supply and satisfying sewage disposal. The present water intake lies about 14.5 km. to the west from the town where two ground water springs Nsere and Shiri have been utilized to meet the water demand of present population. The estimated capacity of these springs is between 8000 and 10000 cu.m. per day. The water is pumped and stored into two storage tanks

(reservoirs) one located near Karanga Prison with a capacity of 1,350 m^3 while the other one is near the Police Training Centre with a capacity of 2,250 m^3. There are two gravity feeder pipes from the water intake to the tanks and distribution pipe network which covers the central areas of the town, the area between Town Centre and K.C.M.C. Hopsital as well as Pasua and Majengo areas. Daily consumption is about 7,200 m^3 in 1973 or about 160 litres per person including industrial water supply. In 1980 it was estimated that daily consumption had risen to 12,000 m^3. A separated piped water supply system exist in some rather rural parts of the town. The possibilities for extension of the future water supply are rather good because Kilimanjaro's slope area to the north of the town has rich ground water resources which can be utilized at relatively low cost due to the advantageous topography. In fact by utilizing some other spring in the area the total output can be raised easily to 25-30,000 m^3 per day.[21]

There is need for construction of an additional water drainage system for the town centre where during heavy rains problems occur with flowing storm water. This can easily be done on account of

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21. Ministry of Water Development and Power Report 1975.

the advantageous topography.

Moshi is one of the few towns of the country with a well-developed concentrated sewage disposal system with a sewage treatment plant; also with a sewer network which covers the central areas and K.C.M.C. Hospital. The effluent is discharged into Rau River. The system covers about ½ of the town whereas the rest of the town uses septic tank or pit latrine systems. The capacity of the mechanical sewage treatment plant is over 3,000 m^3 per day. The system works on gravity principles.

Besides fuelwood and petroleum products, electricity is the most important energy source for Moshi Urban.

TABLE 18

POWER INSTALLED (MEGA-WATTS) IN MOSHI

Year	Mw
1975	9.96
1976	9.16
1977	9.96

POWER SALES (MILLION KWH)

Year	Million Kwh
1975	15.99
1976	17.39
1977	15.75

The figures show there is high consumption of electricity in Moshi. Electricity sales of Moshi are only exceeded by Dar-es-salaam, Tanga, Arusha, Mwanza and Morogoro towns. Further, the Coastal and Northern grid consisting of Dar-es-salaam, Tanga, Morogoro, Arusha and Moshi account for 86% of total electricity sales in Tanzania but of which Dar-es-salaam consumed 50% of the total.[22] Also transmission lines to Moshi and Arusha joined the coastal and Northern grid systems into one grid such that now Moshi and Arusha can use electricity from Hale and Kidatu hydro electric power sources. Apart from these sources, electricity for the town can also be utilized from Nyumba ya Mungu Dam, Kikuletwa Power Station and the Thermal Power Station.

2:8:0 SOME GENENAL REMARKS

Moshi town, one of the two northern poles, is situated on the southern foothills of the densely populated Kilimanjaro mountain. The town is linked to most parts of the country by road,

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22. Third Five Year Plan op. cit. p. 50.

railway and air. There are no major physical constraints as to its growth in all directions.

Since the early 1940s the town has been growing at an average annual growth rate of 6.4%. In-migration has been largely responsible for the growth of the town. According to the 1967 census data, Moshi town retained only 30% of the migrants from the Region. This is an indication of the fact that urban employment opportunities are limited. As regards the town's population, numbering 52223 in 1978 census, it is dominated by men in the working ages. The sex ratio is 128 to 100 in favour of males. At the turn of the century Moshi's population will exceed 200,000 using a conservative growth rate of 6.3% p.a. The predominance of the unemployed in the town is alarming: it is estimated that about 9% of the labour force is unemployed and this does not include the underemployed.

The services sector dominates the economy of the town. There are numerous small-scale establishments which employ less than 10 employees each. Large scale employers are few and these are in the manufacturing sector.

Examination of the various land uses (see Table 20) reveals a number of factors. The agricultrual areas in the town occupies about 68%. Second, residential housing is too overcrowded. However there are ample land reserves for all other land uses particularly industrial. Water and electricity are adequately supplied and facilities exist for future increased use and expansion. The well developed transportation system, the existence of community facilities in plenty and a sizable portion of educated population are aspects that contribute to the development of an industrial sector. On the contrary the industrial potential is largely unexploited and the existing one has limited contribution in income and employment generation due to significant flaws in its linkages. Yet the growth of the town, whether as regards population, commercial and industrial development, has largely dependent on the resource hinterland.

The developed urban land and the various land uses are presented in the following tables.

TABLE 19

MOSHI LAND USE TABLE 1980

DEVELOPED URBAN LAND (ha)

Type of Land Use	Developed	%
Residential	500	34.8
Commercial	40	2.9
Public & Semi-Public	630	43.8
Industry	87	6.0
Transportation	110	7.6
Open Space	70	4.9
Total	1,437	100.0

Source: Moshi town Planner 1980
(Undeveloped, agricultural and Differred land has been excluded).

TABLE 20

MOSHI GENERAL LAND USE TABLE 1980

Type of Use	Gross Area (ha)	% of Total
Residential	750	8.51
Commercial	80	0.91
Public/Semi-Public	730	8.29
Industry	150	1.70
Open Space	1,300	14.76
Agricultural	5,600	63.56
Differred	200	2.27
Total	8,810	100.00

Source:: Moshi Town Planner, 1980.

TABLE 21 DETAILED LAND USES 1980

Code no.	Type of Land use	Total Areas (ha)	% of Total
0	Residential	750	8.51
1	Industrial	150	1.70
2	Educational	270	3.06
3	Recreational	1,300	14.76
4	Public Purpose	130	1.48
5	Commercial	80	0.90
6	Public Utilities	50	0.57
7	Transportation	280	3.18
8	Agricultural	5,600	63.56
9	Differred	200	2.27

Source: Moshi Town Planner 1980.

CHAPTER THREE

3:0:0 HINTERLAND ANALYSIS

The relationship, whether positive or negative, between Moshi's industrial sector and its immediate hinterland cannot be established without an analysis of the physical and resource base, population and linkages (transportation and communications) as far as the hinterland is concerned. Therefore it is the objective of this chapter to analyse the above factors such that economic linkages and development differentials between the town and the hinterland can be identified.

Most of the population derives its livelihood from the hinterland and therefore existing resources as well as resource base potential have to be given their due weight; similarly population characteristics in terms of density, migration and employment are important considerations since resources are useless if not exploited for the benefit of the people; the physical parameter is significant in telling us the kind and nature of the resources and how the population has adopted to it. Efficient exploitation and utilization of resources is made possible by the use of linkages.

There are two main tribes who live in the hinterland. The Chagga live on the slopes of Mt. Kilimanjaro while the Pare dwell in the Pare Mountain

3:1:0 Location and Physiographic Characteristics:

Moshi's hinterland is located in North-East Tanzania between 3 and 4 degrees south latitude, 37 and 38 degrees east longitude. At its northern end is situated Mt. Kilimanjaro with an altitude of 5895 metres at Kibo Peak, the highest in Africa and snow-capped all the year round. Along the lower reaches of the Pangani River, which is the boundary of the hinterland with the Masai Steppe to the West, there are also lands with altitudes as low as 549 metres above sea-level. The hinterland is bordered by Kenya in North and East, Tanga Region in South and Arusha Region in West.

Kilimanjaro Region is the smallest region in Tanzania Mainland (part from Dar-es-Salaam) with an area of 13250 km^2. Excluding Moshi town which is considered a separate urban district, the region has the following administrative districts: Rombo, Moshi Rural and Hai all on the slopes of Mt. Kilimanjaro and constituting the former Kilimanjaro district; finally Mwanga and Same districts both constituting

the former Pare district. The subdivision of more populous areas into smaller viable districts is in accordance with Tanzania's policy of decentralisation.[1]

Mt. Kilimanjaro and Pare Mountains (200-2500 metres) form the backbone of the region, running through the middle of it in a lengthwise direction. Although the region's area is only 1.4% its population is 6% of national total. Most of this population is concentrated on the slopes of Mt. Kilimanjaro and the Pare Mountains at altitudes between 800 and 2000 metres. Thus hinterland studies are incomplete if physical factors such as topography, soils and climate are not analysed.

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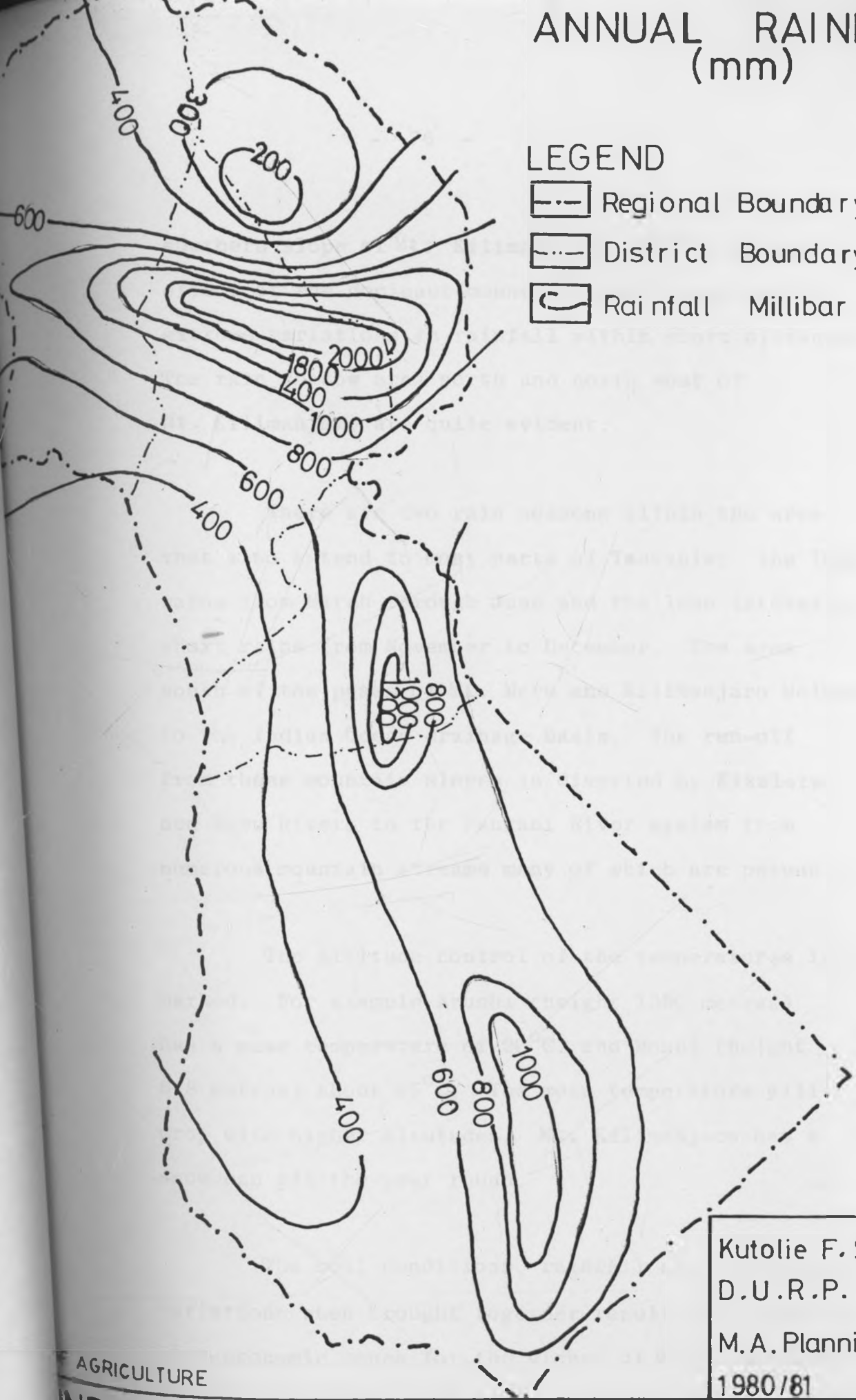
1. Nyerere, J.K., Decentralisation, Government Printer, Dar-es-Salaam, 1972, p. 3.

3:1:1 Geology, rainfall and Temperature:

The area is covered by the volcanic formation on a precambrian basement floor which forms the Masai Steppe to the South and the Amboseli plains to the North. The major type of rocks of precambrian origin include gneiss, quartzite and mica chist. The major types of volcanic rocks are basalt, tuff, ash and trachyte. Except for the bare rock found at higher levels or where exposed by soil erosion, the top soils are mostly clay deposits developed by weathering and redeposition of the resultant products. Of great interest is the complete absence of sand deposits and the small sand content in all soils except for the fine sand which originates from ash deposition.

In general the dominant soils are firstly the clayey, leached, red or red-brown clays at high levels around Kilimanjaro; secondly brown clayey soils at moderate heights. Finally greyish, silty soils at the plains south of Kilimanjaro . With other reasons these soil types and their inherent conditions determine the type and amount of agricultural production while they also affect road construction.

The mean annual rainfall varies between 400 - 500 mm. on the plains to 2,500 mm. on the



Kutolie F.S.
D.U.R.P.
M.A. Planning
1980/81

F AGRICULTURE

INDUSTRIAL SECTOR
HINTERLAND

0 - 10 20 30Km

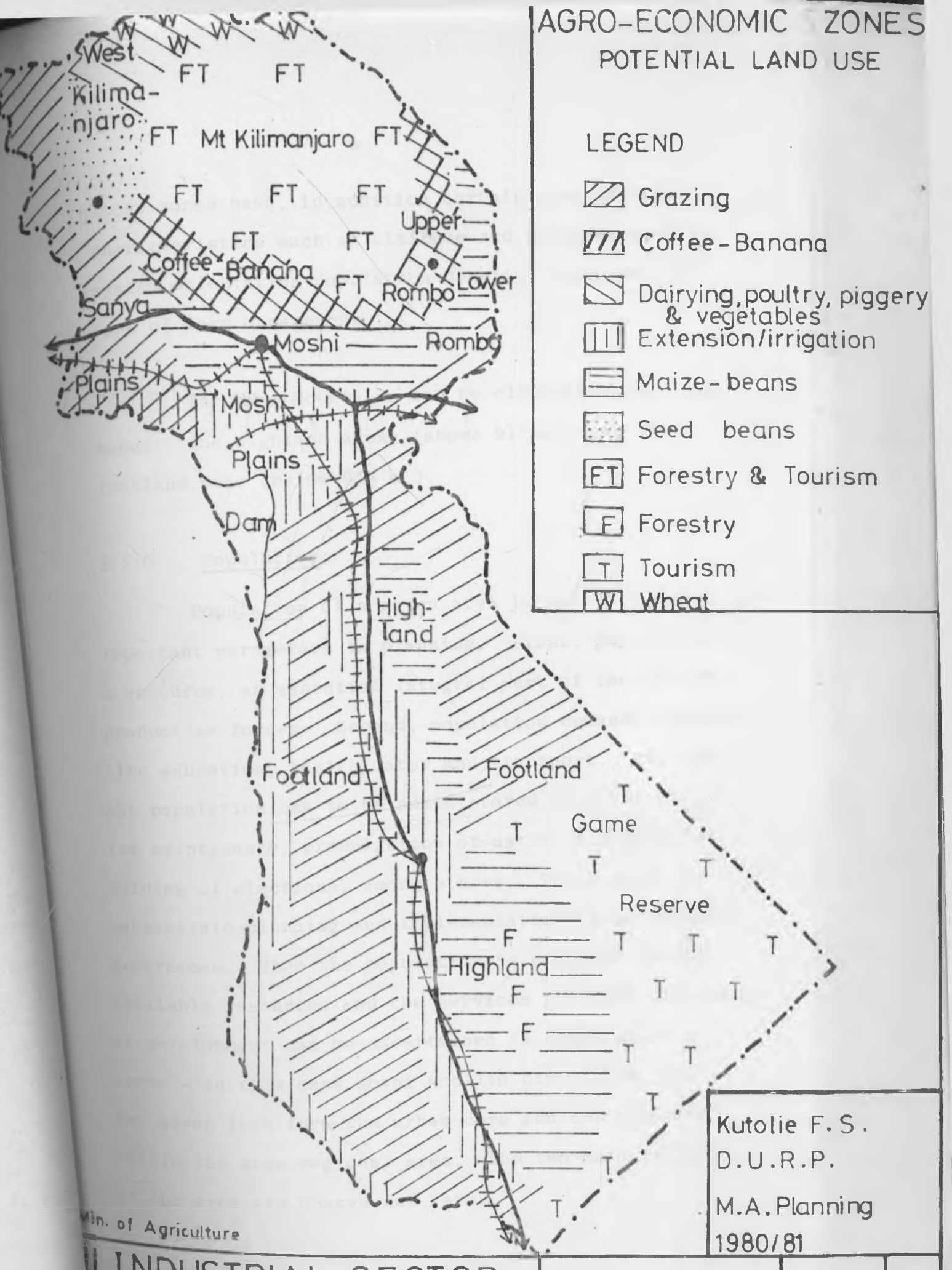
Map
No
7

southern slope of Mt. Kilimanjaro. The orographic effect of the dominant mountain range causes quite extreme variations in rainfall within short distances. The rain shadow area north and north west of Mt. Kilimanjaro are quite evident.

There are two rain seasons within the area that also extend to most parts of Tanzania: the long rains from March through June and the less intensive short rains from November to December. The area south of the peaks of Mt. Meru and Kilimanjaro belongs to the Indian Ocean drainage basin. The run-off from these mountain slopes is diverted by Kikuletwa and Ruvu Rivers to the Pangani River system from numerous mountain streams many of which are perennial.

The altitude control of the temperatures is very marked. For example Arusha (height 1580 metres) has a mean temperature of 20°C. and Moshi (height 848 metres) about 25°C. The mean temperature will drop with higher altutudes. Mt. Kilimanjaro has a snow cap all the year round.

The soil conditions, rainfall and temperature variations when brought together result into about 8 agro-economic zones for the slopes of Mt. Kilimanjaro.



ii INDUSTRIAL SECTOR
ND HINTERLAND

These zones have, in addition, certain identifiable characteristics such as altitude and topography, road system orientation, population density, land use and type of farm management.

The Pare Mountains can be classified into two zones: the highland areas (above 914 m.) and the footland zone (below 914 m.).

3:2:0 Population:

Population of a given area is one of the most important parameters in planning. First, population is a resource, an essential integral part of the nation's productive forces. Second, population demands services like education, health, water and transport. Finally the population has to be administered in terms of law maintenance, promulgation of national principles, holding of elections, among others. These aspects necessitate planning and implementation of development programmes. When the population is compared to the available resources and the services provided the level of development can be ascertained in comparative terms - in this case Moshi and its hinterland, the two areas that form the urban core and the periphery within the same regional area. The two main tribes of the area are Chagga and Pare.

3:2:1 Population Distribution and Density:

Population distribution is the way in which people are found within a given area for exploitation and settlement; whereas population density is a more specific expression of distribution. It reflects the spatial variation in such factors as soil fertility, rainfall, ecological factors, altitude and topography.

The tendency for population to cluster in a few naturally endowed areas should act as an opportunity for further development although this may pose problems to planners at national level since they give rise to a conflict between whether to stimulate further development in such core zones or to create a more even distribution of development.

Density of population assumes significance in another dimension. Within a given area and at a given level of technology resources may limit the size of the population which can be supported within an adequate and acceptable standard of living. Where the population exceeds this limit serious problems of population pressure may arise leading either to excess population resettlement or production improvement methods designed to increase the capacity of the land. Undoubtedly these involve major policy decisions by both administrators and planners.

Population densities for Kilimanjaro and Pare areas of Kilimanjaro Region (rural) can be seen in table 22 for the years 1967, 1972 and 1978. A notable observation is the fact that there is an alarming increase in population density from 47.2 in 1967 to 64.4 people per km.^{2} in 1978 for the hinterland as a whole. For Kilimanjaro district (includes Hai, Moshi rural and Rombo) it has reached 121 people per km.^{2} the problems is further highlighted when you consider population densities in selected areas in the same region. The coffee-banana belt has a density of 534 people per km.^{2} as per 1978 population census (Table 23).

Agricultural resources are judged to be close to a limit in terms of extensive exploitation. More intensive exploitation, other things being equal, yield a higher income but will not solve the employment problem. As such migration to less densely settled areas and industrial growth may have to be urgently considered as alternative means of coping with population pressure particularly in Kilimanjaro district The margin of cultivation in the coffee/banana belts cannot, in all probability, physically be further extended.

The factor of density is seen in a more serious dimension when population growth is considered

The rates of natural increase estimated on the basis of a critical review of the 1967 census are 37 per thousand (inclusive of urban).[2] However rural population growth has been 2.8% p.a. between 1967 and 1978 population census.[3] Using this growth rate the population of the hinterland will be more than one million and a half at the turn of the century, all other factors being equal. Population at five year intervals have been projected as seen in Table 24.

However density alone is an inadequate measure of land shortage or surplus. The quality of land and hence the number of people it will support per unit area varies significantly from one part of the hinterland to another. For instance, the density of population which can be supported adequately by one km.^{2} of land in Kilimanjaro district is much greater than that on the same amount of land in Pare district. The distinction can similarly be made on comparative patches of land within the same district. Furthermore as technology in agriculture improves so will productivity of land so that the population and income level can rise beyond the

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2. B. Egero, Population of Tanzania, 1974, p. 218.

3. 1967 and 1978, Population census Reports.

TABLE 22

DISTRIBUTION OF RURAL POPULATION WITH DENSITIES IN KILIMANJARO REGION 1967, 1972, 1978

District	Year	Area (Km^2)	Population	Density (people per Km^2)
Kilimanjaro	1967	5,310	374,000	89.2
	1972		545,000	102.6
	1978		642,000	120.9
Pare	1967	7,900	150,000	18.9
	1972		174,000	22.0
	1978		208,000	26.3
Region (Rural)	1967	13,210	624,000	47.2
	1972		719,000	54.4
	1978		850,000	64.4

Source: Population Census 1967 and 1978.

population carrying capacity[4, 5]. In addition, increased industrialisation can further change the situation. Therefore the issues of improved agricultural technology,

4. Moore, J.E., Rural Population Carrying Capacity for the Districts of Tanzania, BRALUP No. 18, DSM, 1971.

5. Baserup, E., The conditions of Agricultural Growth, London, 1966.

TABLE 23

DENSITY OF POPULATION IN SELECTED AGRO-ECONOMIC ZONES IN KILIMANJARO

Zone	1967	1978	Density (1978
West Kilimanjaro	9,455	13,070	24
Coffee-banana belt	258,997	358,200	534
Moshi Plains	40,804	56,430	80
Sanya Plains	16,150	22,330	30
Upper Rombo	126,120	174,400	528
Lower Rombo	23,515	32,530	118

Source: 1967 and 1978, Population Census and own Estimations.

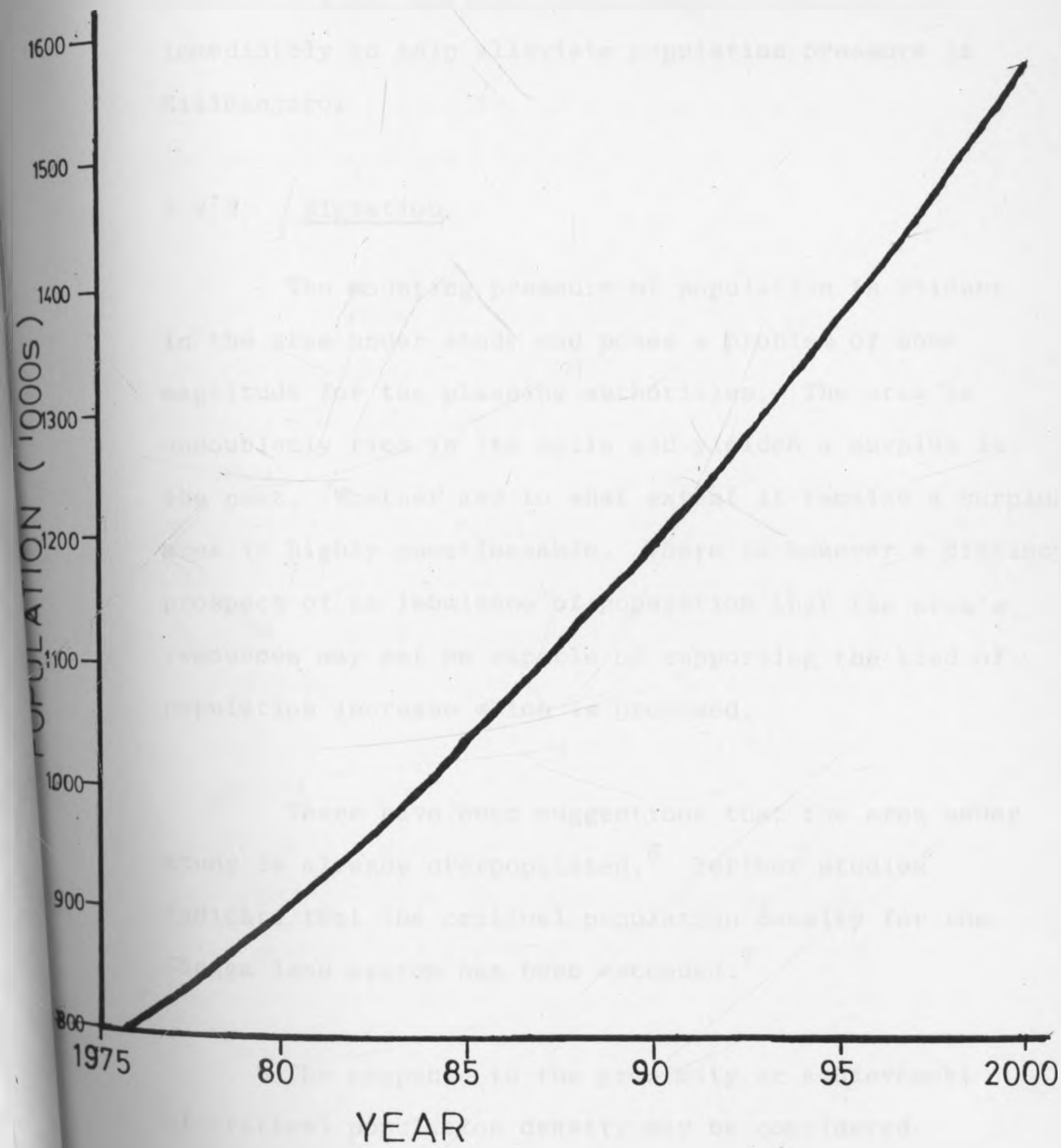
TABLE 24

POPULATION PROJECTION IN HINTERLAND

Year	Population	Growth Rate (% p.a.)
1967	625,858	3.0
1978	850,071	3.0
1980	898,447	2.8
1985	1,031,473	2.8
1990	1,184,195	2.8
1995	1,359,530	2.8
2000	1,560,825	2.8

Source: Author's Projections.

CHART V HINTERLAND PROJECTED POPULATION



industrialisation and emigration to less densely populated areas must be given serious consideration immediately to help alleviate population pressure in Kilimanjaro.

3:2:2 Migration:

The mounting pressure of population is evident in the area under study and poses a problem of some magnitude for the planning authorities. The area is undoubledly rich in its soils and yielded a surplus in the past. Whether and to what extent it remains a surplus area is highly questionnable. There is however a distinct prospect of an imbalance of population that the area's resources may not be capable of supporting the kind of population increase which is promised.

There have been suggestions that the area under study is already overpopulated.[6] Further studies indicate that the critical population density for the Chagga land system has been exceeded.[7]

The response to the proximity or achievement of critical population density may be considered under the following factors: Firstly

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6. Moore, J.E. BRALUP, op. cit.

7. Allan, W., African Husbandman Edniburg, 1967.

migration voluntary or otherwise, to areas where cultivable land is available or to towns in search of industrial employment. Secondly, the stepping up of agricultural inputs in the area; and thirdly, promotion of other forms of economic activity notably manufacturing industry.

Looking at 1967 and 1978 population census it is evident that Kilimanjaro is an area of net emigration. Viewing the table of distribution of the population of Kilimanjaro region by place of birth the following aspects can be ascertained. Kilimanjaro Region was an area of net emigration. Net loss was 1.7% of region's recorded population. Secondly, of total apparent movement within the region and from outside its borders something over 60% was accounted for by Kilimanjaro district. Thirdly, urban growth in Kilimanjaro Region played a relatively small part in the total movement of population; in Kilimanjaro district 20% of total apparent movement (total numbers born elsewhere than in district) is accounted for by the town of Moshi.

The sources and destinations can be calculated. 62% of Kilimanjaro Regions total loss is credited to Arusha and accounts for 27% of that region's total gain. Much of the balance of net emigration from Kilimanjaro is to Coast Region, mainly Dar-es-Salaam City.

TABLE 25

POPULATION BY PLACE OF BIRTH (POPULATION IN ''000, 1967)

	Same Locality	Same Region	Other Region	Other Countries	Total Stated
KILIMANJARO	1	2	3	4	5
Region	497.6	91.3	41.0	22.1	652.1
% of total	76	14	6	3	100
District	381.7	56.1	23.0	15.4	476.1
% of total	80	12	5	3	100
Town (Moshi)	8.0	8.3	7.2	3.1	26.6
% of total	30	31	27	12	100
TOTAL MIGRATION+ KILIMANJARO					
Region					154.4
District					94.5
Town					18.6

+ Aggregate of columns 2 to 4.

Source: Population Census Reports 1967.

TABLE 26

INCIDENCE OF NET INTER-REGIONAL MIGRATION 1967

Region	Total Population No.	Net Migration	
		No.	% of Total
Arusha	610,474	57,716	9.4
Kilimanjaro	652,722	-11,008	1.7

Source: Population Census Reports 1972.

TABLE 27:

KILIMANJARO REGION: SEX RATIOS (1978)

District	Sex Ratio	Comment
Rombo	89.8	more women
Pare	95.0	"
Moshi Rural	91.6	"
Hai	100.4	equality of sexes
Moshi town	127.9	more males
Region (Hinterland)	94.0	more women

Looking at sex ratio table the rural districts except Hai show a preponderance of females i.e. more females than males which may be an indicator of emigration to urban areas since the demographic impact of migration on rural areas with an urban destination reduces the number of men more than the number of women.[8]

Among other reasons, emigration is due to inadequate employment opportunities or land shortage within the area. The study of employment trends can confirm this observation.

3:2:3 Employment:

Wage employment in the hinterland is significantly low when compared to the size of population.The following table shows the wage employment trend as from 1967.

TABLE 28

WAGE EMPLOYMENT HINTERLAND

Year	1967	1969	1971	1972	1973	1978
Employees	19,183	18,722	20,802	24,182	25,774	19,000

Source: Regional Labour Office and own calculations.

8. See C.F. Claeson and B. Egero, Movement to towns in Tanzania, BRACUP Research Note No. 11:1, University of Dar-es-Salaam, 1971.

As the figures above show, the period 1967 to 1978 there has not been any increase in wage employment in the hinterland, signifying that there has not been new opportunities for paid employment.

According to the 1967 census economically active population participating rate for the hinterland is lower than the national average, although higher than that of Arusha and Dar-es-Salaam. The percentage of unemployment to the economically active population in the hinterland is 8% as compared with 2% on the national basis. The census figures include casual employment which tends to understate the real unemployment. Also the high proportion of employment in agriculture at 84% according to the census figures also marks a considerable measure of underemployment. On relative comparison it is significant to note that unemployment rate for the region as a whole is the highest in the nation as per 1967 census.

TABLE 29

ECONOMICALLY ACTIVE POPULATION PARTICIPATION RATE, 1967 CENUS

	(%)
Kilimanjaro	62.7
Arusha	54.0
Tanga	85.4
Coast	66.8
Dar-es-Salaam	56.9
National	79.5

As the figures above show, the period 1967 to 1978 there has not been any increase in wage employment in the hinterland, signifying that there has not been new opportunities for paid employment.

According to the 1967 census economically active population participating rate for the hinterland is lower than the national average, although higher than that of Arusha and Dar-es-Salaam. The percentage of unemployment to the economically active population in the hinterland is 8% as compared with 2% on the national basis. The census figures include casual employment which tends to understate the real unemployment. Also the high proportion of employment in agriculture at 84% according to the census figures also marks a considerable measure of underemployment. On relative comparison it is significant to note that unemployment rate for the region as a whole is the highest in the nation as per 1967 census.

TABLE 29

ECONOMICALLY ACTIVE POPULATION PARTICIPATION RATE, 1967 CENUS

	(%)
Kilimanjaro	62.7
Arusha	54.0
Tanga	85.4
Coast	66.8
Dar-es-Salaam	56.9
National	79.5

TABLE 30

UNEMPLOYMENT, 1967 CENSUS

	Economically Active Population (1000s)	Unemployed (1000s)	Percentage (%)
Kilimanjaro	205.0	16.2	7.9
Arusha	179.5	12.6	7.0
Tanga	370.8	6.3	1.7
Coast	213.9	5.4	1.7
Dar-es-Salaam	102.4	5.9	5.8
Mainland	5,328.3	96.8	1.8

Sources: 1967, Population Census, Bureau of Statistics Vol. IV, 1973.

By far the greatest hinterland employer is the agricultural sector (other than wage employment). Most of the people in the hinterland engage themselves in agricultural production of such crops as coffee, maize, bananas, beans, pyrethrum, dairy-cattle raising etc. Presently a full 94% of the households in the region are smallholder farmers representing 91% of the total population of the region. It should be noted that the average gross acreage per household is 0.66 ha.* and further subdivison is currently going on as the population increases. It is therefore safe to say

* Compare with Table 33.

that this high proportion of employment in the agricultural sector is masking a lot of underemployment within the hinterland. However this does not negate the fact that agriculture accounts for the majority of jobs (in 1975 it was 81.6% of total number of jobs) in the region indicating the heavy dependence upon this single sector. Reference is made to table 31.

TABLE 31

GROSS REGIONAL PRODUCT (GRP) AND EMPLOYMENT (1975)

Sector	GRP (million Shs)	%	Employment Nos.	%
Agriculture	764.9	67.1	208,997	81.6
Mining	26.4	2.3	1,051	0.4
Manufacturing	54.0	4.7	11,390	4.4
Electricity and Water	13.8	1.2	793	0.3
Construction	26.0	2.3	1,276	0.5
Trade	115.3	10.1	6,078	2.4
Transport and Communication	19.5	1.7	4,433	1.7
Services	120.2	10.3	18,184	7.1
Not Stated			3,863	1.5
Totals	1,190.1	100.0	256,065	100.0

Source: RDD's Office and author's calculations

3:3:0 Hinterland Resource Base

The mountain chain of Kilimanjaro and Pare Mountains comprise the highland areas and the plains, the lowland areas. The former are densely populated and mainly agricultural with adequate rainfall, excellent water resources and good soils with high potential.[9]

The conditions in the vast lowland areas are different. The potential of soils is in general considerable but the shortage of water is the main obstacle to cultivation. There is also a lower population density whereas net average annual income per farmer family is also considerably lower.

The hinterland resources include crops (cash and subsistence), forestry, fishing, tourism, livestock and, to a lesser extent, quarrying and industry (manufacturing). Agriculture is by far the main occupation of practically every rural household and thus it is the mainstay of the economy of the region.

The study of the resource base of the hinterland makes it possible to see the sources of

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9. See V. James, Unpublished M.A. Thesis, University of Nairobi, 1979, p. 52.

livelihood and income-earning capacity as well as opportunities available for the people of the hinterland. The analysis further highlights the raw material sources of the industries in Moshi town thus specifying the economic links that exist between the two areas.

3:3:1 Agriculture:

The crops grown in the hinterland include coffee, bananas, maize, wheat, sisal, sugarcane, beans and pyrethrum. The salient features of the main crops are summarized herein under.

Coffee:

Arabica coffee is the only type of significance produced in the study area, which accounts for between one third and two-thirds of national supply.[10] All arabica coffee harvested in Tanzania is delivered for processing at the Coffee Curing Works in Moshi.

It is apparent that the average size of small holdings, Kihamba and Kithaka*, has declined in the last decade due to subdivision. Coffee is interplanted with banana to provide shade. The average size of coffee-banana holding is 0.46 to 0.48 ha (1.14 to 1.19 acres).

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10. Tanzania Coffee Board Annual Reports (various) Moshi, Tanzania.

* Kihamba and Kithaka - Traditional farm for Chagga and Pare respectively.

On average coffee estates have 65 to 75 ha. each. 60% of estates range in size from 25 to 100 ha. However the largest estate reach the size of 350 ha. The estates are now under nationalised management.

The Moshi Coffee estates use artificial fertilizer but it is never used by smallholders.

TABLE 32

COFFEE IN KILIMANJARO AREA

Type of Holding	Area Under Coffee		Average Yield Parchment	Deliveries of Clean Coffee	
	ha.	%	Kgs/acre	1000 tons,	%
Smallholders	41,600	90.6	175	14.4	82.8
Moshi Estates	4,300	9.4	445	3.0	17.2

Source: Regional Agriculture Reports and Estate Returns, 1979.

TABLE 33

CULTIVATED AREA (Km^2) BY DISTRICT (1977)

		Hai	Moshi	Rombo	Pare	Total
1	Total Area (Km^2)	2,109.9	1,764.1	1,435.0	7,900.0	13,209.0
2	Cultivable land	1,516.3	1,346.7	502.4	5,012.9	8,378.2
	(% of 1)	71.9	76.3	35.3	35.0	63.5
3	Land Cultivated (gross agric. acreage)	725.1	621.5	283.8	360.1	1,990.5
	3-1 small-holders	313.2	354.0	354.2	392.6	1,414.0
	3-2 Estates	315.4	203.7	0.6	56.8	576.5
4	Rate of Cultivation (%)	47.8	46.1	56.5	7.2	23.6
5	Rural population	155,500	315,900	141,300	177,300	790,000
6	ha/person	0.47	0.20	0.20	0.20	0.25
7	Irrigated area	32.0	154.4	3.0	90.0	279.4

Sources: Ministry of Agriculture and Bureau of Statistics.

The current returns to coffee in the hinterland area are estimated as follows:

TABLE 34

COFEE RETURNS

	Smallholders T.sh./Acre	Estate T.sh/Acre
Pest and Disease Control	50	500
Fertilizer	-	450
Hired labour	130	1125
Family labour	550	-
	50	-
Depreciation	-	70
Bags	-	75
Transport	-	70
Total Cost	780	2290
Yield of parchment Kg/acre	180	500
or T.sh./Kg.	4.5	5.5
Grass Revenue	810	2750
Net Return	+30	+460

Source: Author's Survey 1980.

The margins shown above fluctuate from season to season due to fluctuations in yields and prices; for example in the last season 1980/81 average prices were T.Sh. 9 per kg. but average yields were considerably lower than what is stated in the table. But these fluctuations some how balanced one another. Actual cash receipts by the smallholder are higher than the net margin implies because family labour is not an immediate cost centre. It should also be noted that the cost of pest and disease control is the estimated cash cost to the farmer; it excludes the cost to the state of the subsidy.

The interest in reviving the programme of central pulpery construction as the best means of improving the overall quality level of smallholder coffee should be treated with extreme caution. Presently most of the existing pulperies are improperly run, under utilised, poorly maintained and unprofitable. The problem lies mainly with poor management. The potential technical improvement in coffee quality to be derived from central pulpery provides strong argument in the long run, along the lines successfully pursued in Kenya. However, a cautious approach to the expansion programme can be recommended, in the short term by first overcoming managerial problems through more effective supervision; existing pulperies should be seen to be working economically and

efficiently before a programme of building 47* pulperies is embarked upon by Kilimanjaro Region.

The long term outlook for coffee cannot be said to be a very bright one. Firstly, the long term external market constraints are likely to limit volume growth to 3% p.a. for the long time to come. Secondly, export prices are volatile. The best prospect for improved foreign exchange earnings lies in raising the average quality of coffee offered to buyers; there is need also to look into further processing of coffee into the final product for both local and external consumption.

The raising of the quality of coffee requires for its achievement a progressive and permanent improvement in husbandy, and more in the way of inputs. However the trend of cost and prices has been such as to squeeze farm income quite sharply in recent years. The effect is likely to be disincentive to effort and investment. In addition the placing of estate management from private to public sector largely dependent on the narrow base of local skills raises a serious question of whether the quantity and quality of estate production can be maintained in the near future. Already most of the nationalised coffee estates are having very low production returns as a result of gross mismanagement.*

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* Kilimanjaro Region intends to construct 47 pulperies in the near future (RDD's office).

Maize:

Maize is the staple food grain in the hinterland. It is both grown by smallholders and on estates. It is also interplanted with beans, coffee, banana, cotton and even vegetables. Available data suggest considerable annual fluctuations in harvested production and estimates show that Kilimanjaro is a deficit area.

TABLE 35: MAIZE DEFICIT

1000 tons	Kilimanjaro District
Production (excluding estate production)	56.1
Official purchases	7.0
Official local sales	3.1
Available for consumption	52.2
Estimated requirement	56.7
Apravent deficit	-4.5

Source: Regional Agricultural Office, 1980

Maize is grown primarily as a subsistence crop and surpluses taking good with bad years tend to be marginal and fluctuate with maize production. Furthermore, the pricing policy has not been such as to supply an incentive to growers if you take production costs into consideration.

Bananas

Bananas are by far the most important staple food crop for most of the population living on the slopes of Mt. Kilimanjaro and are also used as a basis for local beer making.

Nearly all smallholder coffee is interplanted at varying densities with bananas. There are in addition, small stands of bananas in the plains, so that the bananas area slightly exceeds the coffee area in total.

TABLE 36: BANANAS PRODUCTION/CONSUMPTION IN KILIMANJARO

Estimated Area in hectares	44,000
Yield range tons/ha	5 - 8
Production range 1000 tons	220 - 352
Consumption 1000 tons	261 - 278

Source: Kilimo Files, Annual Reports and estimates by aut

Kilimanjaro is apparently a surplus area in bananas. Although it is grown mainly as a subsistence crop, there is a sizeable trade in bananas amounting to perhaps as much as 20 - 30 per cent[11] of the annual crop. The

11 - These are only estimates. There are no existing official figures.

periodic markets within the hinterland are flooded with bananas for sale. They are headloaded from the smallholder farms to the nearest markets as part and parce of the local trade. Bananas are also sent - over large distances - to the plains areas at the estimated rate of 35 - 40,000 tons per annum, to Moshi town at the rate of 1,500 - 10,000 tons a year, to Dar es Salaam, and other points outside Kilimanjaro at a rate of 2,000 - 3,000 tons per annum.[12]

There is virtually nothing in the way of cash inputs in banana farming. Claims on family labour are also small. Therefore, net returns are close to gross returns. Prices vary with season, variety and quality. The annual average is about T.Shs.0.69/kg. which for a yield of 5 tons, represents a gross return of T.Shs. 3,350 per annuam.

Let it be made clear here that banana farming has had very little attention of planners or agricultural advisory staff in the past. This has been a colonial legacy for which crops not meant for export have had little attention of the central goverment.

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12 - Also only estimates.
13 - This is contrasted with export crops, all virtually have extension officers.

However, the scope for improvement is considerable, average yields of pure stand in East Africa can be 15 - 20 tons/ha while yields of 38 to 50 have been achieved.[14] The 7 tons of bananas now harvested from a hectare in Kilimanjaro is equivalent to 2 tons of maize in calorific terms. Two tons of maize a hectare could only, however, be achieved after a long period of years of more intensive extension effort than is now the norm in Tanzania. A programme directed to the improvement of banana yields, therefore, makes good sense and essential. Banana production will have to expand by 40% to 50% in the next 10 years merely to maintain the dietary standards of a rising population.

Sugar

The sugar industry in Kilimanjaro is dominated by the operation of the Tanganyika Planting Company Ltd. (TPC) which is both the sole producer of refined sugar in the area and also has a crucial national importance in producing half the country's domestic sugar supplies.

The TPC factory is located about 20 km. from Moshi town and is connected to the latter by an all

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14 - Lyamungu Coffee Research Station Reports.

weather road. The gross area of the TPC estate is 20,000 acres (8095 ha.) of which some 13,000 acres are under sugarcane. There are plans to extend cultivation by taking over 1480 acres of the neighbouring Kahe Sisal Estate and 4,000 - 5000 acres of the East African Kenaf Farm.

Yields on the T.P.C. estate are high: 45 - 50 tons of sugarcane an acre per annum, equivalent to 4 - 4½ tons of refined sugar at an extraction rate of 9%. Sugar production is currently at a rate of 55,000 tons a year having risen fairly steadily over a period of 10 years by 60%. Cane is grown entirely under irrigation. Half the present acreage and all future expansion is dependent on water from boreholes.

Cutting is by hand throughout the year with the exception of a 2 or 3 weed period for plant maintenance. For this reason, TPC employs 3,5000 people and is the largest single employer in the whole region. Since there are no outgrowers, any future expansion implies more employment for the factory.

Apart from sugar, the factory has other products too. For every 10 tons of sugar produced, there are

3 to 4 tons of molasses for which there is need to find out how this product could economically be used both to create employment and to produce other products locally and reduce imports.[15]

T.P.C. does not control the marketing and distribution of its own sugar. This responsibility is vested into the national Sugar Development Corporation with headquarters in Dar es Salaam. It is no wonder that there can be an acute shortage of sugar in Moshi while it is abundant in Dar es Salaam!

Wheat:

Kilimanjaro together with Arusha region account for over 90% of Tanzania's marketed wheat supply. It is grown almost entirely as a cash crop and mainly on large estates in West Kilimanjaro. The area under wheat is currently 4,500 hectares in west Kilimanjaro and production fluctuates from year to year due to drought and the quality of farm management.

TABLE 37: WHEAT PURCHASE:(Yearly Average 1000 tons)

Period	Kilimanjaro Region	Arusha Region
1964 - 69	8.7	14.1
1970 - 72	11.9	24.9
1973 - 75	6.6	21.5

Source: Regional Agricultural Office, Moshi, 1980.

15 - Molasses can be used to produce a variety of products including power and industrial alcohol.

All wheat cultivation is heavily mechanised in the form of mechanical seed drilling, tractor spraying of herbicides and insecticides and combine harvesting. Although fertilizer input is rarely used, costs of production have risen more rapidly than market prices due mainly to fast increase in fuel costs. Most of wheat harvested is milled in Arusha and the flour surplus over and above local requirements is sold in the nearby regions of Tanga, Singida, Shinyanga, and Mwanza. National wheat demand is alarmingly high at about 90,000 tons per annum. Most of this demand has to be met by imports, once again, constraining the little foreign currency available. There is ample capacity for expansion to increase the area under wheat and improve the yield per unit area.

Other Crops:

A wide variety of pulses are grown primarily for subsistence. They are important for local diet, although their importance tends to be underestimated by authorities. The pulses are generally interplanted with maize with notoriously low yields. Most of the exchange in pulses takes place in the local periodic markets which are found almost everywhere in the hinterland.

Export beans are grown in West Kilimanjaro and in some of the coffee estates. They are mainly grown for the purposes of supplying seed and for canning.

Pyrethrum is grown to a smaller extent, in West Kilimanjaro and Rombo, but there has been a decline in production attributable to level and terms of payment and to the fact that the crop makes a heavy demand on labour. The dried pyrethrum flowers have to be sent to Tanganyika Eztract Company's plant at Arusha burdening the farmer on extra cost of transportation. Kilimanjaro farmers produce only about 30 tons of the crop, 1% of national production. The neighbouring Arusha region produces about 8% .

Another cash crop produced in the area on a minor scale is cotton , grown mainly in the lower areas of Moshi and in the Pare footland areas. Production in recent years has been declining due to low prices and bad crop husbandry. The area under cotton is currently over 3,500 hectares and cotton growing is confined to smallholdings, generally of 1 - 2 hectares. There are two cotton ginneries in the area, one at Moshi and the other in Pare. The ginneries are currently experiencing

underutilisation of capacity. The lint is sent by rail to Dar es Salaam while the cotton seed is sent to Morogoro for crushing.

Sisal is also produced in the hinterland in areas where rainfall is low particularly in lower Moshi and in Pare footland areas along the Tanga railwayline. It is essentially an estate crop by which each estate has a factory (DECORTICATOR) for removing the pulp. The poor price record of the 1960's has been the main factor in the decline of sisal production in Kilimanjaro and Tanzania as a whole. However, in recent years, its world price has been very favourable and currently, there is a rehabilitation programme in raising sisal production. Sisal lint is a raw material for the manufacture of rope (sisal twine and cordage), sisal mattresses, floor mat/carpets and sisal bags.

3:3:2: LIVESTOCK

The hinterland area has large herds of cattle, sheep, goats,chicken and pigs. The meat from such animals is highly important to provide the necessary protein intake in the people's diet.

The estimated cattle population in the area is about 200,000 or slightly more than 1 cattle per household. Most of the cattle is the local zebu type which is lean and disease resistant. However, there is a substantial number of grade cattle mainly kept in the coffee/banana belt.

In the heavily populated coffee/banana zone, cattle are kept to provide some milk for subsistence;and farmyard manure, but grazing resources are almost non-existence and all cattle are kept and fed in doors.

In Kilimanjaro region, the regional livestock development officer* estimates that there is an annual intake of 100,000 heads of which only half is inspected at slaughter. Therefore, in the final analysis, the region is a large net importer of cattle from neighbouring regions such as Arusha, Dodoma, Sangida and Sinyanga particularly to supply urban demand.

Milk production is divided between a traditional mainly subsistence sector and a commercial sector pasteurising milk for the urban areas. The large scale dairy farms in West Kilimanjaro supply milk to the processing plant in Arusha. Commercial smallholders are

*R.D.D.'s Office, Moshi, 1980.

concentrated in the coffee/banana belt with local sales of milk to supplement their income. There is a large unsatisfied demand for milk in both the urban area of Moshi and the rural areas.

So far, the government provides assistance to the large-scale nationalised farms in West Kilimanjaro but little or no asistance is intended for small-holders sector. Definitely, if more help is given to the latter sector in the form of qualified advisory staff, stock improvement, the economies of milk production and improved fodder grasses, then this sector could become a very important source of income for a population which solely relies on coffee cash sales.

Stocks of goats and sheep are kept entirely for subsistence milk and meat production. However, there is a significant local trade in sheep and goats and about 20,000 heads a year are brought into the hinterland for slaughter. The skins are sold to the Hides and Skins Company for delivery to the tanneries factory.

A commercial poultry industry has laid some firm basis in the hinterland to provide meat and eggs.

However, the bulk of poultry production is confined to the smallholders who get almost no financial help from the regional authorities. The poultry industry is another area for diversification from sole dependence on coffee as a source of cash income since poultry keeping could provide a valuable source of income for smallholders and also especially for Ujamaa villages located in poor agricultural areas where crop production is unreliable. There are no problems in demand because national growth rates of 7% and 9% for poultry meat and eggs[16] respectively are very promising. Improvement is particularly needed in the areas of availability of day-old chicks and quality of poultry feed; also processing capacity and marketing.

3:3:3 Other Resources

Mining and quarrying is directed almost exclusively to the production for local building and construction. Such materials include clay, sand, gravel and stone. The output of the industry is mainly bought and used within a short radius of its source. There is one limestone concession that is mined in the Pare district and produces about 400 tons per annuam and is sent by rail to Dar es Salaam for use in cement production. Otherwise, there are no valuable mineral deposits in the area.

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16 - Growthrates estimates by Marketing Development Bureau, Ministry of Agriculture, Dar es Salaam,

The forest resources of the hinterland comprise primarily the indigenous forest which is concentrated around the peak of Mt. Kilimanjaro and softwood plantations which have been raised in the forest resource. The forest resources are geared towards the satisfaction of local and national demand. For efficient exploitation and utilisation of forest products, there is a large complex at Moshi comprising a sawmill, timber treatment, plywood, housing components, transmission poles and furniture, all of which use the forest products as raw materials; the Kibo Match factory uses wood for the manufacture of match sticks; the various furniture firms in Moshi town use sawn wood from the hinterland. In fact, forest timber is one of the resources that have excellent backward and forward linkages - the forest products are used as inputs in many of the industries in Moshi; the output in turn, is bought by the people in the form of various furniture products such as beds, chairs, tables, crates, etc. The industry can generate a lot of employment opportunities if properly managed, exploited and control is effected. Smallscale industries can be embarked upon using forest products, not only in the town, but more so in the hinterland generating income and imparting skills.

It is estimated that as much as half the removals are currently unrecorded suggesting that this escapes

the eyes of forest officers and therefore illegal. More stringent measures should be taken to ensure efficient utilization and exploitation of particularly indigenous timbers; furthermore, there is need to make up an inventory of forest resources so as to facilitate the efficient exploitation. Reference is made to tables 38 - 42.

TABLE 38: AN INVENTORY OF PRODUCTION FORESTS IN KILIMANJARO HINTERLAND

Name of Forest	Area in Size (hectares)
Rau	620
Chambogo (Pare)	5,467
Chome (Pare)	14,283
Kahe I and II	1,277
Kilimanjaro	185,896
Total	207,543

Source: R.D.D.'s Office, Kilimanjaro and office interviews 1980.

TABLE 39: PRODUCTION FROM FORESTS (LOGS)

Year	Volume (m^3)
1971	16,900
1972	19,500
1973	30,400
1974	15,400
1975	20,400
1976	30,000
1977	30,000
1978	30,000
1979	30,000

Source: R.D.D.'s Office, Kilimanjaro and Office interviews, 1980.

TABLE 40: MAIN CONSUMERS OF FOREST PRODUCTS

Consumer	Volume (m^3)		
	1972	1973	1974
Majengo Timbers	351	1,911	339
Kilimanjaro Timbers	528	5,044	5,943
Kilimanjaro Saw Mill	1,648	3,423	4,576
Sambarai Saw-Mill	-	273	416
New Kilimanjaro	186	302	690
C.Singh	660	1,923	5,686
Moshi Plywood	-	3,567	2,368
Total	3,373	16,443	20,018

Source: R.D.D.'s Office, Kilimanjaro and Office interviews, 1980.

TABLE 41: THE WOOD PRODUCED HAS BEEN USED AS FOLLOWS

Year	Housing Materials (m^3)	Fuelwoods & Charcoal (M^3)	Totals (M^3)
1971	8,900	58,963	67,863
1972	14,045	2,045	16,090
1973	13,813	3,674	17,487
1974	7,715	16,075	23,790
1975	12,962	20,133	33,095

Source: R.D.D.'s Office, Kilimanjaro, and office interviews, 1980.

TABLE 42: PRODUCTION AND DEMAND

Year	Production (M^3)	Total Demand (M^3)	Shortages of surplus (M^3)
1971	16,900	67,863	- 50,963
1972	19,500	16,090	+ 3,410
1973	30,700	17,487	+13,213
1974	15,400	23,790	- 8,390
1975	20,400	33,095	-12,695

Source: R.D.D.'s Office, Kilimanjaro, and office interviews, 1980.

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1975	20,400	33,095	-12,695

Source: R.D.D.'s Office, Kilimanjaro, and office interviews, 1980.

Looking at the various tables above, it can be seen that demand for forest products has been steadily increasing within the region and since 1974, it has been necessary to import products from other regions to fill the gap. There should be a considerable change in demand for wood as population increases, living standards rise and income increases.

The annual production of existing commercial exploitation forests will be maintained at the present level of 30,000m^3 since they are for the most part rather small in scale and production cannot be increased rapidly.

Kilimanjaro is an integral part of the Northern Tourist Circuit of Tanzania. The Kilimanjaro National Park was created mainly to facilitate mountain climbing; the other game viewing areas within the hinterland include Mkomazi in Pare district and Sanya Plains near Kilimanjaro International Airport. Apart from making Kilimanjaro as a national park, nothing much has been done by the authorities to fully integrate Kilimanjaro region as a tourist attraction in the sense that the bulk of tourist investments has been made in the neighbouring region of Arusha and in fact in recent years, the importance of the hinterland and Moshi as part of the

northern tourist circuit has sharply declined at the expense of Arusha. The latter presently has more than its share of tourist facilities in the form of first class tourist hotels, publicity offices and personnel[17]. In fact, the Kilimanjaro International Airport was constructed half-way between Moshi and Arusha to facilitate tourist development for both regions; however, subsequent tourist investment trend has been otherwise - the Kilimanjaro side has received little or nothing in the way of tourist development as of late.

In fact, a new northern tourist route is possible considering the promising future of the whole northern area including Mt. Kilimanjaro and Mkomazi Game Reserve. This exploitation of tourism resources will bring in more foreign currency, increase the employment opportunities of local inhabitants and accordingly raise their income. At the same time, it is necessary to conserve the important tourist resources, natural environment and wildlife together with this exploitation.

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17 - See Msuya, Unpublished M.A. Thesis, University of Nairobi, 1979.

TABLE 43: COMPARISON OF ECONOMIC GROWTH (1966 PRICES)

Year	GDP (National)		GRP (Kilimanjaro	
	GDP Million Shs.	Per capita Shs.	GRP Million Shs.	per capita (Shs.)
1967	6875	575	435.7	667
1975	9590	648	588.4	680
1980	11780.3	698.1	709.0	687
Yearly change (%) 1967-80	4.2	1.5	3.8	0.2

Source: Bureau of Statistics, R.D.D.'s Office and author's survey

TABLE 44: ESTIMATED ECONOMIC MICRO-FRAME (1975 Prices)

	Sectoral Distribution (%)			Rate of Growth	
	1975	1980	1985	1975-80	1980-85
Agriculture	67.1	63.0	57.8	5.1	5.1
Mining	2.3	1.9	1.5	2.5	2.0
Manufacturing	4.7	6.1	8.4	12.0	14.0
Electricity & water	1.2	1.7	2.6	14.0	16.0
Construction	2.3	2.9	4.1	12.0	14.0
Trade	10.1	10.9	11.5	8.0	8.0
Transport and Communication	1.7	2.0	2.3	9.5	10.0
Services	10.5	11.4	11.9	8.0	8.0
Total	100.0	100.0	100.0	6.4	7.0
GRP (Shs.Million	1140.1	1553.0	2173.6		
Population(1000)	865.0	957.4	1109.8	3.0	3.0
Per capita GRP (Shs.)	1318.0	1622.1	1958.6	2.9	3.7

Source: Bureau of Statistics, R.D.D.'s office and author's survey.

TABLE 45: CROP PRODUCTION

A: CASH CROP PRODUCTION IN AVERAGE YEAR (TONS)

Coffee	20,518
Cotton	1,196
Sugar	56,296
Sisal	6,986
seedbeans	770
Pyrethrum	95
Cardamon	19
Other crops (cash)	1,978
Totals & averages	87,858

B: FOODCROP PRODUCTION IN AVERAGE YEAR (TONS)

Bananas	305,809
Maize	45,466
Beans	2,904
Finger Millet	3,800
Rice	6,332
wheat	9,359
Cassava	3,125
Irish Potatoes	8,830
Sweet Potatoes	3,965
Vegetables	3,034
Citrus Fruits	83
Other Food crops	321
Totals and Averages	393,023

Sources: Regional Agricultural Office, Bureau of Statistics and field estimates, 1980.

3:4:0 Communications Linkages

3:4:1 The transportation system:

It is an important part of the infrastructure and includes railways, airports and roads. This system links the hinterland with Moshi town in the first place and secondly provides the essential service of hauling goods and people to other parts of the country and the world at large. By all means the transportation system is very important in the analysis of economic linkages and development gap between Moshi town and its hinterland.

As regards the railways, the area is served by the Tanga Railway which gives direct access to the ports of Tanga and Dar es Salaam. Inbound freight consists mostly of oil, cement and assorted manufactures. Outbound freight consists mainly of the hinterland's agricultural products including those from Arusha region. At Arusha station average annual inbound tonnage amounts to 60,000 - 70,000 tons, outbound between 30,000 - 40,000 tons. At Moshi station where most of the products are either offloaded or loaded, the annual average inbound freight is 80,000 tons, outbound between 50,000 and 80,000 tons. The railway line also handles passenger traffic to Tanga and Dar es Salaam.

The area is well served by the new Kilimanjaro International Airport (K.I.A.) and by general aviation airports in Moshi and Same. There are also a few landing airstrips in West Kilimanjaro.

K.I.A. is built to a very good standard capable of handling the largest jet aircrafts. The terminal can handle 700 passengers per hour, while its present number of passengers is less than 200 per day. Therefore, it is greatly underutilised and there is ample capacity, even if a large number of tourists are attracted to the area. Also, K.I.A. handles a relatively small volume of air cargo (744 tons in 1974). There is scope for considerable expansion of air export for such items as vegetables, meat and flowers.

Moshi airport is operated for general aviation only. The bulk of the operations are for business flights and charter flights to the game areas. Its present capacity is adequate.

The airports in West Kilimanjaro are infrequently used while some are abandoned.

The road system is highly developed, if not by its quality then by its extent when compared to other regions in the country. The density of trunk, territorial main

local main and regional roads is 0.12 km/km^2 in the Kilimanjaro region. On comparative basis, road density in Arusha Region is 0.03 km/km^2, 0.08 km/km^2 for Mwanga and Tanga while the national average is less than 0.05 km/km^2.

From the main roads, which are usually bituminized or with gravel surface, minor roads extend into the areas they feed (thus feeder roads) thereby connecting at least one village to the main road.

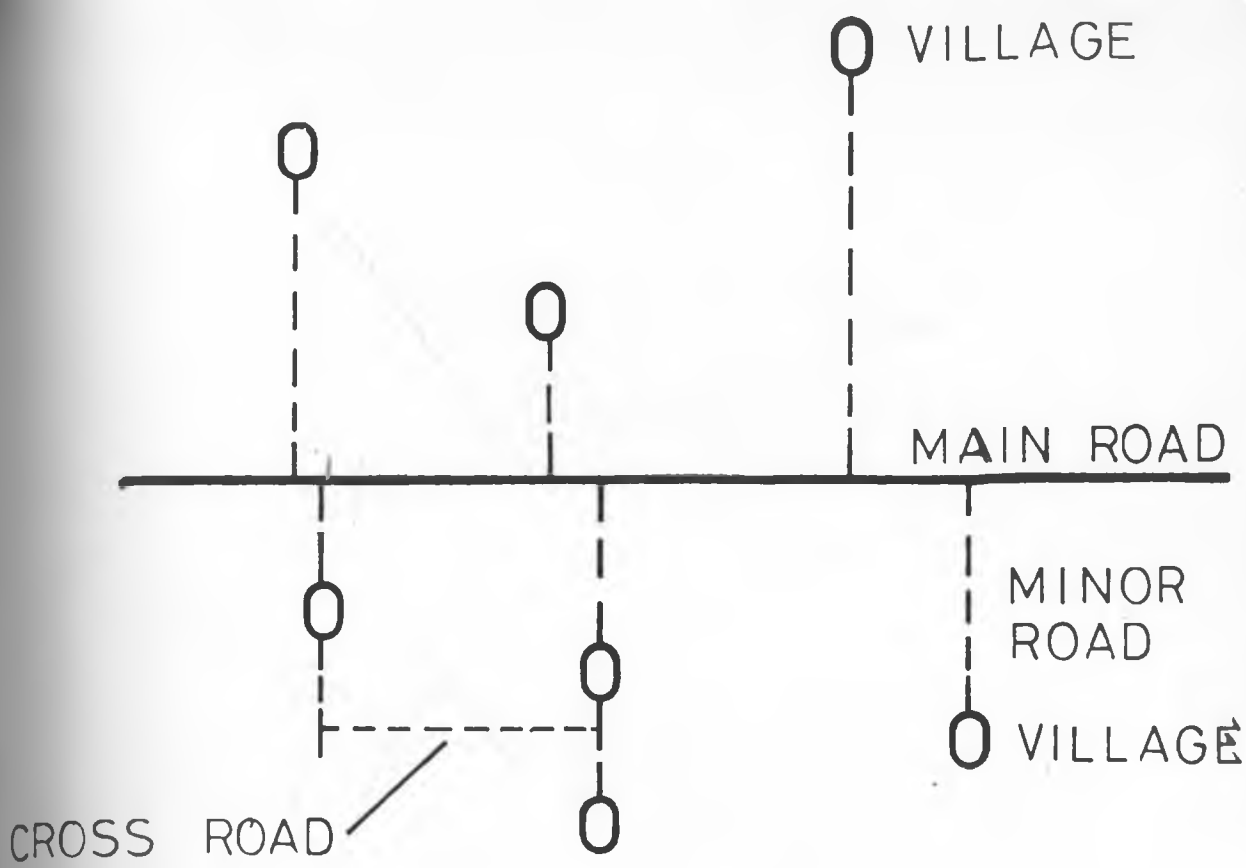
The primary road net work consists of the Northern Trunk Road that enters the hinterland in Same District and proceeds to Moshi. From here, it continues in a western direction to Arusha. From Moshi, there is an eastern branch to Taveta on the border with Kenya. The northern trunk road is bituminized with 18 - 20 feet carriageway. Some sections of this important road are very bad due to poor maintenance.

The quality of the feeder roads varies from place to place,but generally poor and in some cases very poor. They range from engineered gravel roads (e.g. Kibosho, Rombo etc.) or even bitumen roads (Sanya Juu, Machame, and Marangu) to mere earthen tracks (e.g. Uru, Kirua, Ugweno etc.) The former, however, have quite often deteriorated due to acute insufficient maintenance to a state where they can now be termed as "improved earthroads" only. Some of these feeder roads

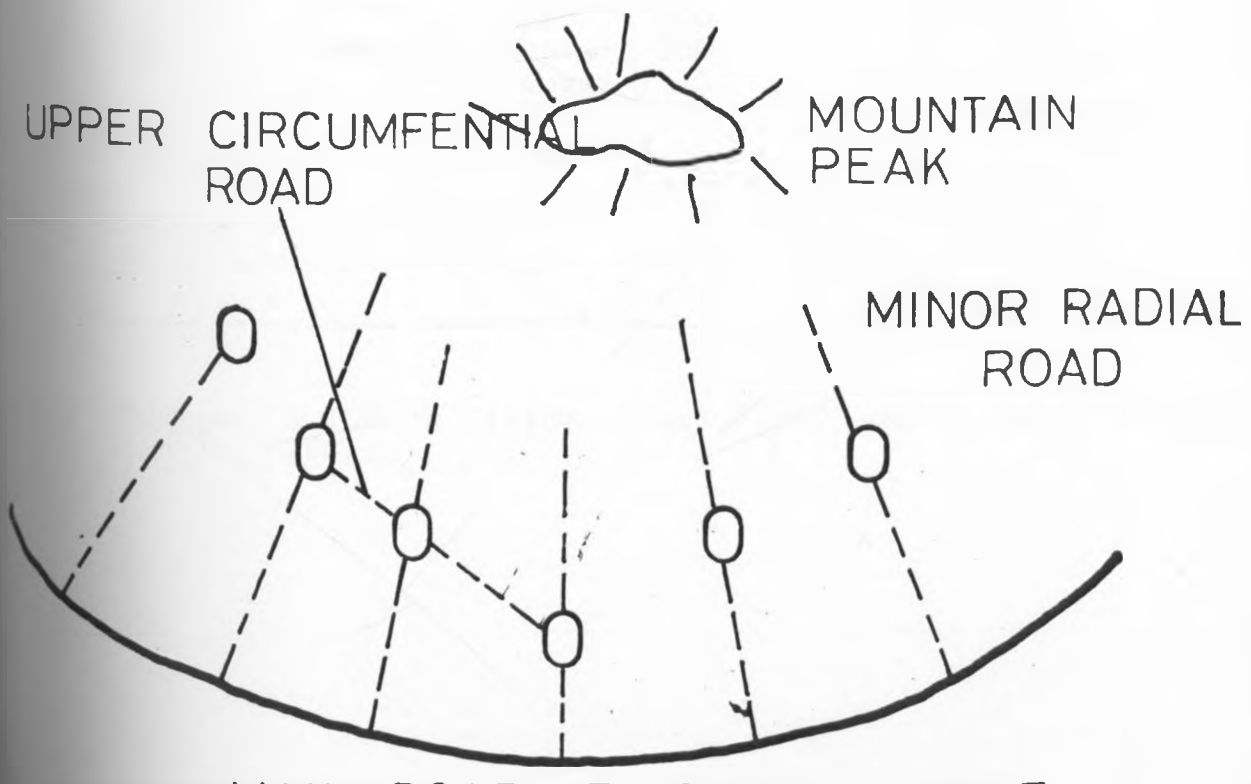
are impassable during the rains cutting off communication between the affected villages and Moshi town. The continued state of affairs might cause a constraint to development in the sense that there might be a decrease in the net value of agricultural production in the road influence areas. It must be emphasized that most of the basic essentials like sugar, cooking oil, some building material etc. are hauled from Moshi town through the feeder roads to the peasants in the hinterland. Furthermore, the main cash crop of the hinterland, coffee, has to be sent to the Coffee Curing Factory at Moshi town by lorries and pick-ups in most cases utilizing the feeder roads.

If the feeder roads and the primary road are improved, a number of benefits will accrue such as reduction in vehicle operating costs, passenger time savings, reductions in accident, inventory and road maintenance costs.

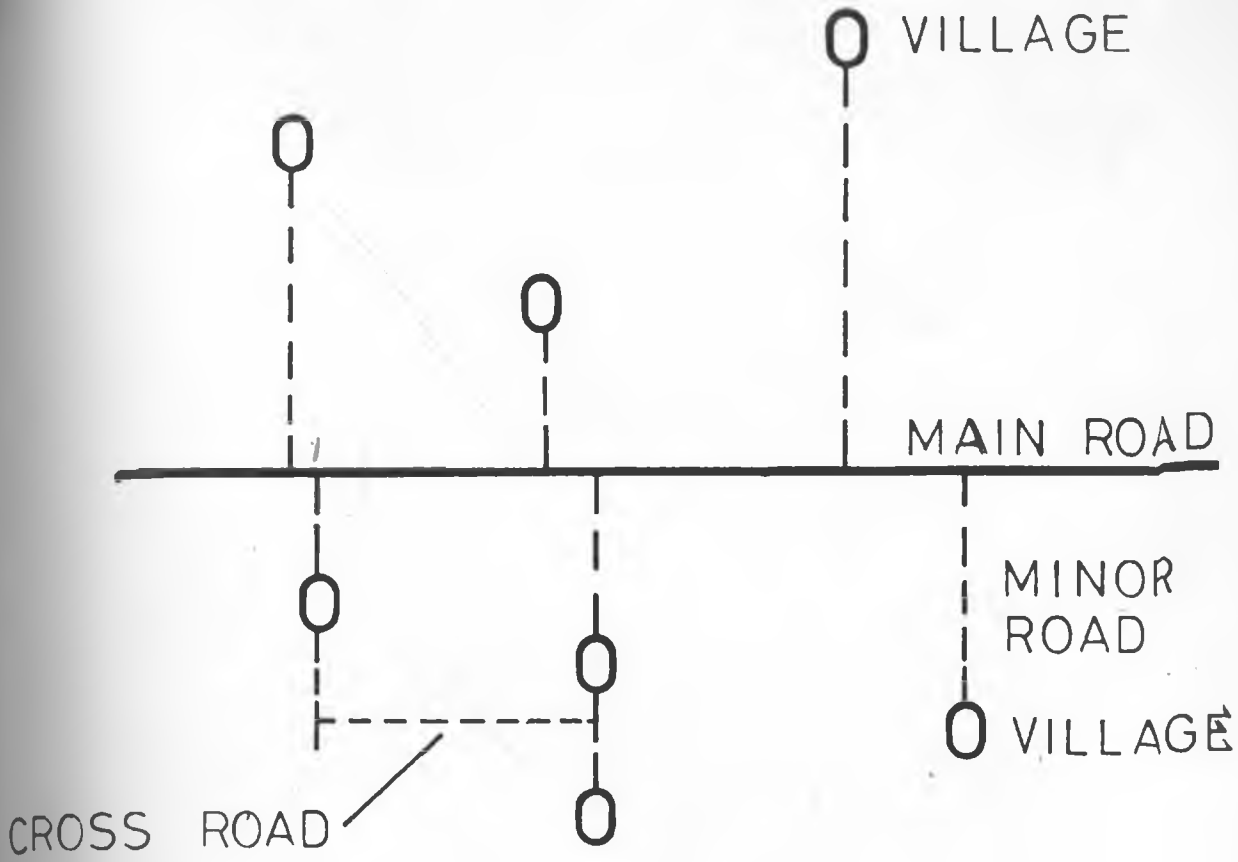
The road system in the hinterland has a general pattern as shown below:



FLAT TERRAIN



MOUNTAINOUS TERRAN



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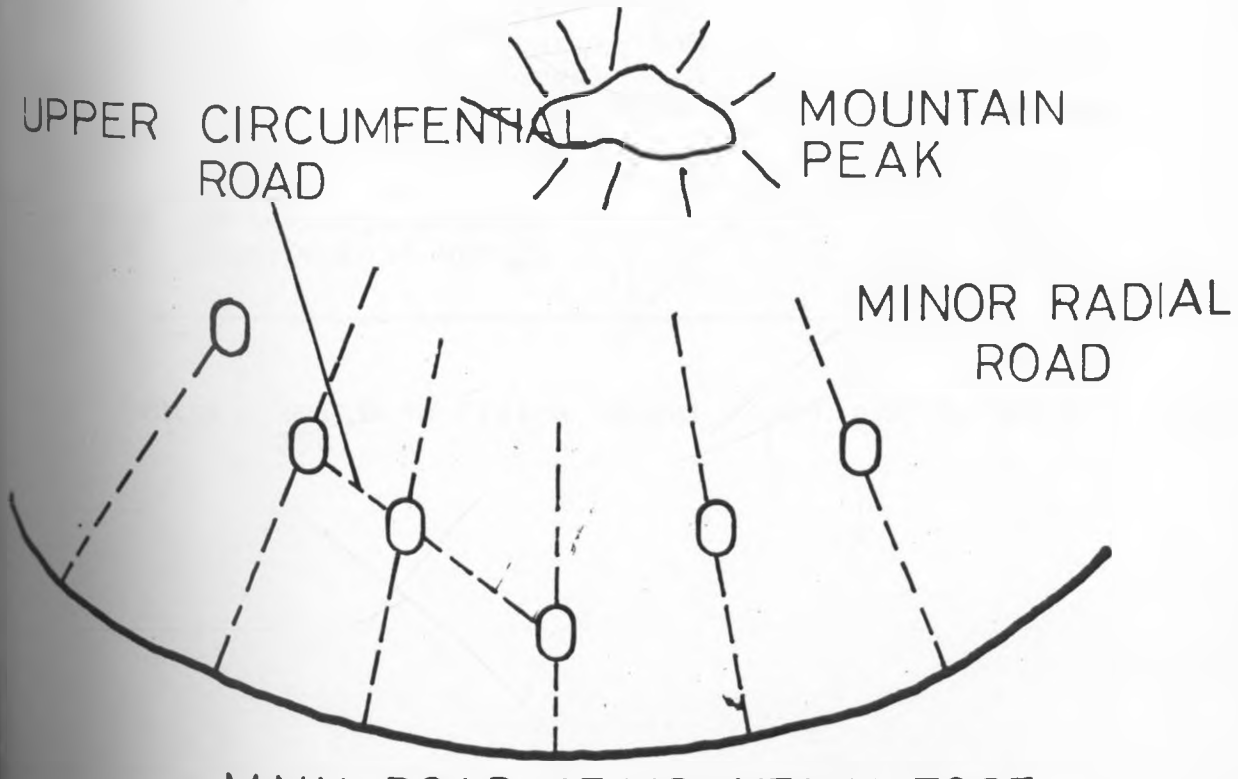

MOUNTAINOUS TERRAN

TABLE 46: FEEDER ROADS: HINTERLAND

Road	Estimated Average Daily Traffic, 1975 (vehicles per day)	Road condition Existing 1981
1. Mwika-Mkuu	200	Earth
2. Mkuu-Tarakea	30	Earth
3. Tarakea - Keni - Taveta Road	20	Earth
4. Mwika-Himo	130	Earth
5. Middle Rombo	50	Earth
6. Kilema-Marangu-Mwika	165	Earth
7. Kirua -Kilema	60	Earth
8. Himo-Makuyuni-Kileo	20	Earth
9. Himo-Marangu	300	Bitumen
10. Moshi-Kahe	80	Earth
11. Moshi-Old Moshi	80	Earth
12. Moshi-Mkokomu	50	Earth
13. Moshi-Uru East	150	Bitumen
14. Moshi-Uru West	200	Earth
15. Moshi-Kibosho Mission	150	Gravel
16. Old Arusha Rd.-Umbwe	250	Gravel
17. " " Lyamungu	150	Earth
18. Mango-Kombo-Machame Hospital	40	Earth
19. Moshi-Arusha Chini	600	Gravel
20. Kikafu-Machame Central	350	Bitumen
21. Boma Ng'ombe-Rundugai	15	Earth
22. " " Sanya Juu	300	Bitumen
23. Olmolog-W.Kilimanjaro - Sanya Juu	150	Earth
24. Same-Gonja-Mkomazi	-	Earth
25. Same-Ugweno-Mwanga	-	Earth

Source: R.D.D.'s Office, Moshi, 1980. and Author's Survey 1981.

MT. KILIMANJARO

Kibo

FOREST RESERVE.

SANYA JUU

MKUU

MOSHI

FEEDER ROADS

LEGEND

- National Boundary
- Regional "
- Trunk Road
- Feeder Road
- Railway
- Market
- Airport

0 5 10Km

Kutolie F.S.

D.U.R.P.

M.A. Planning

1980/81

MOSHI INDUSTRIAL SECTOR AND HINTERLAND

MAP NO 10

Some of the minor roads carry relatively large traffic volumes up to 600 vehicles per day.[18] This can be seen in Table 46 which shows a traffic count carried out in 1975 and due to import control of cars, there has not been a significant increase in traffic volume by 1981. The total length of feeder roads considered as minor district roads is 2073 km. of which class A: 737 km and Class B: 1336 km. The legnth of trunk roads, mentioned above, is 291 km. of which 239 km. is bitumen and 52 km. is gravel.

3:4:2 Other Communications Links

Postal and telephone services at the regional level converge at Moshi where connections to the rest of the country and the world at large can be made. These facilities provide quick communications links particularly between the remote rural areas to the rest of Tanzania in terms of commercial, industrial, educational,agricultural, medical and other emergency services.

The hinterland has 6 departmental post offices while there are 28 sub-departments that serve the people of the rural areas. This is highly inadequate in the sense that each unit serves a large number of people while they have to travel long distances.

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18 -Regional Engineer, Moshi, 1980.

As regards telephone service, the regional telephone exchange is at Moshi. There is need to improve telephone facilities in Sanya Juu, Mkuu, Mwanga and Same to district level in order to facilitate better communications links between these administrative and service centres with Moshi regional centre and the rest of the country. In the rural areas, there are only 6 telephone sub-exchanges.

Together with the transportation system earlier discussed, postal and telephone services are equally important for the welfare of the people, particularly those who live in the rural areas. Prompt and better agricultural advisory service can be rendered at any place in the hinterland when required as long as postal and telephone facilities exist. Furthermore, political, economic, social and administrative services for the improvement of the standard of living of the masses are more efficient and effective if the above facilities do exist. The following table shows the nature and extent of such services.

TABLE 47: POSTAL AND TELEPHONE SERVICE
(Hinterland, 1980)

Description	No.	No. of people served per unit
A. Postal Service:		
1. Departmental	6	150,000
2. Sub-Departmental	28	32,000
Total	34	26,000
B: Telephone Service:		
1. District exchange	3	300,000
2. Sub-exchange	6	150,000
Total	9	100,000

Source: Author's survey, 1980.

3:5:0: Some Conclusions

The emphasis on this chapter has been the analysis of the physical and resource base, population and economic linkages (transportation) with respect to the hinterland. This analysis leads us to the identification of relationships between the town and the hinterland as well as development disparities between the two sectors.

Kilimanjaro Region is the smallest region in Mainland Tanzania (apart from Dar es Salaam). Its area is 1.4% of Tanzania's land surface, but has 6% of the total population. The physical features lead to certain identifiable characteristics such as altitude and topography, road system orientation, population density, land use and type of farm management.

Some areas of the hinterland have very high population density reaching 600 people per km^2. This has given rise to population pressure. In addition, agricultural resources are judged to be close to a limit in terms of extensive exploitation and as such migration to less densely populated areas as well as industrial growth must be considered urgently.

There is considerable emigration from the hinterland. Of the hinterland's total emigration, the majority went to Arusha and Dar es Salaam while urban growth in the region played a relatively small part in the total movement of population. Among other reasons, emigration is due to inadequate employment opportunities and land shortage within the hinterland.

By far, the greatest hinterland employer is the agricultural sector which accounts for 82% of the region's total employment. However, wage employment

has not been growing satisfactorily in recent times signifying that there has not been new opportunities in paid employment. The main problem is unemployment and under-employment. This problem is further aggravated by more subdivision of the already small holdings of "vihamba and vithaka". There are also signs that per capita income is stagnating in the hinterland while at the same time, it is lagging far behind that of the urban sector.

The main resources of the hinterland include crops (cash and subsistence), forestry, fishing, tourism and livestock. Agriculture is the mainstay of the economy accounting for over 67% of the G.R.P. Coffee is the main cash crop whereas bananas is the staple food. Raw materials for industry, in addition to coffee are sisal, sugarcane, cotton, pyrethrum, and forest products. Rural industrialization is very low and tourism resources are so far marginally tapped.

Subsistence agriculture is no longer sufficient to feed the population. Maize, rice and beans have to be imported from other regions to supplement local production. However, self-sufficiency in these crops is possible if the plains are harnessed for agricultural production by investment in irrigation. There is need

for crop diversification rather than solely relying on coffee. Emphasis on dairy cattle, poultry and piggery will help to increase incomes and help in reducing malnutrition.

The feeder roads that open up the hinterland areas are poor in quality in most cases. However, their significance in the prvision of linkages to the town cannot be underrated. They are used in the haulage of forest products, cash crop and food crops while small-scale industrial and commercial activities would be impossible to operate without the feeder roads. They need to be upgraded while regular maintenance is essential so that transportation linkages are strengthened.

Other problems facing the hinterland comparatively include poor housing, unsterilised water,inconvenient location of periodic markets and in general less incomes per capita. All these problems contribute to the economic disparity between the hinterland and the urban sector of Moshi.

However, these problems can be overcome, if not completely wiped out, by increased utilization and exploitation of the available resources. The exploitation of the existing resources must go hand in hand with the establishment of industries that have direct linkages with the hinterland. It is mainly through integrated approach to development that will definitely alleviate the identified problems seriously facing the hinterland.

CHAPTER FOUR

4:0:0 SYNTHESIS OF THE RELATIONSHIP BETWEEN MOSHI'S INDUSTRIAL SECTOR AND ITS HINTERLAND:

4:1:0 Introduction:

The findings of Chapter Two show that there are several large-scale industries located in Moshi town either primarily processing for exports or for local consumption. Most of these establishments are agro-based industries utilizing to some extent the resource base of the immediate hinterland. The resource base of Moshi's hinterland is analysed in Chapter Three determining existing and potential resources. The main aim of this chapter then is to find industrial linkages through which Moshi town interact with its hinterland.

Since linkage studies are concerned with the identification of potential flows i.e. flows of goods and services, then an investigation of the following linkages[1] is necessary and useful for the study:

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1. Linkages defined in Chapter Two for further reference see Bendavid, H., Regional Economic Analysis, 1974, pp. 59-67.

(a) Backward production linkages

(b) Forward production linkages

(c) Distribution linkages

(d) Commercial and service linkages

In this particular case I conducted a linkage survey of 5 firms/industries in Moshi town and their relationships to the immediate hinterland. The information obtained related to outputs and inputs of the production processes. For the outputs of each production process I determined how and where they are delivered, what they are used for, marketing of the output; where the inputs are obtained, delivery method, etc. The information obtained in some cases is incomplete due to the fact that I did not receive much co-operation from the management of the firms. However the survey conducted is significant as far as the study is concerned.

The firms surveyed were T.C.C.C. Ltd. (Coffee Curing), Tanzania Tanneries Ltd. (Leather), T.C.B. Ltd. (sisal sacks), Kibo Match Corporation Ltd. (Safety Matches), Tantimbers Ltd. (timber). The coffee factory has been given more weight because of two main reasons: its operations affect more people in the hinterland than any other and secondly I received more co-operation from its management.

4:2:0 Linkage Survey

4:3:1 T.C.C.C. Ltd.

This firm owns and manages the coffee curing factory which is located near the Moshi Railway Station. The factory is considered to be the biggest of its kind in the country in terms of capital outlay and employment. It processes parchment coffee into clean coffee ready for export. Furthermore, all arabica coffee (milds) produced in Tanzania is milled at the factory.

Moshi's hinterland produces between 1/3 and 2/3,[2] in different years, of Tanzania's total arabica coffee signifying the importance of the hinterland to the location of the factory itself. However before the parchment coffee reaches the factory a number of processes have to be carried out from the farm-level to the buying post.

At the farm level coffee is grown either in estates or in smallholder farms where crop husbandry methods are applied. Initially ripe cherry is picked by hand and then sent for pulping and subsequent drying. The stages, from picking to

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2. See Chapter Three.

drying, are very critical because they determine the quality of coffee. Later the dry parchment is packed into sisal sacks ready for delivery at a buying post managed by C.A.T. Most of the smallholders carry their coffee on head to the buying post while estates deliver their parchment directly at Coffee Curing Factory. From the buying posts the coffee is sent to the factory by lorries. Road network between the coffee zone and the town is essential for the transportation of coffee. What we have uncovered so far is the production linkage that links the peasant farmer to the factory and every step is significant in the sense that it plays an essential part in the quantity and quality of production and subsequent generation of income and employment.

At the factory parchment coffee is milled or cured by removing the husks and reduces the moisture content to a minimum. The beans are then subjected to numerous grading operations.

The subsequent marked grades are then sampled and samples sent to the Authority's (CAT) liquoring department for classification and quality assessment. The classification report forms the basis for distributing the sale proceeds to the grower,

for making up bulks of similar coffees and arranging reserve prices at auctions. Auction sales of coffee are held in Moshi during the coffee season at the Coffee Curing Company's godown which has a storage capacity for over one million bags (60 kg. each). The Curing Company also arranges for railing and, where required, bulking of coffees sought at auction. The leading importers[3] are F.R.G., U.S.A., Italy, Holland, Sweden, Japan, U.K., Canada, France, and Australia in that order. Therefore the Curing Works provides a vital link between the local coffee producer and the world market which controls the price he gets. Local sales of roasted arabica is less than 1%[4] of total arabica production which means that more than 99% is exported in its raw state.

The Coffee Curing Works employs about 650 workers in its various departments whose salaries and wages are paid out of curing charges. During my survey out of those interviewed 60% were born in the region while the rest were born in the neighbouring regions. Of those born in the region, 80% were born in the hinterland and the rest in the town. 83% of those born in the region repatriate part of their income to the hinterland to support their families or relatives. The survey also revealed that apart from wages, 52% of the workers have other sources of

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3. C.A.T. Report 1980

4. Author's Survey based on figures supplied by T.C.C.C.LTD.

income mainly through the ownership of a farm from which considerable income is generated. The average wage of a factory operative was T.shs. 9515 p.a.

The study of Coffee Curing Works cannot be complete unless we study the functions of Coffee Authority of Tanzania (C.A.T.). Since the basic unit of administration in rural Tanzania is the village,[5] the marketing of parchment coffee is organised through it. C.A.T. is reponsible for organising coffee collection from producers, sells coffee on the international and domestic markets and returns the sale proceeds to the grower. It finances coffee research, improvement and eradication of diseases. It acts as liaison between the grower, the buyer and the government while all these operations are financed by charges on all coffee sold. As seen from above functions C.A.T. is directly related to T.C.C.C. Ltd. The authority has a top heavy bureaucracy all dependent on the coffee peasants.

Along the various stages until coffee is ready for export, production linkages play a significant role in generating incomes which can

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5. Government of Tanzania, Villages Act, 1975.

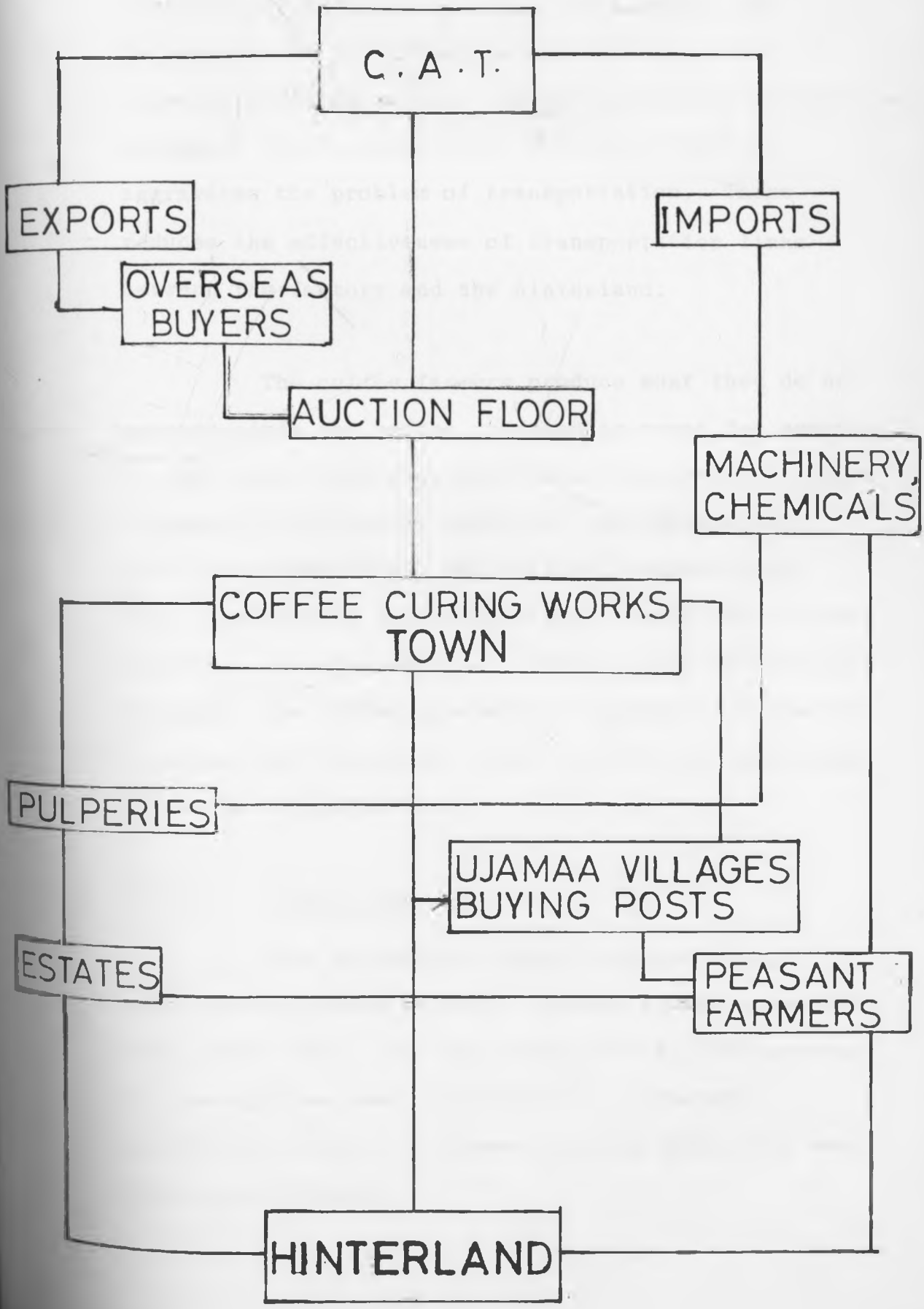
be used to stimulate other sectors of the economy particularly in the hinterland. The spread effects of increased incomes include raising the living standards of the people. However the production linkages are faced with a serious problem of quality. The numerous smallholders process their coffee individually without due regard to the manner and timing of fermentation, use of inefficient machines in the removal of the pulp, bad washing and drying all leading to poor quality of the coffee and subsequent low prices and incomes. Secondly there is the problem of quantity. For the time being poor coffee husbandry, proliferation of coffee diseases particularly C.B.D. (coffee berry disease) and non-use of fertilizers are some of the factors that have limited increased production. Thirdly the Curing Factory simply semi-processes the coffee for export in its raw state while processing to final demand is done abroad. This places coffee solely dependent on the mechanism of supply and demand of the world market. It is very possible that the processing of export coffee can also contribute to increasing its use as input for further local production i.e. coffee can be further processed for final consumption in both domestic and export markets widening the scope of increased incomes and subsequent stimulation of increased production. The production linkages of the factory as exposed above

are weak both in the hinterland context as well as at interregional level. There linkages need to be strengthened if increased benefits are to accrue to the people of the hinterland and to the national economy as a whole.

The activities of the factory have significant implications for the development of the rural areas. In the first place, part of the employees' income, albeit small, is repatriated to the rural areas. As indicated earlier this repatriated income is inadequate in the sense that their monthly earnings and number of employees are small. Also most of the employees have a dual character working as employees while at the same time they own agricultural plots in the rural areas which generate income. Secondly the factory draws the most able and active section of the population from the rural areas to the town whose contribution to the rural economy, but still dependent on it, is now denied. In the final analysis this leads to the underdevelopment of the hinterland.

The transportation system is crucial to coffee production Parchment coffee from the various buying points have to be transported to the Curing Works frequently, at least once a week, during the coffee season. The feeder roads are mainly earth

CHART VI LINKAGE STRUCTURE
COFFEE INDUSTRY



trucks badly affected by heavy truck usage, and in general are poorly maintained causing delays in transportation of coffee. Quantity deterioration is not uncommon. Inavailability of vehicles further aggravates the problem of transportation. These reduces the effectiveness of transportation links between the factory and the hinterland.

The coffee farmers produce what they do not consume since the coffee produced is meant for export. In this case local distributive and marketing linkages/ channels are virtually absent at the post-factory level and promotional activities in encouraging local consumption are rudimentary. Existence of local marketing and distribution effects could have widened urdened the income generating capacity of coffee by creating more employment at all levels and increasing the scope of production.

4:2:2 T.B.C. Ltd.

This parastatal company manages a bag manufacturing plant which is located in the industrial area, Moshi town. It was established in 1969 during the second five year plan under the industrial growth pole policy for decentralising industries away from Dar-es-Salaam.

The raw material inputs into the manufacture of sisal bags include sisal fibre readily obtainable locally from Tanzania Sisal Authority (TSA) that owns the nationalised sisal estates; and chemicals imported from abroad. In the estates the sisal leaves are cut by workmen, transported to the estate factory, the Decorticator, that removes the pulp and leaves the lint or fibre. Since the sisal leaves are heavy and bulky and the fact that sisal estates are extensive, they are hauled through railroads to the factory. After the process of decortication, the fibre is intensively washed, sundried and baled. The cutting of the leaves is labour-intensive and requires a permanent labour force stationed at the estate. We can easily see that sisal production requires a considerable amount of investment and that is why it is grown in estates to benefit from economies of scale. Therefore at the estate level infrastructural facilities are necessary such as estate roads, railroads, electricity and water all important for the first stage processing of sisal. Secondly the estates employ a large number of sisal cutters, weeders and management staff who have to be housed within the estates.

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6. Tanzania Second Five Year Plan Vol. I.

The bales of sisal fibre from the estates within the hinterland are either railed to Tanga port for export or retained to be used as an input into the bag factory. The factory has an installed capacity of producing more than 4.5 million bags annually as at 1980; however the factory is at the moment working under-capacity due to inadequate skilled personnel, unavailability of the necessary imported material inputs due to foreign exchange constraint and low productivity.[7] The bag factory employs 425 workers who mainly get their livelihood by working at the plant.

The foregoing are the identified production, employment and transportation linkages that the Bag Factory has with the hinterland. These linkages although significant display some important weaknesses particularly at the estate level. The volume of sisal production has been declining since the late 1960's partly due to low world market prices and partly due to incompetence of the T.S.A. that inherited the nationalised estates. Most of the sisal estates are in very bad condition requiring immediate rehabilitation if production is to be increased significantly. Secondly quality of fibre is low due to poor handling techniques

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7. Tanzania Economic Survey, 1980.

particularly at the estate level and this requires improvement for higher sale prices. Thirdly, increased utilization of sisal fibre by the Bag Factory would in turn boost up production in the estates since this entails less dependence on the world market prices, increase value-added and subsequently improving foreign exchange earnings. However more sisal fibre input at the Bag plant implies either greater utilization of existing capacity and/or expansion of the factory. This is recommended in the next chapter.

The sacks produced are used pan-territorial mainly in the packing of agricultural products such as maize, wheat, beans etc. Institutionalwise the main consumers of sisal sacks are Coffee Curing Works and National Milling Corporation. Over 50% of the output of the factory is used by the Coffee Curing Factory the largest single consumer. This is the main reason why the Bag factory was located in Moshi. Both factories benefit from agglomeration economies whereby the coffee factory secures the 1.5 million - plus sacks at no or very little transportation costs while the bag firm has no marketing problem. Further, the sacks are used at all stages in the coffee production from the farm level to the export stage signifying that the hinterland is a great market for the factory's output. However frequent shortages of

these sacks is a common problem due the fact that demand has never been met by the factory.

One reason that accounts for the factory's low output is the fact that it utilizes imported chemicals, machinery and spare parts for which little or no foreign exchange is allocated to buy them. This is a problem that is facing all industries in Tanzania which were established, ironically, under the import substitution programme. Thus it appears the import content,characteristic of industries established in Moshi,has the impact of lowering the effectiveness of linkages.[8] As regards the employment linkages, the same weaknesses attributed to Coffee Curing Works discussed in section 4:2:1 also apply.

4:2:3 Kibo Match Corporation Ltd.

This is a match manufacturing firm with a plant located along Moshi-Arusha Road adjacent to the Karanga regional prison. It manufactures safety matches for both local consumption and exports to neighbouring countries. This is the only one of its kind in the country. The raw materials include paper, chimicals and wood. It is a wood products industry.

8. Rweyemamu, J., Underdevelopment and Industrialization in Tanzania, O.U.P. 1973 pp. 150-159.

In addition to electricity and water, wood is obtainable from the hinterland forest reserves. The wood is used in the manufacture of match boxes and splints. The wood felled from the forest is transported to the match factory where the procurred logs are processed - there are two main processes at the factory i.e. matches and match boxes and both of them are highly capital intensive requiring very little labour. In fact from the time the wood is put into the splint-making machine the product is untouched by human hands till used by the ultimate consumer. Consequently, employed operatives are only 300 to man both processes of production.

However the utilization of wood at the factory helps in the generation of employment opportunities in the wood industry although wood consumption at the plant is relatively small.

Regarding income repatriation to the hinterland, what was said about Coffee Curing employees (section 4:2:1) is also applicable here in that the employee benefits accruing to the rural areas are very limited indeed.

The factory consumes a considerable amount of chemicals. Each wood splint match has a head that contains potash (potassium) chlorate while the side of a match box is coated with a composition

of red phosphorus and an abrasive material. Also to reduce firehazard splints are impregnated with a weak solution of ammonium sulphate. All these chimicals are imported further causing a serious drain on the scarce foreign exchange reserves. The imported machinery and spare parts have similar effect on the national economy. Therefore the level of production at the factory is heavily dependent on the amount of foreign exchange available to pay for the imports. Dependence on imported materials weakens the effectiveness of the linkages both at the input and output levels.

Matches for local consumption in Tanzania are distributed by the various Regional Trading Companies (R.T.C.s). The Kilimanjaro R.T.C. is responsible for the distribution and marketing of match boxes throughout the town and the hinterland. The retailer, individual shop owners or co-operatives, buy their stocks from R.T.C. whose headequarters are in Moshi town and have to transport them to the remote rural areas for the ultimate consumer. During the rainy season transportation is limited particularly on the feeder roads.

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4:2:4 Tanzania Tanneries Ltd

The leather factory was established as a consequence of the second five year plan 1969-74 under the regional growth pole policy for industrial decentralisation. Since then two other factories have been constructed at Mwanza and Morogoro respectively during the third five year plan 1976/81 with an objective of processing all locally produced hides and skins in Tanzania.[9] The Moshi tanneries, the largest among the three, is capable of producing 14.0 million sq. ft . of processed leather p.a.

The raw material inputs include locally available hides and skins from the livestock industry. The hinterland is a known great consumer of meet and the slaughtering of cattle, goats and sheep is big business both in the town and all over the hinterland. However the latter is not much endowed with livestock and as such the area is a large net importer of livestock from neighbouring regions to supplement local demand.

As earlier indicated in Chapter Three, the livestock are slaughtered at numerious registered butcheries or in households for meat purposes mainly.

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9. Tanzania Third Five Year Plan 1976/81 pp. 45-47.

The hides and skins are washed and dried and then sold to agents of Tanzania Hides and Skins Ltd. sole buyers of the product. The latter publicly - owned firm is responsible for preserving or curing the product for transport and shipment to overseas buyers, in case of exports, and delivery to tanneries, in case of local processing into leather. The factory processes the hides and skins into various types of leather by using imported machinery and chemicals, while some locally produced wattle extract is used in the tanning process.

All the way from the livestock farmer to the factory the operations of production transportation and labour are important; these are linkages that help in the creation of more incomes to the population and subsequently raising the standard of living of the people engaged in those operations. Although these linkages are significant in the production of leather there are important weaknesses inherent in the system. Firstly, some of the hides and skins delivered at the factory is of poor quality due to poor handling techniques at the slaughter-house level. There is room for improvement at this stage such that the butchers get more income for first grade hides and skins especially when we consider the fact that hide or skins is worth up to 10%[10] of the value

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10. Author's Survey, August 1980.

of the animal depending on quality. Secondly, all the hides and skins have to be transported all the way from the hinterland to the town. It is especially difficult during the rains because many of the feeder roads are in poor condition at this time and,therefore, a considerable portion of the raw product is destroyed or deteriorates in quality while still in the hands of the butchers. Thirdly, as regards employment the same problem that faces the Coffee Curing Works is equally true of the Tanneries although it employs about 460 operatives. Fourthly the industry is heavily dependent on imported chemicals, machinery and spare parts further draining Tanzania's foreign exchange reserves. This is a nationwide problem and Moshi Tanneries is no exception. As such I am advising strongly that the chemical, iron and steel industries be developed and co-ordinated at national level[11] to provide intermediate inputs into other industries. This will drastically cut the import content of these industries and release the scarce foreign exchange earnings for other more important uses.

The products of Tanzania Tanneries Ltd. are splits, plain leather, printed leather, sports suede and suede splits, upholstery leather and garmentleather.

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11. Raw materials are available locally for these basic industries: coal and iron in Chunya, phosphates at Kilwa and Arusha, etc.

These products can be used in the manufacture of shoes, belts, hoses, furniture, travelling bags, and garments to mention only a few. This means that the leather is an intermediate input into other industries particularly the shoe industry. The intermediate stages between leather processing and those industries that use leather as inputs is the wholesaling and retailing of leather. In the case study the wholesaler is the R.T.C. who market and distributes to retailers and direct leather consumers. In the region there are a number of small scale shoe-makers, one medium-scale shoe manufacturer (Karanga Prison) for the uniformed forces; various furniture manufacturers also utilize uphostery leather for cushion covers; m/s Shah Industries in Moshi manufactures various type of leather handbags and garments;however all these manufacturers utilize only a small percentage (5%) of the tanneries output since they are not large-scale manufacturing concerns. The largest shoe manufacturing firm, therefore the largest leather consumer, in Tanzania is located in Dar-es-Salaam. Thus while the Moshi tanneries is in Northern Tanzania, the Dar-es-Salaam shoe Company is in Central-Eastern Coast of Tanzania significantly raising transport costs of leather. In this respect the Moshi Tanneries has more forward linkage effect with Dar-es-Salaam than into immediate hinterland.

In conclusion, although the location of the Tanneries factory has been largely influenced by the availability of raw material inputs of hides and skins the linkages that it has with the hinterland are weak due to a number of factors. First, transportation of hides and skins from the hinterland is hampered by the poor state of feeder roads particularly during the rainy season. Secondly the handling techniques of hides and skins at the butchery level are poor leading to deterioration of quality. Thirdly, the factory relies heavily on imported chemicals and machinery in its production process which is, invariably, constrainted by the inadequate foreign exchange earnings. Fourthly there is a serious under utilization of capacity due to lack of skilled personnel, low productivity and foreign exchange constraint, among others. Fifthly much of the output of the factory is not utilized "locally" (town and hinterland) due to the absence of large-scale leather consuming industries despite the fact that the hinterland is a large potential market for leather goods.

CHART VII LINKAGE STRUCTURE LEATHER INDUSTRY

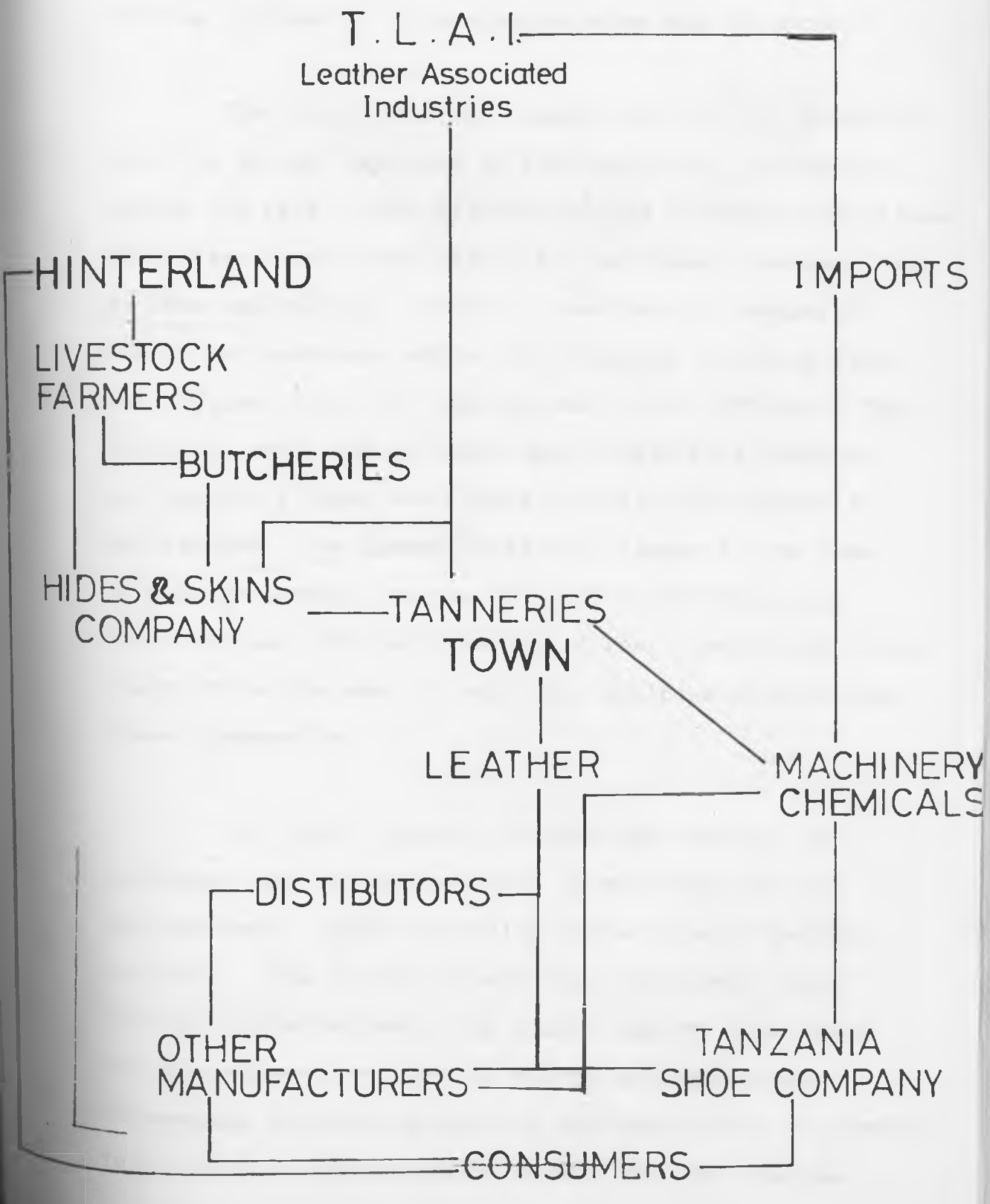
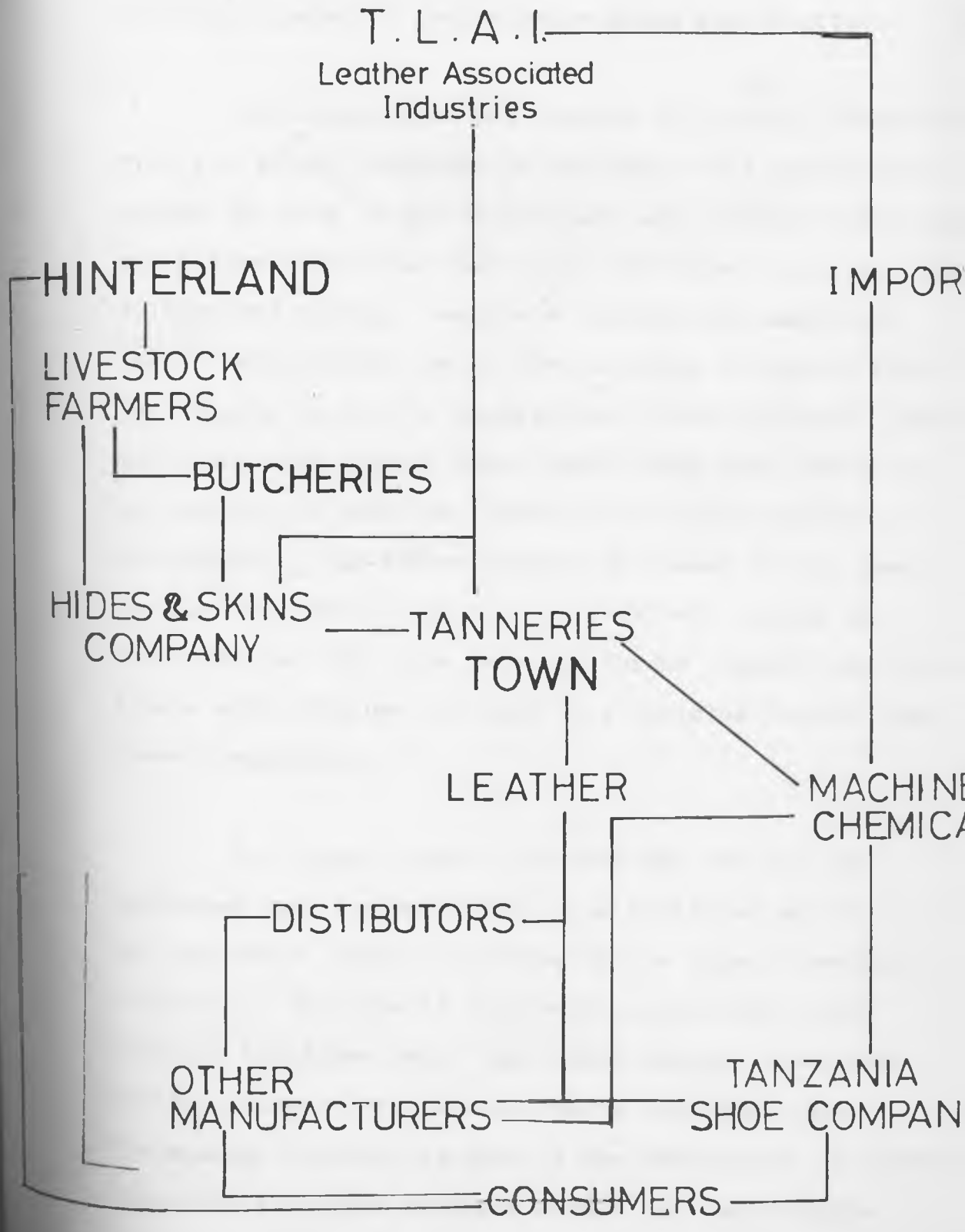


CHART VII LINKAGE STRUCTURE LEATHER INDUSTRY



4:2:5 Kiltimbers Ltd.

This is a subsidiary company of Tanzania Wood Industries Corporation (TWICO) based in Moshi town. The complex comprises of sawmill, timber treatment,plywood, housing components, transmission poles and furniture.

The inputs into the complex are secured primarily from the forest resources of the hinterland concentrated around the peak of the Kilimanjaro and softwood plantations which have been raised mainly in the forest reserve. Tree felling and hauling require a considerable amount of labour and machinery while the selection of mature trees for logging is done by experienced forest officers. The machinery used include power saws, heavy duty tractors and lorries to haul the timber to collection points in the reserve. The transportation of timber to the town is done by lorries, but this is difficult during the rains because the roads from the forest reserve are earth tracks while the use of heavy duty vehicles renders them almost impassable.

The timber, once it reaches the factory, is processed into various products as mentioned earlier. The processes differ according to the type of product required. The sawmill uses various machinery like circular breakdown saws, log double edgers, frame saws, multiple edgers for trimming boards and scantlings The sawnwood produced is used in the manufacture of plywood, furniture and other products within the same complex.

In the manufacture of plywood glue, pressing and finishing machineries are used. Various chemicals are used in timber treatment. Therefore, the various processes within the complex depend on one another in some important aspects.

The plywood and part of the sawn wood is sold to Tanzania Timber Marketing Company Ltd. (Tantimber) for marketing and distribution to sub-wholesalers and retailers. Some is exported through the same company. The rest of the sawn wood is used as an input into the manufacture of other products within the factory. The housing components are processed at the complex and these can be assembled on sites into housing units according to demand. The transmission poles can be used for electricity and telephone.

The sawn wood marketed by Tantimber is of great demand within the area (the town and the hinterland) by builders and small-scale manufacturers of furniture, fixtures and other timber products. Small-scale manufacturing of this type is a vital stage in the linkage structure of the wood industry, particularly in the hinterland. The present situation is rather appalling in the sense that these manufacturers are simply individuals with one or two assistants with a few tools. Their

businesses are entirely un-economic and unprofitable. This link could be strengthened by forming furniture co-operatives which can get access to loans and technical advice through the responsible public institutions like S.I.D.O. and T.R.D.B.[11] These co-operatives can be conveniently and appropriately located at market centres where they can display their products. Small-scale furniture industries can be established without much capital outlay to provide employment and extra incomes to the rural unemployed or under-employed as revealed in Chapter Three.

Another weakness in the linkage structure is the fact that the existing (and potential) small-scale markets of wood products located in the hinterland have to incur extra transportation costs in securing the sawn wood from Tantimber which is in Moshi town. The extra cost makes their products more expensive than those obtainable in the town from equivalent manufacturers. Therefore, the marketing and distribution of timber should be spread all over the hinterland at selected convenient locations.

The employment linkages of the factory and their subsequent weaknesses need not be restated here since these are similar to those discussed under Section 4:2:1.

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11 -S.I.D.O = Small Industries Development Organization, a public institution mainly based in towns

TRDB = Tanzania Rural Development Bank.

The complex had 600 employees in 1980. Further, there is the problem of under-utilization of capacity. For example, although the factory has the capacity of producing 21,300 m^3 of sawn wood, it only produced 4,600 m^3 in 1980. Problems facing the factory include inadequate technical expertise, low productivity, and lack of foreign exchange to procure imported machinery, spare parts and chemicals.

The wood industry is one of the industries with potential backward and forward linkages if properly planned, co-ordinated and located. The problems discussed above as regards the Kiltimber factory, uncover the weaknesses in the linkage structure such that maximum benefits do not accrue to the people of the hinterland from the industry. Increased production at the factory means increased employment opportunities and more incomes. The increased output can be utilized as inputs into other industries, say furniture manufacture, further generating more employment and income. However, increased production at Kiltimber factory implies availability of raw materials such as wood and chemicals. Above all, availability, nature and the extent of the markets - both domestic and foreign must have been initially assessed. This means that the backward and forward linkages must be planned in advance. It is not

enough simply to plunk a big industrial project in an area as was the case of Kiltimbers and other industries located in Moshi. Furthermore, Kiltimbers is known to produce large quantities of bye-products such as saw-dust and wood shavings, but these are not used productively.

4:3:0 Concluding Remakrs

After the commissioning of Tanzania Tanneries and Bag Factory in the early 1970's, no other significant manufacturing enterprise has been established in Moshi since then except the on-going construction of Machine Tools Plant which is expected to turn out 485 machine tools per year including universal lathes, bench and column drilling machines, universal power saws, etc. Although it will lay a good basis for the engineering industry, there are a number of shortcomings because the component parts of the industry will be in locations far removed from each other. While the Moshi Machine Tools plant happens to be in northern Tanzania, the technical training centre will be in Mwanza in the North-West and the iron and coal deposits still to be developed are in Southern Tanzania.

Further although the industrial base of Moshi expanded in the early years of independence, the content of that industrialisation is far from being comprehensive.

It reflects very little forward and backward linkages between and within various sectors. It has not succeeded even in its genuine import substitution. The sustained importation of key industrial inputs is a clear illustration of this type of industrialization. Again, the raw material base of the hinterland is yet to be exploited to strengthen the linkage structure. For example, the T.P.C. sugar refinery, only 20 kilometres from the town, produces molasses as a bye-product in the region of 20,000 tons per annum. From molasses, it is possible, among other things, to manufacture pharmaceuticals and alcohol which might provide the basis of chemicals and plastics industry. Instead of building such complementary industries, Tanzania exports molasses and then at a much higher cost imports spirits and pharmaceuticals. The same can be said of other industries that have been established at Moshi.

The capital-intensive bias of the Moshi based industries has several consequences as a result of its effects on both the nature and volume of employment. Firstly, it narrows down employment opportunities. Secondly, because capital-intensive techniques tend to employ a semi-skilled and professional type of labour, which receives

relatively higher wages, it tends to accentuate the disparities in income between the town and the hinterland. My survey confirms this income disparity - while the factory operative has an average annual wage of T.Shs.9515, the agricultural farmer get T.Shs.5565/- per annuam. Further, Moshi's industrial sector has so far failed to solve the problems of unemployment both in the town and the hinterland. While the latter provides food for the urban population and raw materials for the industrial sector, it gets nothing in return - thus the town has essentially remained parasitic to the hinterland.

The analysis of economic and social infrastructure shows that there is a great disparity in development between the urban area and the hinterland. The roads of the hinterland, which are very important in the industrial linkage structure, are earth tracks and poorly maintained; the people use for domestic purposes disease-prone untreated water from rivers, streams or furrows. The hinterland has less social facilities per population as compared to the town.

CHAPTER FIVE

5:0:0 CONCLUSIONS AND RECOMMENDATIONS

5:0:1 Research Findings

This study has basically emphasized the relationship of Moshi's industrial sector with its immediate hinterland. The industrial sector was examined in terms of the nature and type of industries, raw material inputs and production outputs as well as employment and incomes. The town's different land uses were analysed with respect to commerce, residence, transportation, major community facilities and finally public utilities. These facilities are important because they are directly or indirectly, related to the establishment of industries. The emphasis on the industrial sector was on backward and forward production linkages - for example, in the case of coffee industry, different production levels at farm, pulpery, buying post and the coffee curing factory were analysed while its processing for export was examined. All these stages encompassed production, employment, transportation and commercial linkages. Apart from the coffee curing factory, four other industries were considered with respect to the linkages. This led to the identification of the concrete relationship between these industries with the rural hinterland. In this way, the effectiveness of Moshi as an industrial centre, in minimizing the hinterland's unemployment and other related problems was critica-

lly examined and whether it has been able to provide the required goods and services for rural consumption.

The study went further in analysing the hinterland in terms of population, resource base - existing and potential, and the hinterland's contribution likewise to the growth of Moshi town. Furthermore, the type and nature of communication linkages both with the town and other parts of Tanzania were identified.

However, the study has found out that the inherited colonial spatial structure has continued to predominate. Moshi town remains an outpost of the world market system bearing little or no relation to its hinterland. This is a clear indication that the various government strategies and policies have not succeeded in integrating and re-orienting the economy internally. In addition, although the hinterland is endowed with fertile agricultural land, good natural resources like forests and tourist resources, leave alone educated population, it is still lagging behind the town. Consequently, Moshi town continues to attract more human and capital resources from the rural areas. Thus, the relationship that exists between the town and its hinterland is one-way: it is parasitic and the town's industrial sector has little, if any, economic spread effect over its hinterland.

This analysis has established that the relationshi of the industrial sector with the hinterland is weak. I has limited contribution to the development of the latte because it only siphons off labour and raw materials from the rural areas and gives back little or nothing in return.

The town itself has a high unemployment rate despite the existence of industrial concentration within the town. The urban industries are not generating adequ employment opportunities at a rate commensurate with urban population increase while in the hinterland, unemplo is the order of the day despite the fact that many peop have basic education.

The exodus of the most productive age-groups to th urban areas mostly Arusha and Dar es Salaam has a depressing effect upon the rural farm economy and its revenue producing capacity. The reasons for mass out-migration include development disparity between urban and rural areas, landlessness among young people, and th education that prepares the students for white-collar jobs in the modern sector. The greater drift to Arusha and Dar es Salaam other than Moshi is due mainly to in-adequate employment opportunities at the latter.

The regional development policies formulated so far i.e. the nine growth poles strategy and the zonal growth poles for industrial location have had little success to bring about effective regional development or limiting the outmigration of people from the region to Dar es Salaam in particular. The third Five Year Plan of industrial decentralization has succeeded in centralising industries in Dar es Salaam, Morogoro and Arusha contrary to the policy itself.

Yet Moshi town has a high industrial potential which should be exploited. Constraints to industrial development of the town are non-existent in the way of land, power, water and economic infrastructural facilities with transportation links to all parts of the country by road, railway and air; facilities exist for connections to other countries too. Unutilized market exist in the hinterland whose current population is approaching a million and who do not get industrially produced basic goods and services. Shortage of consumption goods is rampant in the hinterland and the fact that the industrial sector is unable to provide at least some of these much needed goods is indicative of low industrialisation and/or poor forward and backward linkages.

5:2:0 Recommendations

In view of the foregoing identified problems limiting the efficient functioning of Moshi as an industrial growth centre and the weaknesses presently inherent in the industrial production linkages, it is essential that the study recommends some strategies that will at least alleviate the salient problems afflicting both the hinterland and the town. In both cases, the coffee industry is given more emphasis due to its importance in the area although other aspects are also considered.

5:2:1 Hinterland

(a) At the farm level, the main issue is not quantity, but quality as far as coffee is concerned. The ripe coffee berries from the numerous smallholders should be delivered to centrally-run pulperies where quality control can easily be effected. The establishment of central pulperies is the key to quality improvement of coffee if the farmers are to realise more incomes. However, these coffee factories require trained and skilled manpower to provide proper management. It is advised that the establishment of these pulperies should be the responsibility of C.A.T. who have the means to do so in terms of manpower and finance. Further

initial supervision can be provided by the same institution before the factories are handed over to co-operatives. Proper phasing is particularly important in order to permit the sharing of experiences. With these objectives in mind, the project can be completed within a 10 year period.

(b) Since the buying posts are run by C.A.T. with personnel un-knowledgeable to local conditions while the populace has no say in the management of C.A.T. itself, then the defunct Co-operative Union should be re-introduced. This means that the Ujamaa Villages as registered Co-operatives should work under the umbrella of the Co-operative Union,run the buying posts as was the case before (1976) and be able to share experiences. The consequence of this policy is the reduction of C.A.T.'s top-heavy bureaucracy, most of whom have no coffee production experience. In addition, the Co-operative Union having local grassroot experience can articulate local initiative and participation under Ujamaa Socialism for the benefit of the masses. It is advised that this exercise be started immediately and can be completed within the next five years.

(c) The Village Co-operatives, under the Co-operative Union can be granted loans through the Rural Development

Bankto buy vehicles for transporting coffee and other products to Moshi town. This will facilitate increased efficiency in the delivery of coffee for further processing. In this way, transportation linkages become more effective for rural development.

(d) In view of the fact that subsistence production is inadequate to feed the people of the hinterland, let alone the town's population, due to over-reliance and over-dependence on coffee, then it is recommended that partial diversification of crop production be carried out in the coffee-banana belt. Emphasis should be placed on food crops such as beans, maize and bananas. The Ministry of Agriculture in co-operation with regional authorities can provide extension officers, improved seed and better methods of crop husbandry to facilitate increased food production for self-sufficiency. The banana is the chief food crop of the hinterland. In some seasons, there is excess supply, but due to lack of cold storage facilities and other methods of preservation, the crop is left in the field to rot. Ways should be found on how to preserve the crop so that it can be used in drought seasons even if it means reviving the long abandoned traditional method of preservation.

Promotion of protein-yielding foods should be embarked upon by the regional, district and village leaders as well as agricultural officers. This is important in the sense that malnutrition is on the increase due to less consumption of proteins. It is advised to establish and encourage ,in addition to beans, piggery, poultry and dairy farming which can be carried out in the coffee-banana belt as part of the integrated rural development programme; beans and maize do well in the Moshi Plains, and rice under irrigation, in the Pangani Valley. It is recommended that more investment in irrigation be made available in the plains by joint collaboration of Regional authorities and Ministries of Agriculture and Water Development.

(e) Implementation of the last recommendation is crucial because it will partially solve the problem of population pressure.Given the fact that agricultural resources are close to a limit in terms of extensive exploitation in the highland areas then emigration to the plains (Moshi Plains , Pangani Valley and Mkomazi) has to be considered urgently. There are still substantial areas of cultivable but unused land in the peripheral areas of the region suitable for the accommodation of overspill population from the densely populated central areas. Such land, however, require considerable investment in clearing or, as the case of

Pangani Valley and Moshi Plains, in the provision of irrigation facilities. But this investment is necessary as one of the ways of solving population pressure and its subsequent unemployment and under-employment in the hinterland. The settled overspill population will contribute towards the development of the hinterland in particular and the nation as a whole by being effectively employed in agriculture. Regional authorities, Ministries of Agriculture and Water should be involved right from the beginning. This has to be a long term project requiring co-ordination at all levels and has to begin immediately.

(f) Development of small-scale industries in the hinterland utilizing locally available materials is very essential. Industrial estates can be established initially at district headquarters of Sanya Juu, Moshi Rombo and Same by the Small Industries Development Organization (S.I.D.O.) The latter, in conjunction with the district authorities, can then help in establishing small-scale industries on co-operative basis in the established Ujamaa Villages. Such industries include the manufacture of furniture and allied wood products, jaggery production, flour milling, shoe-making and repair, brick-making and metal works, among others. What should be observed in the location of

these industries is the availability of raw material inputs and the existence of power and transportation links. These factors must be utilized to the benefit of the industries. The fundamental objective of the estates is to improve and impart industrial skills in general. The allotment of land for small-scale industry should be given top priority along with considerations of water, power and transportation links. The existing market centres offer the first locational sites for these industries. Map. No. 11(a) shows the small scale industrial location proposed sites along the lines discussed here. In conjunction with small-scale industrialisation, the extent of local and regional markets must be explored in terms of which products have to be produced and their respective level of demand.

(g) The haulage of raw materials and other products from the hinterland to the town requires good transportation links. It is, therefore, proposed that the existing road network in the resource hinterland be improved and regular maintenance should be provided. This is significant because it will greatly strengthen the trasnportation linkages between the town and the hinterland hitherto considered as weak. The road improvement project can provide bitumen on some roads and

engineered gravelling on others according to need and financial availability. These proposals can be seen in the map No. 11(a)

(h) Another priority area is rural electrification the effects of which can be extended to the social, agricultural and industrial spheres. It is proposed that rural electrification which has already started in Western Kilimanjaro can be extended to other rural areas in the hinterland. Electricity helps to improve the services of hospitals by making it possible to use modern equipment and by providing power to rural small-scale industries. It can also be used in irrigation work, in processing particularly the proposed central pulperies and in other manufacturing plants.

5:2:3 Moshi Town

Given the fact that the town's industrial potential is so far unexploited, then it is essential that the government, parastatal institutions and private entrepreneurs channel increased investment in industries, so that the town can function efficiently and optimally as an industrial growth centre. The existing supply of water and electricity can be readily utilised for

industrialisation purposes while the good communications linkages with the rest of the country provides an additional impetus in the establishment of industries in the town. Increased and better utilisation of the raw materials from the hinterland and subsequent processing of products for local consumption will in the final analysis, re-orient the economy interally. This implies that, initially, the existing industries must widen their scope in the production process such that the present outputs are used as inputs in the processing for final demand. The implementation of this strategy will further enhance and strengthen the production, employment and, in particular, the commercial and distribution linkages. The overall objective is to increase the industrial sector's contribution to the urban and rural economies in terms of additional incomes and employment opportunities.

However, this does not preclude the establishment of new industries. In fact, this strategy should go hand in hand by establishing the kind of industries that utilize the local materials and process products for local consumption.

As regards the coffee industry, the following factories are recommended:

(a) Production of Coffee Charcoal

In the curing of coffee, coffee husks are produced as a by-product. Presently, they are considered as a waste and in fact, a cost to the Curing Factory. The proposed plant will change all these by utilizing the husks as raw material in the production of synthetic charcoal or coffee briquettes. The charcoal will be used as an alternative source of energy for heating and cooking. In addition to keeping the environment clean, the plant will also reduce the destruction of forests. It is recommended that the plant be established near the Coffee Curing Works where land is available for extension possibilities. It is advised that the research and the establishment of the coffee plant be the ultimate responsibility of T.C.C.C. Ltd. in collaboration with C.A.T. who may have the requisite capital outlay.

(b) Production of Instant Coffee

Processing of hulled arabica coffee into instant coffee for final consumption will complete the production linkages that were earlier identified as missing. Canned instant coffee can be marketed locally as well as for export. This will widen the income earning capacity of the product since it will fetch higher prices than the

semi-processed coffee. This, in the final analysis, expands the role of coffee as a foreign exchange money spinner. T.C.C.C. Ltd. is the proper institution adequately placed to establish the plant because instant coffee processing is simply an extension of coffee curing production process.

(c) Finally, T.C.C. Ltd. along with C.A.T. and the proposed Co-operative Union, is advised to examine the possibility of extracting by-products from coffee such as liquor. The success in this venture will definitely enhance the role of the crop as a money earner rather than simply a beverage.

In conjunction with the recommendations made regarding the coffee industry in the hinterland, the coffee related industries proposed in the town will strengthen and enhance the backward and forward linkages of the coffee industry. Especially important are the inter-industry linkages of which the proposals seek to strengthen. More employment opportunities will be created at all levels, more incomes will be earned and the subsequent spread effects will affect all the sectors of the economy both at the regional level and the nation as a whole.

Other industries linked to the resource hinterland should also be established. The establishment of a sugar complex at Moshi may produce various products. Bagasse from crushed cane can be used in the production of roofing sheets, packing material and paper. Molasses can be used in the production of alcohol which can provide the basis of a small-scale industry as well as pharmaceuticals. All these raw materials are available from the large sugar plant at Arusha Chini. A dairy plant is necessary to process milk from the hinterland - milk production is going to increase tremendously as per proposal 5:2:1 (b) above. There is need to establish cold storage facilities in the town to cater for poultry meat, eggs, vegetables and bananas from the hinterland ready for marketing in other urban areas especially Dar es Salaam. It is also recommended that a large-scale shoe and leather garment factory be located at Moshi so that it can utilize the leather produced by Tanzania Tanneries plant as raw material. The forest products industry can be expanded to include the manufacture of fabricated timber products such as blockboard, hardboard, softboard, building board, pencils and cellulose rayon. All these industries should be included in the town's industrialization strategy for the next 20 years up to 2,000 A.D.

In the short run it is recommended that utilization of capacity of existing industries should be emphasized in order to boost up production. Where possible factory expansion should be carried out at the existing sites. This is particularly true of the Kibo match, bag and the tanneries factories. The exercise of industrialisation must consider critically the problem of importation of machinery and chemicals. The establishment of iron, steel and chemical industries will have to be incorporated in the national industrial policy strategy so as to reduce the importation of these products. This is significant because these are basic industries that produce intermediate inputs into all other industries.

To ensure that all these proposals are actually implemented a regional committee for industrialisation should be formed under the Chairmanship of the Regional Commissioner to ensure government backing. It should have a permanent secretariat headed by an executive secretary preferably the Chairman of the proposed Co-operative Union. Representatives of the Ministries of industry, trade, agriculture, water and power, regional development director and town council must be included in the Committee. The latter must be empowered to carry out feasibility studies,

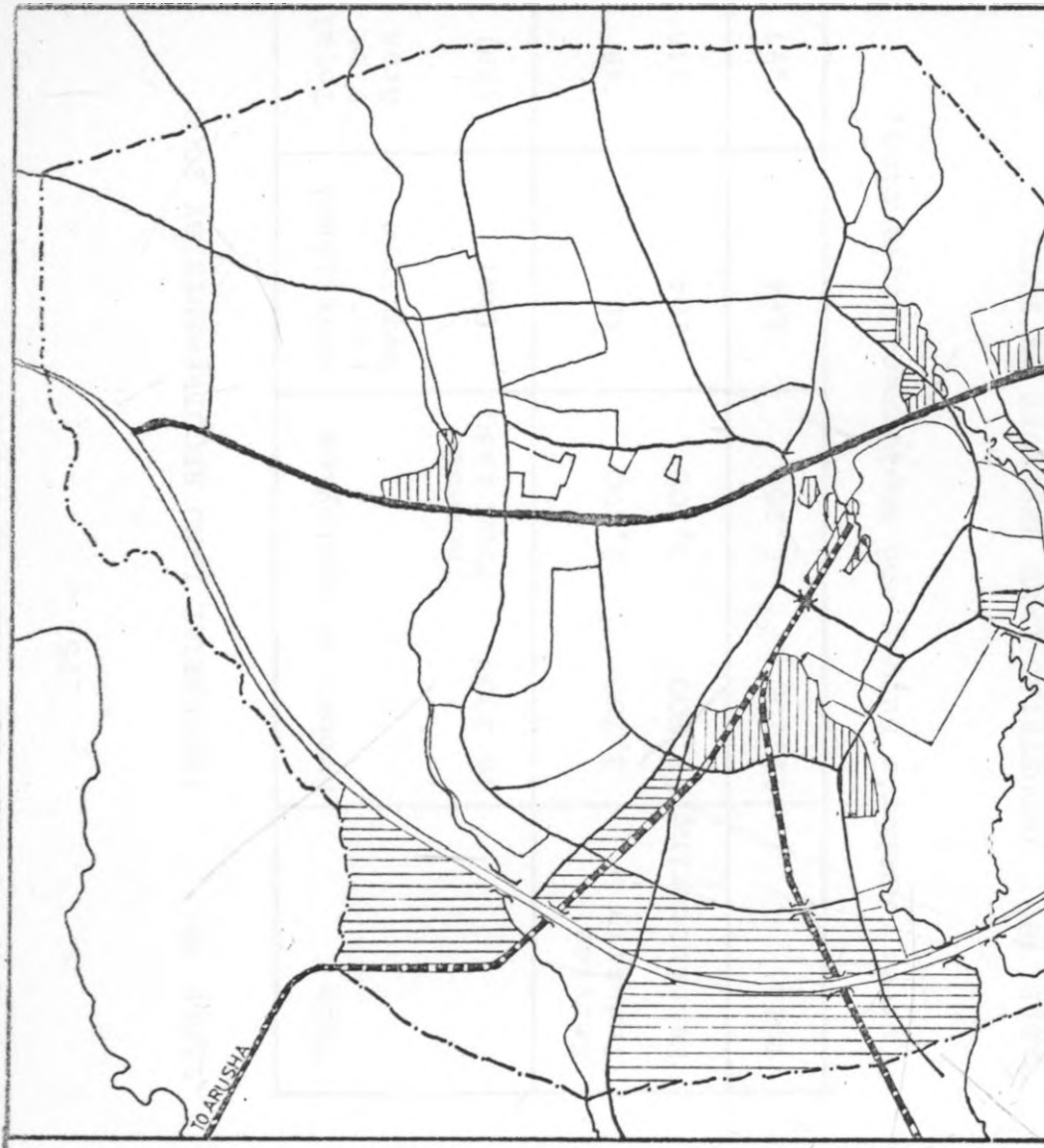
seek local and external finance for the sole purpose of industrialisation.

The proposed industrialisation exercise in the town will definitely require additional land in order for it to succeed. This study has projected industrial land requirements up to year 2000. Location sites for manufacturing industries include the present industrial area, Pasua, Rau, Karanga and along air port road. For service industries there are scattered sites within the township and Rau. Map 12 shows these proposed sites.

The planning standards of industrial areas for employees per plot have been estimated as follows:

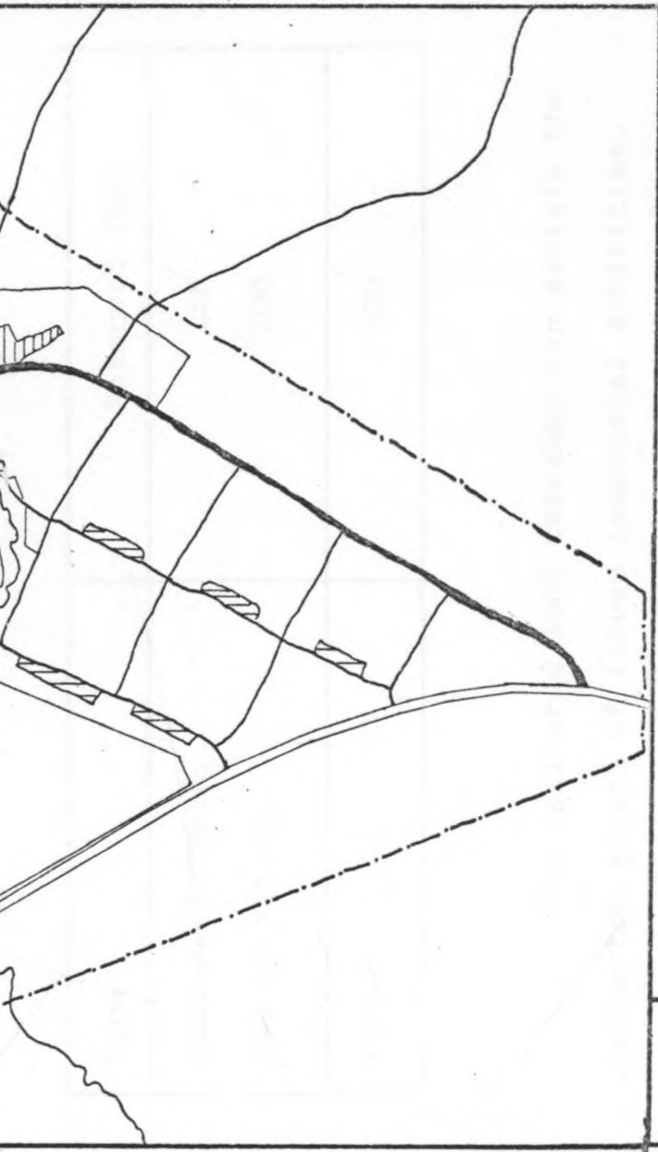
	Service Industry	Manufacturing Industry
Employees per plot hectare	70	50
Plot area per employee (sq. m.)	143	200

In the basis of this and the projected industrial employees by the year 2000 the following table is derived:



MOSHI INDUSTRIAL

AND HINTERLA



INDUSTRIAL LAND USE 2000

LEGEND

- TOWN BOUNDARY
- EXISTING TRUNK ROAD
- PROPOSED TRUNK ROAD
- ARTERIAL ROAD
- COLLECTOR ROAD
- EXISTING INDUSTRY
- PROPOSED INDUSTRY
- RAILWAY
- RIVERS

SCALE 1: 20,000

0 1 2 KM

S E C T O R

KUTOLIE F.S.
M.A. PLANNING
UNIV OF NAIROBI

MAP NO. 12

TABLE 48: INDUSTRIAL LAND REQUIREMENTS BY 2000

Type	Number of Employees		Additional Plot Required	Total Plot Area
	in 2000	Increase from 1980	(ha)	(ha)
Service Industry	3,700	2,400	40	49
Manufacturing	8,500	3,200	104	148
Total	12,200	6,200	144	197

Source: Author's Survey and Employment Projection.

TABLE 49: INDUSTRIAL LAND RESERVES BY 2000

Type	Reserved (ha)
Service Industry	155
Manufacturing	200
Total	200

The estimated land reserves can satisfy the unexpected growth of future industrial activities.

In conclusion this study has addressed itself to the relationship of Moshi's industrial sector with its immediate hinterland. The problems associated with this relationship have been analysed and recommendations have been made to alleviate them both in the hinterland and the town.

Appendix I

Kilimajaro Directory of Industries as at 1980

(establishments employing 10 or more people only)

Key:

Size	No. of employees
2	10 - 19
3	20 - 49
4	50 - 499
5	500+

1.	Name and Location	Main Product	Size	Year of Establi-ment
1.	Home Industries of Tanzania + Light industrial area + Viwanda St.	Cooking oil	3	1969
2.	Shah Industries + Factory Area + Karakara Road	Maize & rice milling	3	1962
3.	Kilimanjaro Posho & Rice Mills + Factory Area + Karakara Road	Gain milling	2	1964
4.	Meru Bakeries Ltd. + Selous St..	Bakery & Confectionary products	4	1958

	Name and Location	Main Product	size	Year of Establish-ment
..	Moolji's Bakery Ltd	Bakery & Confectionary Products	4	1960
6.	T.P.C. Ltd. + Arusha Chini	Refined Sugar	5	1935
7.	Usagara Farmers + Kahe Road	Jaggery	3	1967
8.	Gonja Estate Ltd + Gonja, Same	Jaggery	4	1961
9.	Kilimanjaro Sweets & Confectionary + Moshi Road	Sweets	3	1965
0.	T.C.C.C. Ltd + Ghalla Std.	Coffee Curing	5	1933
1.	Umoja Bottlers Ltd + Boma Road	Soft drinks	3	1966
2.	Tanzania Bag Corporation Ltd + Karakara St.	Sisal Bags	4	1969
3.	E.A. Kenaf Industries Ltd + Industrial Area	Kenaf bags & Hession cloths	4	1972
4	Moshi textile mills Ltd + off Tanga Road (Rau)	Knitwear & wooven fabrics	4	1966

	Name and Location	Main Products	Size	Year of Establishment
15.	Moshi Clothing Factory + Karakara Road	Garments	3	1966
16.	Jethwa Garments Manufactures + Karakara Road	Children and Ladies dresses	2	1973
17.	Himo Farmers & Planters Ltd	Tanning & Lining of leather	3	-
18.	Jamhuri Tanning Company + Mkuu Rombo	- do -	2	-
19.	Tanzania Tanneries Ltd + Factory Area	Tanning	4	1970
20.	Port of Kiltimbers Ltd Moshi Plywood Factory + Sukari Road	Plywood	3	-
21.	Kilimajaro Timbers Ltd + in Forest Reserve, Leraagwa	Saw milling	4	1948
22.	Crates Manufacturers Ltd. + Boma Road	Wooden furniture Soda creates and Packing cases	3	1972

	Name and Location	Main Products	Size	Year of Establishment
23.	F.I.D.P. Saw Mill Rongai + Rongai Softwood Plantation Rongai	Logging & Saw milling, tobacco cases	4	-
24.	Charan Singh & Sons + Rau Area	Logging & Timber production	3	1969
25.	Sikh Saw Mills (T) Ltd. + Sukari Road	Plywood production & timber sawing	4	1972
26.	J.S. Khambaita Ltd + Rindi Lane	Civil engineering construction & Blg	2	1938
27.	Purshottan Premji & Co. + Mosqure St., Industrial area	Furniture	2	1949
28.	Raffaeli De Palma + Karanga, Old Arusha Road	Furniture & fixture	3	1954
29.	Kilimanjaro General Constructors + Factory Area	Furniture	3	-
30.	Sambarai Ushirika Saw mills + Sambarai Village	Saw millers	3	-

	Name and Location	Main Products	Size	Year of Establish-ment
31.	Kiboroloni, Furniture + Kiboroloni	Carpentry	2	1973
32.	Kiboroloni Carpentry + Kiboroloni	- do -	2	1975
33.	Kilimanjaro Printing Printers + New Arusha Road		2	1968
34.	Printex Ltd + Market Road	- do - and Stationery	3	1964
35.	Hussein Industrial Co. + Kiboroloni	Soaps & Sweets	2	1952
36.	Afr. Flower Industries Ltd + Boma Road	Insence Sticks, shampoo, mosquito	4	-
37.	Kibo Match Corporation Ltd + Taifa Road (Arusha New Rd.)	Matches	4	-
38.	Paramount Rubbering Co. Ltd + Kiboroloni	Tyre retrending	2	1955

	Name and Location	Main Products	Size	Year of Establi-shment
39.	Sehmbi Engineers + Ghalla St.	Mechanical engineering workshop	3	-
40.	Tanganyika Bus Body Buildings + Ghalla St.	Bus body builders	3	1959
41.	TANESCO + Kikuletwa Power Station Ghalla St.	Jeneration, Transmission & distributors of electrical energy	4	1938
42.	T.P.C. Ltd + Arusha Chini	Generation of electrical energy	3	1930

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APPENDIX II

(To be read in conjunction with Chapter 4).

Location Quotient: Forest Industry, 1980

Employment in Forestry		Total Employment
Kilimanjaro	900	31,993
Tanzania	6000	535,943

$$L.Q = \frac{900/31993}{6000/535,943} = \frac{0.0281311}{0.0111952} = 2.5$$

This shows that the region is more specialised than the nation in forestry industry. The industry is in itself an export industry.

(Note: L.Q $>$ 1 or Unity).

B: Manufacturing Industry, 1980

Employment in Manufacturing:		Total Employment:
Kilimanjaro	6,000	31,993
Nation	85,493	535,945

$$L.Q. = \frac{6000/31993}{85,493/535,945} = \frac{0.0281311}{0.1595182} = 0.1763504$$

Here, L.Q. $<$ 1: The region is less specialised than the nation as a whole signifying that there is room for more industries.

APPENDIX II LEATHER INDUSTRY.

Raw Materials	Processes
1. Hides and skins	
2. Water	1. Washing (soaking)
3. Lime	2. Liming
	3. Hairing
	4. Fleshing
	5. De-liming
4. Chemical extracts (e.g. Bark)	6. Tanning
5. Salt	7. Washing 8. Drying
6. Dyes	9. Dyeing 10. Finishing

By-Products	Products	Uses
1. Hair		plaster, mattresses felt
2. Flesh		Glue, fertilizer
3. Ammonia		Chemical works household uses
	1 Leather	1. shoes, 2. Book binding 3. Travelling Bags 4. Pocket books 5. Gloves 6. Automobiles 7. Furniture 8. Harness 9. Saddles 10. Belts 11. Hose, etc.

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