AN INTEGRATED URBAN STRUCTURE FOR KILIFI TOWN, COAST PROVINCE KENYA.

BY

TIMOTHY S.S. MAKUNLA.

A thesis submitted in partial fulfilment of the requirements for the Master of Arts (Planning) degree.

AN ESTIMATED COST

FOR KILIFI TOWN,

[illegible].

I, Timothy Sazakah Godwin Makunda, declare that this is my original work and has not been presented for a degree in any other University.

T. S. G. Makunda

October, 1975

Dédicated to

my beloved wife.

ACKNOWLEDGEMENTS

I am greatly indebted to many individuals for their invaluable assistance in my endeavour to accomplish this task. While wholeheartedly thanking all these people I wish to mention and give special thanks to the following.

Firstly, my thanks are due to the staff of the planning course, Department of Urban and Regional Planning for their guidance and support in this exercise. In particular I wish to mention Mr. Subir Saha who was my supervisor, Mr. Z. Maleche for his unfailing encouragement and Professor A. Subbarkrishniah for the advice and support he freely gave all along.

Secondly, I wish to thank the staff of the Department of Physical Planning, Ministry of Lands and Settlement for their cooperation in many ways. In particular I wish to mention Miss Mary Mwinamo who spared her precious time for typing my manuscript. My wife, Julia, also devoted much of her spare time typing this thesis and her assistance is gratefully acknowledged.

Lastly, I would like to state that I alone am responsible for any errors or omissions.

ABSTRACT

In most of the small urban areas and service centres in Kenya one observes a relatively dispersed urban structure with the various elements sometimes very widely dispersed. It is not uncommon to find the administrative/ health services being widely separated from the commercial, educational or religious functions of the town. This kind of urban structure becomes a problem in that the provision of urban services and utilities becomes relatively expensive. Very often each of the separate urban functions would have to be regarded as a separate unit and provided with for example, its own water supply, leading to duplication of efforts. It is the contention of this thesis that this situation arises out of historical, physical, economic, social and political factors which must be thoroughly understood before any attempts are made at solving the problem. It is further contended that an integrated urban structure must be evolved to bring into close relationship all the scattered elements at least in the initial stages of the towns' growth.

In this study [illegible]'s problem affecting Kenya's small urban areas is examined in detail in the specific case of Kilifi Urban area with the aim of evolving an urban structure which will integrate the separate elements of Kilifi urban area.

Kilifi's urban structure cannot be said to be completely dispersed but certainly some essential elements are located outside the main town area. The commercial, administrative, health, some of the residential and some of the educational services are located in the main town area. Low density residential development is, however, essentially outside the main town being found along the creek and the beaches. The Mnarani Sports Club is also outside the main town. Most important is the multi-million shilling cashewnut factory located about 2½ kilometres outside Kilifi township which is the main

industrial area of the town. This has probably caused greater distortion of the town's structure than any other single factor.

Behind this structure are important historical, physical, economic, social and political factors. All these factors are closely interrelated. Historically, the pre-colonial town was located south of the Kilifi Creek, near the present site of Mnarani Sports Club. During the colonial period, however, the town shiften to its present site north of the creek. The Mnarani club and the beach plots belonging to up country gentry were also developed during this period. The introduction of the colonial administration spelt out the towns role as the district headquarters for Kilifi district. Its hinterland was however extended to cover parts of Tana River District. The communication links developed during the colonial period and after independence have

helped to intensify Kilifi's role in its hinterland. The introduction of the cashewnut factory at Mbarani and the factory's expansion has enhanced the town's significance not only by increasing its population by over 50% but also stimulating the economic growth of its hinterland. Physical factors such as the creek, the beaches, areas liable to flooding, forests and hills and natural factors such as farming have also had a great influence on the structure of the town. It can be expected that they will continue to influence the future urban structure of the Kilifi urban area.

But Kilifi town's growth depends on more factors than just those relating to its immediate site. Indeed Kilifi's growth will depend on the economic development of its hinterland and its competitiveness in relation to nearby urban areas. In order that demand for

the goods and services which Kilifi supplies to its hinterland may rise the great agricultural, ranching, tourist, forestry and mineral potential of Kilifi district must be developed not only for the present but also future population of the District. With this development, other centres will spring up and grow to take care of smaller hinterlands within the overall hinterland of Kilifi urban area supplying largely lower order goods and services leaving higher order ones to Kilifi. Furthermore Kilifi's hinterland will be reduced by competition from Mombasa, the provincial capital and second largest town in Kenya, and Malindi, a tourist centre. Mombasa, population about 300,000, not only includes Kilifi town and district in its vast hinterland but also serves the southwesternmost part of the district for lower order goods and services. Malindi serves the Malindi sub-district and parts of Tana River and Lamu Districts. With the development of

the economic potential of the hinterland and provision of good communicational network, Kilifi should play an intermediate role supplying goods between those of the highest order that Mombasa can be expected to provide and those the smaller centres which will develop in its hinterland can supply.

The proposed urban structure is linear forming a - U shape with the beach developments constituting the right limb while the main town forms the left limb. Some developments are proposed south of the creek. This shape succeeds in integrating the industrial area with the main town area. It perpetuates the integration of the beach developments with the rest of the town and anticipates closer links with the south mainland by proposing a bridge across the Kilifi creek. The U shaped town is kept largely east of the main national trunk road for Mombasa to Malindi to minimize traffic hazards. Special pedestrian crossings will be required to link up the residential areas with the industrial area.

TABLE OF CONTENTS

LIST OF MAPS

LIST OF FIGURES

LIST OF TABLES

CHAPTER ONE

INTRODUCTION

1.1. [illegible]

A casual observation of small urban centres and central places of lower order in Kenya reveals the phenomenon of wide and distinct separation of functions in each centre. For example, it is common to find the religious (missionary) institutions situated at a considerable distance from administrative and business functions of the centre. In some instances some of these functions may group together forming clusters for example administrative/commercial vis a vis the religious/educational functional groupings. In the smaller centres these functions are so widely separated that one must assume a very wide radius to conceive of the whole as a unit. Small urban areas which have struck luck in being selected for the location of relatively large industrial plants have ended up with an urban structure consisting of two separated parts: the traditional area and the new satellite industrial area which quite often depends on the former for housing and other services. Kilifi, which is the case study of this thesis, is a good example of this with the new [illegible]

This wide dispersal of functions inherently engenders certain problems. The most obvious problem is the cost of providing urban infrastructure to the whole urban area on an integrated basis. This results from the fact that unlike the compact urban area, the various units of the town are so widely separated by belts of open space through which urban infrastructure can only be uneconomically provided to link up separate developed and developing areas. Alternatively, separate infrastructural facilities would have to be provided for each group of functions thus resulting in duplication. For example where a separate water supply system has to be developed for an educational institution while another supply system is provided for the commercial and industrial zones of the urban area this results in duplication of facilities such as the pumping stations, staff employed, treatment works and storage facilities which would otherwise have been provided on a larger more economic scale for the entire urban area if this was compact.

The causes of this functional separation may include political, sociological and historical factors. Missions stations with associated educational and health facilities may have been

deliberately located away from the administrative services because of a desire to dissociate missionary involvement from the colonial government's authority which tended to be associated with oppression, repression and everything bad. The religious interests could thus be seen by the natives as being more noble than the political administration. Commercial activity sought locations close to the administrative offices because of the protection the then predominantly Asian business community required from the colonial administration.

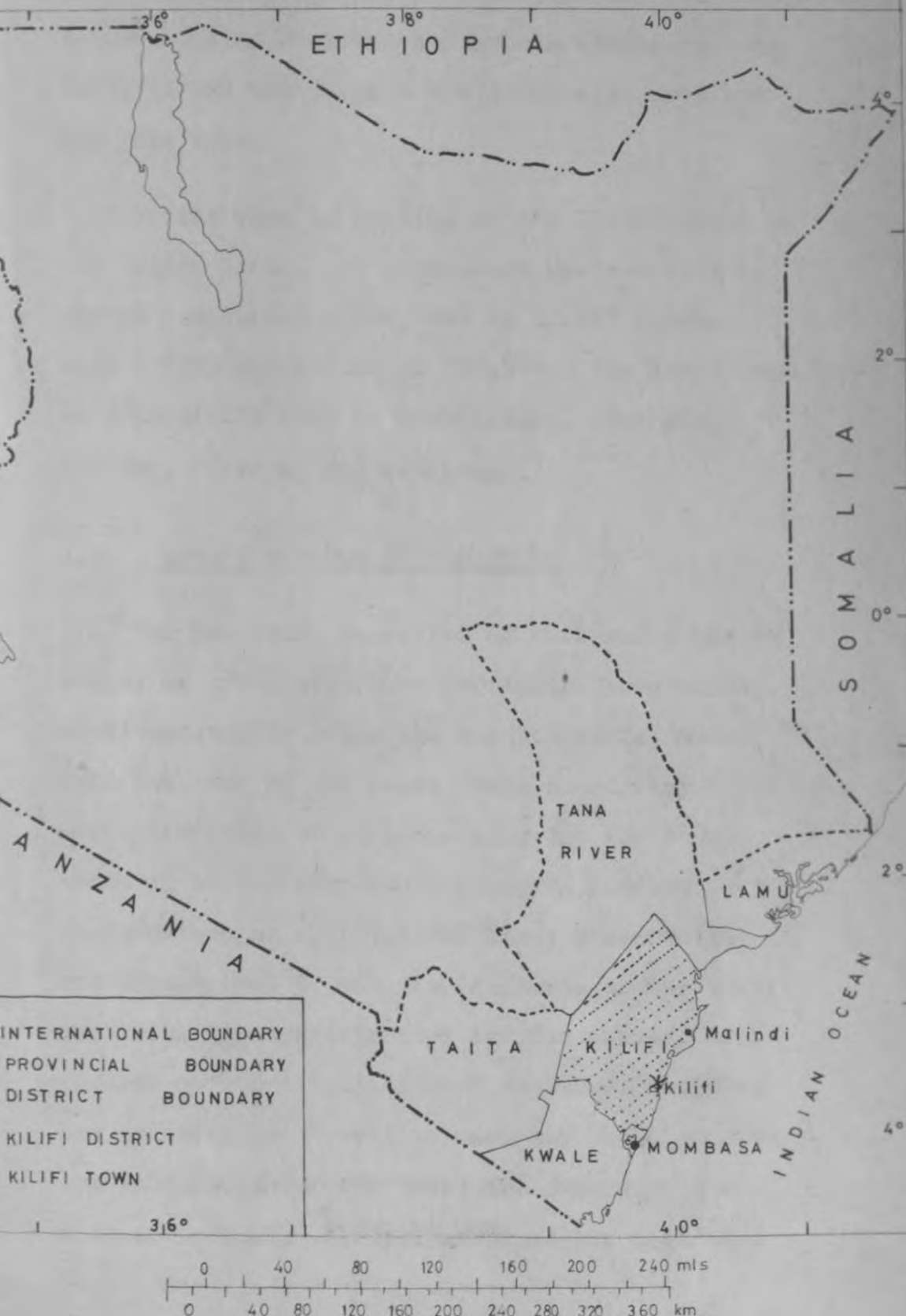
Whatever the cause of this dispersal of functions, the most important issue is how future growth of these small urban areas can best be guided in order to evolve a more compact and integrated urban structure that will lead to a better and more rational organization of the land uses in these urban areas. It is the contention of this thesis that while generalizations may be made about all urban areas affected by the phenomenon of dispersal of functions it will nevertheless be essential to examine each case in its own right with a view to identifying that structure which will best serve that particular urban area. Generally it may be said that the

approach would be in all cases one of evolving within idiosyncratic limits an integrated urban structure geared towards the merging of erstwhile separated functions into a compact urban area. The main thesis presented here, therefore, is that each dispersed urban structure reflects historical, physical, economic, social, and political factors and that each specific urban area can be provided with an integrated urban structure which would in time condense the dispersed urban functions in order to assure a more rational organization of land uses. The urban structure evolved should provide a framework within which growth takes place such that the element of wide separation is gradually eliminated.

1.2 The Study Area

Kilifi town, the district headquarters of Kilifi district in the Coast Province of Kenya, see map 1, is examined as an case study. This problem manifests itself in Kilifi in that the town's industrial area is located about 2½ kilometres from the main town centre resulting in long journeys to work for the factory workers who live in the main town area. Due to its ideal location and investment in infrastructure the Kibarani area should best

MAP 1 LOCATION OF THE STUDY AREA



serve as the Industrial area for Kilifi, the problem becomes one of evolving a physical structure that links up the two parts - the industrial area and the main town.

Kilifi town is located at the Kilifi creek on the Indian Ocean. As a district headquarters it serves a district whose area is 12,593 sq.kms. with a 1969 population of 307,568. Its hinterland is potentially rich in agriculture, minerals, fishing, forestry and tourism.

1.3 THE OBJECTIVES OF THE STUDY

The overiding objective of this study was to evolve an urban structure for Kilifi town which would eventually integrate the Industrial area with the rest of the town. Main subsidiary objectives were: provision of adequate land for the town's needs up to the year 2000; ensuring limited encroachment on agricultural land; preservation and enhancement of the good features of the town; provision of a satisfactory traffic network that ensured smooth circulation of vehicles, bicycles and pedestrians as well as one that would enhance the integration of the town; and provision for adequate social, cultural services and utilities

to cater for the growing population of the town. In addition the study was aimed at strengthening the economic base of the town.

1.4 PRESENTATION.

The thesis is presented in two parts. The first part deals with the background in two rather long chapters. Chapter two deals with the historical evolution of the the town and its region. Chapter three considers in detail the physical, economic, social, demographic and infrastructural characteristics of the region.

Part two deals with the urban structure of Kilifi town in 10 chapters. Chaper four covers the geographical setting of the town site; chapter 5 with the demographic characteristics, 6, the physical structure, 7 housing; 8, the economic base; 9 the social services; 10, utilities; 11, transportation, 12, the central area and 13 with the phasing and implementation of the structure plan. Chapter 14 summarises and draws conclusions from the study.

1.5 LIMITATIONS:

A lot of the data used came from secondary sources since the field survey was very brief but these sources were authentic and an attempt has been made to indicate the sources of the data

throughout the report. The data on housing units was based on the interpretation of the latest aerial photograph of Kilifi town procured from the Survey of Kenya. No traffic counts were made in the field. The proposed bridging point was based on the principle of the shortest distance and observation of the nature of the rock. No doubt a geological survey would be necessarybe ore the bridge was appropriately built.

In spite of these difficulties, the report has been made as realistic as possible and the proposed urban structure can adequately guide the development of the town in an integrated manner.

PART ONE

BACKGROUND STUDIES

CHAPTER TWO

HISTORICAL EVOLUTION OF KILIFI TOWN AND REGION

2.1 INTRODUCTION

2.1.1. In this first of the background chapters the historical evolution of Kilifi town and region is briefly discussed chiefly to throw light onto the origins of the present day activities of the town and its hinterland. In short this chapter discusses how the town came to exist in relation to its region. This should facilitate a better understanding of the role which Kilifi town plays in Kilifi district, its region. The importance of this knowledge to the actual planning of Kilifi town can hardly be overstressed since the town serves not only its own inhabitants but also a large proportion of those resident in the district.

2.1.2. Kilifi is an old town whose origins date back to the pre-Arab period. It has come under different influences: of the arab, of the Portuguese, of the British colonizers and now of the independent Government of Kenya. During all these periods Kilifi has experienced certain

developments which together have given the town its present structure and which it is the aim of this chapter to identify and evaluate. For convenience this historical analysis is treated under the following sub-headings the indigenous influences, the Arab influences, the Portuguese influences, the colonial era influences, and the influence of the post uhuru era. Some of these influences like the Arab influences came in two definite periods while obviously there are bound to arise cross references among the various influences and eras

2.2. [illegible]

2.2.1. Very little information is available about indigenous influences on the town of Kilifi, its origin and who first developed it. It appears that the first people to live in the present hinterland of Kilifi were known as Asi; about whom little is known, but as they were hunters they are not likely to have had significant influence on the creation of the settlement. The Asi were displaced by the Wanyika who had migrated from Shungwaya, the Bantu Kingdom between Rivers Juba and Tana, as a result of Galla pressure. The Wanyika established Kayas - fortified settlements- along the coastal ranges primarily to ward off

further Galla attacks which were also directed against coastal settlements, and thus became sedentarised as cultivators. These Kayas did become subsquently important inland "sister-cities" to the swahili city - states along the coast. Fig 1 shows these Kayas in relation to their respective coastal states. This association was for defensive, political and economic purposes. The Kanyika helped the Swahili people to ward off masai attacks from the hinterland.

2.2.2. The Kanyika people interacted with the coastal Swahili, Arab, and Indian communities only in commercial or political terms. They were enslaved by Arabs, who exported their slaves through the various coastal settlements or ports. They also engaged in commerce as middlemen and traded with the Arabs and Indians in various items such as timber for dhow construction, ivory, gum, copal, money, slaves and many other desirables. This trade did not decline until Arab coastal settlements could penetrate the hinterland via caravan routes. The Kanyika also traded with Indians who as a rule lived in the ports only. Some of the Kanyika were slaves living in the coastal settlements thus forming part of the settlements population.

2.2.3. Thus before the coming of the Arabs there

KILIFI DISTRICT

HE RELATIONSHIP BETWEEN KAYAS ND COASTAL SETTLEMENTS

FIG. 1

SOURCE: P. FERNS SEE LIST OF REFERENCES

COASTAL SETTLEMENTS

a MAMBRUI
b MALINDI
c GEDE
d MIDA
e KILIFI
f TAKAUNGU
g MTANGANYIKO
h MTWAPA
i MOMBASA

KAYAS

1 KAUMA
2 CHONYI
3 JIBANA
4 KIZURINI
5 FUNGO (GIRIAMA)
6 MARIAKANI
7 KAMBE
8 RIBE
9 RABAI
10 MAZERAS

COASTAL RANGES

LIMIT OF COASTAL RAIN BELT

2.3 THE ARAB AND AFRO [illegible]

2.3.1 When the Arabs arrived at the coast of East Africa they settled in coastal ports, intermarried with Bantu producing Swahilis, "half castes", and conducted trade and commerce with the Wanyika in their area. Kilifi was one of the settlements in this zone. The others were Lamu, Malindi, Pate, Mida Tanganyiko, Takaungu, Mtwapa, Mombasa etc. In these towns were Arabs, Swahilis, Indians and slaves. The slaves usually cultivated plantations, cleared sites, worked as porters and in the construction industry. Surplus slaves were exported on dhows. The Indians engaged mainly in commerce. The Arabs and Swahilis were Kings and noblemen as well as landlords, but also undertook trade, commerce and plantation farming.

2.3.2. The agricultural economy was based on a variety of fruits, coconuts, black millet, beans, rice, tamarind, sugar-cane, cattle, goats, fat-tailed sheep, fowls and camels. There were orange and mango orchards in the vicinity of towns. The orchards were watered from wells. Some sorghum was also grown.

2.3.3 The most important economic activity on which the coastal settlements depended was trade. Trade was carried on mainly up and down the coast between the various coastal settlements. Dhows

were used as the main means of transport and required good sheltered harbours hence the location of most of the settlements at creeks for example Kilifi. In the Kilifi area trade was mainly in slaves (for use by the wealthy in towns and for export), ivory, ambergis, External trade was mainly in the hands of Indians-Banyas (trading class) Bokoras and Khojas (muslims). Imports included Kanikis, shadder, glass, and beads, persian rose water, salt, glass bottles, dried fish and china ware. They exported slaves, ivory tortoise shell, ambergis, wax resin, incense, civet and cowrie shells. Cargo was usually unloaded at the larger ports such as Mombasa and distributed to the smaller towns like Kilifi. Profit was often as high as 100% while in some settlements trade was barter with cotton and grain as measures, some coins and gold were also used.

2.3.4. The settlements tended to be protected from mainland dwellers. The towns were usually inhabited by muslims but surrounded by natives. However, the coastal settlements forged good relations with African tribes during times of war when Africans would use as weapons: spears, bows, poisoned arrows, swords and catapults.

2.3.5 Politically, each town and village, however small, had its own king. There were no associations or federations of

over others only temporarily.

2.3.6. Very often the coastal states had distinct architecture and street layout. The houses were packed close together mainly of mud and palm thatch but with some stone houses about three storeys high. The stone houses were usually isolated, palm thatched, decorated with beautifully worked wood and painted both inside and outside. The mud wattle houses crumbled away. Today isolated tomps of the stone buildings are seen as ruins.

2.3.7. The old town of Kilifi was located south of Kilifi creek between the present site of Mnarani club and Takaungu. The place where the town stood is now covered by thick bush. The ruins of what was the King's palace can be seen on top of a hill. There are also remains of a tower like pillar and a mosque in which quotations from the Koran are beautifully curved in stone. Lower down are fragments of the old town wall and a bastioned gate. There is no trace of the main town itself probably because it was built in mud and wattle. It has been suggested that the main town probably lay between the palace and the ramparts.

2.3.8 There were two other settlements on this side of the creek as shown on figure 2 b. These were

Kauma and Mtanganyiko.

2.3.9 The period of the Zanzibar sultanate intensified and defined the pattern of coastal interaction with the interior. Caravans of trade from Kamba and other interior tribes with Nyika and intermediaries became more frequent than in previous periods. In the Kilifi area trade was carried on between the Wanyika and Swahilis, the Kamba, Galla, Taita, and Kikuyus. This trade was centred on Rabai. It involved the barter of girls and cattle in return for weapons, cloth and foods. The Wanyika acted as intermediaries for the trade. The Sultan exercised power over a 10 mile strip of land along the coast which became in colonial period the sultan's Protectorate. In this strip land ownership was a very complicated affair which has dragged on into the independence period.

2.4. THE PORTUGUESE PERIOD

2.4.1 During the Portuguese era Kilifi received relatively insignificant attention compared to their engagement with Malindi and Mombasa and other towns along the East African Coast. In fact most of their ships did not call at Kilifi at all. In Mombasa the Portuguese even settled for various

lengths of periods at various times. Portuguese ships usually called at Malindi on their way up the coast and to or from India and were invariably accorded warm welcome. Portuguese were more interested in Kilwa further down the coast because this controlled the important Sofala gold trade. Perhaps the Portuguese did not have interest in Kilifi because the settlement did not offer any economic or military advantage of the scale the more important settlements provided them. The Portuguese did not settle in Kilifi town although they tried settling in other coastal towns such as Mombasa, Mnza, Pate, Pemba, Zanzibar, Mafia and Kilwa. They could only settle permanently in Mombasa and Zanzibar in 17th century.

2.4.2 The greatest impact the Portuguese had on Kilifi town was the assistance they gave to the King of Malindi in battles against the King of Kilifi. Kilifi inhabitants constituted a threat to the inhabitants of Malindi (raiding and abducting their women. The women feared even collecting firewood unguarded). The King of Malindi attacked and captured Kilifi killing its King. Owing to the death of Kilifis' King, the Mombasa King, who was his relative, attacked Malindi but was in turn

slain by "Mazrui ullos". Kilifi was, however completely destroyed by Malindi battles as well as subsequent battles with Mombasa. Both Malindi and Kilifi were then governed from Mombasa by the Malindi king who had transfered to Mombasa. This was perhaps indicative of the role Mombasa was subsquently to play as the capital of coast Province.

2.4.3. Nevertheless, in as much as Kilifi was one of the towns along the East African Coast which came under the perview of the portuguese it may be generalised that the general effects of the Portuguese on life at the coast affected Kilifi settlement as well as any other settlement. The Portuguese brought certain [illegible]s to the coastal settlements. They created restrictions on trade which had hitherto flourished up and down the coast. They created [illegible]v and caused the indigenes to pay tribute to the King of Portugal. They did not open any new outlets of trade and there was no increase in agricultural productivity. Although crops such as maize, cassava and pineapples were produced during this period, the Portuguese played little role in this innovation. The interland was never penetrated by the portuguese. Their christianity was so feable that the muslim culture of the coastal towns remained unchanged.

2.4.4. The Portuguese supported the Arabs and Swahilis in their relationships with the hinterland. This relationship depended on persuasion as well as coercion. The presence of Portuguese capturing in coastal towns like Malindi greatly facilitated in the coercion role played in the hinterland by the coastal Arab states.

The portuguese presence in East Africa attracted the British. The British were otherwise inclined more towards colonizing India. The arrival of the British with their colonial policy eclipsed the Arab but not Indian commercial activity.

2.5. The Colonial Period (1895-1961)

2.5.1. The British were initially interested in the East African coast as a strategy to secure control over the Suez canal and the Indian Ocean which was the route to their colony of India. Their concern for East Africa was largely due to the Portuguese presence and activities in the area. With the construction of the East African Railway, however, their interest became more directed towards the interior particularly the development of the highlands and lake basin as export enclaves.

2.5.2. Kilifi District was thus in the backwaters. Mombasa developed because it was the main port for what was then British East Africa and has continued to grow while serving increasingly Kenya, Uganda and Northern Tanzania which together form its hinterland. Perhaps one could hazard a guess that had Kilifi creek been developed as a port linked with the hinterland, Kilifi town would have had similar fortunes to Mombasa's development opportunities. The hinterland was developed largely due to European settlement of the "White Highlands" whose economy was supported by the African reserves by way of cheap labour supply and even subsidization of the settler export economy. Towns in the hinterland, particularly along the railway, thus had economic bases for their growth. Being away from the railway line, perhaps, meant slower growth.

2.5.3. Although it is true that throughout the colonial period the British did very little in the way of development of Kilifi town and its hinterland one can identify certain aspects which had some impact on the development of the whole area. This impact took the form of economic, political, and social aspects of the development of the area.

2.5.4 Politically, the British colonial government relied on the system of Indirect Rule. This

system which was first applied in Nigeria by Lord Lugard was introduced in East Africa by Sir Donald Cameron the Governor of the then Tanganyika (present Tanzania mainland) in 1925. It was based on use of the existing tribal political structure to govern the natives. Under this system tribal authorities up to locational level, were in theory supposed to be responsible for their own internal affairs while the colonial powers handled affairs external to the tribe.

In Kilifi district, the tribal authority was decentralized. Each sub-tribe, based on a Kaya, had its own group of elders who governed the people basing their authority on traditions and customs of the tribe. The colonial government used this system and created a total of 30 locations, 3 divisions and one District of Kilifi with its headquarters in Kilifi town. While at locational level there was a chief below whom were subchiefs and village headmen, at the Divisional level there was the District officer and the District Commissioner at the District level. The last two represented the colonial authority. African District Councils were established as a forum for the people's wishes to be expressed by their representatives who were nominated by the D.C.

2 ADMINISTRATIVE DIVISIONS & LOCATION

2.f.i. Each location had its administrative headquarters, the chief's centre. Likewise each sublocation had its meeting place. In addition, the colonialists created a series of local shopping centres through the aid of African District Councils who collected rates and cess from such markets. Although missionaries also located their facilities in such shopping centres and administrative centres, they tended to isolate the religious/educational functions from the administrative/commercial land uses. Kilifi town underwent this phase but to a lesser degree because of its muslim inclinations and now owing to growth and expansion isolationism in religious/educational from the administrative/commercial aspects is diminishing. There is a hint at the solution to the problem of isolationism i.e. to plan future growth to take place in an urban structure which will eventually integrate the whole town more or less adequately. The present government has adopted virtually the same administrative structure. Moves to split the District into two - one to be headquartered at Malindi the present Malindi sub-district and the rest to remain attached to Kilifi district headquarters have frequently been heard but it is clear such a move is not imminent.

2.5.6 The British colonial administrative system employed coercion in its dealings with the people of Kilifi District and this had a very retarding impact on the development consciousness of the people. Cases in point are many. The colonialists collected hut tax by force while they did little to develop educational, health facilities, roads, water supplies and other forms of infrastructure. The District Commissioner was called upon to control by force dealings in ivory which the Wanyika had engaged in for a long time with the Arabs and Swahilis of the coast but which were now termed "illegal ivory smuggling". Many natives were forced to work on plantations along the coast, mainly sisal and cashewnut plantations. The colonial government's Sabaki settlement scheme was the source of much trouble for the Wanyika who were first settled in the area, then forcefully evicted (400 huts were burnt in the Giriama rebellion of 1913) and then allowed to settle again even as far as on the northern bank of the River. During the 2nd world war many Wanyika were taken away by force as "carrier corps".

This attifude of coercion was also coupled with neglect. Both these had a serious impact on the Wanyika. They became incooperative and developed a negative altitude towards development. They

continued with their traditional ways and even still practice witchcraft today as is evidenced by reports in the Daily press about court convictions of persons practicing witchcraft with the purpose of instilling fear into the populace. The Present Government is trying to change this altitude through Africanization and self help projects.

2.5.7. Socially, the colonial Government did establish some health and educational programmes but perhaps it was the role of Missions that did more in this direction. Missions of the Methodist, Roman Catholic, Baptist, Seventh Day Adventists and Pentecostal played an important role in establishment of health and educational facilities, economic activities and the allayment of fear among the natives. The work of Krapf and Rebmann was particularly notable in this guise. The Girisama, however, took little to the Faith. They came to the missions purely for the health, economic and educational benefits otherwise they were still inclined to practice their traditional beliefs including witchcraft. The Swahilis of the coastal settlement remained predominately muslim.

2.5.8 Economically, the colonial Government did very little to stimulate the development of

agriculture and the interest of the indegeneous people of Kilifi in commercial and industrial fields. In a sense the colonial era warped the original commercial interests of the Wanyika. Until recently, the tourist hotels at the coast were hiring persons from up country. Commerce and industry was dominated by the Asians and the Arabs who stayed in the Townships.

2.6 THE POST INDEPENDENCE PERIOD (SINCE 1963)

2.6.1. The National era started in 1963 after Kenya's independence. It ushered in a centralized form of government which has resulted in weak and ineffective local authorities at the District level. The centralized form of Government was the brain child of the ruling KANU party. It went against the grain of the colonial practise which had created a decentralized form of government through African District Councils, although the central government was represented by the District Commissioner at the District level. The Regional constitution insisted upon by KADU would in a sense have resulted in stronger regional or local authorities. But this was effectively deterred in 1964 when Kenya was declared a republic with a very strong centralized form of government.

2.6.2 The centralized form of government consists of the headquarter offices of the various ministries and the ministries representatives at the provincial level forming the provincial administration. At the provincial level Provincial Commissioner, who is the president's direct representative, is the overall in charge, at the district level the boss is the District Commissioner, at Divisional level this function is held by the District officer below whom are the chief in charge of a location and the subchief in charge of a sublocation. Lower than subchief is the people's village leader normally elected by the people themselves. Until recently, the various persons involved in provincial administration were also responsible for planning and implementing development programmes, at provincial, district, locational, sub-locational and village levels.

2.6.3. At the local level one finds local authorities either as county councils whose areas of juridiction concide with district boundaries or in the form of city, municipal, township or urban councils administering urban areas. These have elected representatives and are responsible to varying extents for development of their respective areas. Local authorities are placed,

with two key problems; lack of finance and lack of skilled staff. As a result the local authorities have always been very weak and running alot of deficits in their budgeting. Some of the major municipalities like Nairobi and Mombasa have been able to cope more competently with these problems while the weaker local authorities, particularly the county councils, have hardly managed to discharge their functions. Kilifi urban area and its hinterland are under the jurisdiction of the Kilifi County Council.

2.5.4. County Councils were created after independence in all areas of the republic. Formerly, they existed only in the White Highlands for European settlers. After independence, these county councils were meant to be a forum for the local people through which local needs and requirements would be identified and measures taken to satisfy the development needs and desires of the local people. They were responsible for the provision of education and health facilities and the maintenance of minor roads. Their finance came from graduated personal taxes and rates. It was however, soon realized that the financial and management problems facing the local authorities, meant that county councils as well as other local authorities could not amidst fulfil the expectations

of the people. The central Government, therefore took over some of the functions namely provision of education and health facilities and maintenance and provision of roads in all of the local authority areas. The local authorities therefore became the instruments of organizing self-help activities and provision of very low level services. But they have continued to show a lot of weakness in the field of finance and management as a result of the bolition of the Graduated Personal tax which was their main source of revenue.

2.6.5. The Kenya Government lays a lot of emphasis on rural development since the majority of the people live there and since Kenya is primarily an agricultural country. Efforts have therefore been geared towards attaining the best way in which rural development can be planned and implemented by the various development agencies in a coordinated manner. As a result, the Government is in the process of setting up a planning machinery in each district and Province which will ensure this approach. Provincial and District development committees are being set up to serve this end. They will consist of government officials at the respective levels and represen atives of the people both national and Local politicians as well as prominent members of

the local community. These committees will prepare and implement plans for each district. These plans will be financed by the Central Government ministerial votes, direct grants to each district and from private sources as well as parastatal organizations. Kilifi will therefore have such a District Development Committee.

E.P.Z. All the various agencies have played their various roles in the economic, social and urban development of Kilifi District. All these aspects will be treated a length in the subsequent chapters. Here only a few things are highlighted. Economically, the districts agriculture, tourism, mineral, forestry and other economic resources have been exploited to varying extents. Agricultural development has pursued the policy of self sufficiency in food production and production of cash crops such as cashewnuts factory at Kilifi. Dairying and ranching have also been encouraged. Various minerals are now being exploited such as lead and zinc at Kilifi and settlement schemes have also been promoted notably at Tezo, Roka and Mtondia near Kilifi. Tourist development can best be seen in the number of hotels and cottages fronting the beaches and indeed it is the main stay of Malindi town's economy.

2.6.7 There is, however, still much potential for development of the economic resources of the District as will be explained in chapter 3.

2.6.8 The development of infrastructure and services has also been promoted by the various development agencies as well as on a self help basis. Various Primary, Secondary, and Nursery schools have been provided in various parts of the District. Health centres and dispensaries have been built and the Kilifi and Malindi hospitals expanded. Urban housing especially in Kilifi and Malindi has been built by Central Government, the county council through the assistance of the National Housing Corporation. Roads have been classified, built and maintained with varying successes. Water is now the focus of the Central Government efforts to develop Kilifi District and the urban areas such as Kilifi Malindi and other coastal towns.

2.6.9 Kilifi town structure has experienced some changes during the last decade of the colonial era. The ferry which serves as the link between north and south mainland has been improved and plans are under way to further improve it, a bridge will be built in the future. Imarani Club has

has continued to expand its activities is a popular sporting ground for tourists as well as locals. The town roads have received a face lift as part of the Government tourist road programme. New housing estates have been built by the County Council through the National Housing Corporation. Some Beach houses have been developed. The cashewnut factory is probably the most significant single factor affecting the urban structure of Kilifi since it increases the towns population by more than half and makes available an income which will attract more service activity and necessitate the expansion of the supply of housing.

2.7. SUMMARY

2.7.1 The five eras have had varying and different impacts on Kilifi's urban structure as illustrated in the sketches in figure 2 a, b, c and d. In the indigenous phase there was virtually no local settlement known as Kilifi. The creek area can be said to have been virgin with mangrove forests and other features in their natural state. During the arab era, a settlement sprung up south of Kilifi creek. It was a fishing village as well as a city state. The creek was used as a good sheltered harbour. Other settlements in the creek area were

THE HISTORICAL DEVELOPMENT OF KILIFI TOWN

NDIGENEOUS ERA

creek virtually virgin with no

Settlement

THE ARAB AND PORTUGUESE TIMES

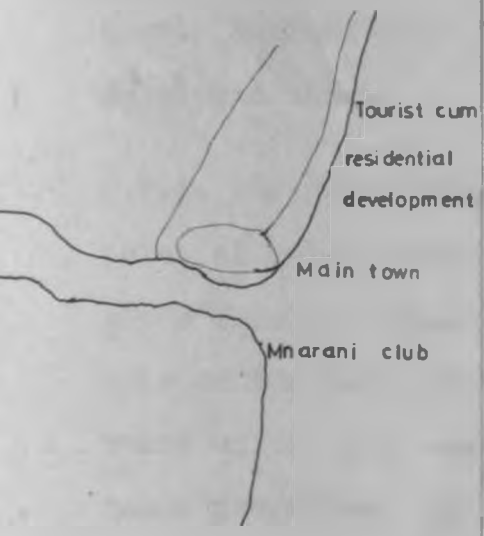
Kilifi existed south of the creek

Other settlements were Mtanganyiko and Kaumo

Communications were oriented towards the sea.

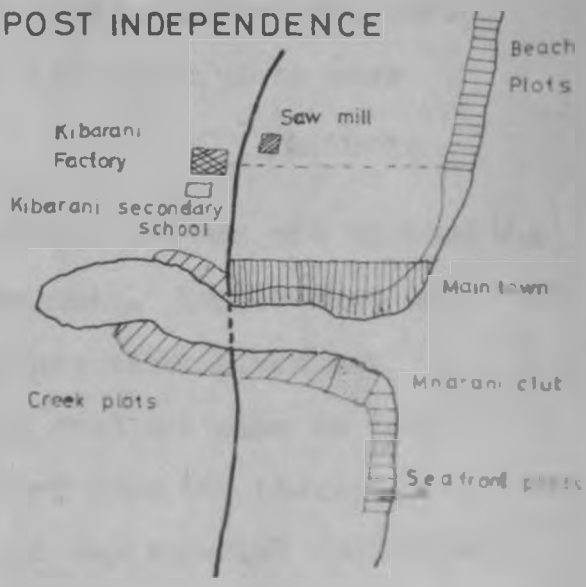
b

COLONIAL ERA



ilifi town moved north of the creek

POST INDEPENDENCE



d

NOT DRAWN TO SCALE

Kauma and Ntanganyiko. The portuguese era did not change the urban structure except perhaps in the change of political leadership.

2.7.2 It was during the colonial era that Kilifi's present urban structure was first laid. The colonial Government moved Kilifi town to its present site north of the creek. They established the administrative offices and the social services. It was during this era that the commercial sector was also started. Kibarani factory also came into existence then. The main Mombasa-Malindi road was built as a gravel murrum road. The ferry service was established then. Mnarani club and the beach plots were developed then.

2.7.3. The post independence era has not changed the colonial urban structure much. Improvement in roads through tarmacing has taken place not only on the main through road but also in town roads which have benefited from the tourist roads programme. Some of the colonial facilities like golf courses are still in use. Kibarani casnewnut factory has been expanded thus making the biggest impact on the size and urban structure of Kilifi. Mnarani club has

continued to expand to cater for tourist needs. Water supply is being boosted. A secondary school is now in existence at Kibarani.

The historical process of development has thus resulted in a dispersed settlement with some major development forming nuclei away from the main town area. This is the problem which this thesis is trying to solve.

CHAPTER THREE.

THE REGIONAL SETTING

3.1. INTRODUCTION.

3.1.1. Most urban areas thrive because they serve as centres for the production and distribution of goods and services. It is these production and distribution functions that create jobs in the urban area. The town produces certain goods and services which are consumed beyond its borders, in its hinterland, as well as those which are consumed entirely within the urban area. More often some of the goods and services produced are consumed both within and outside the city boundaries. According to the economic base concept those goods and services which a city produced and exports outside its boundaries are basic activities while those which are produced to satify the city's internal needs are known as non-basic activities. The most important point in all this is that the town and the region form an important relationship of interdependence. While the town produces goods and services for the region it also imports food and other services from outside its boundaries.

The growth of the volume and sophistication of production of basic goods and services depends on the effective demand from the region. The effective demand in turn depends on the purchasing power of the people in the region. The purchasing power presupposes the development of the economic potential of the region in order to raise the income of the people.

3.2. KILIFI'S HINTERLAND DEFINED.

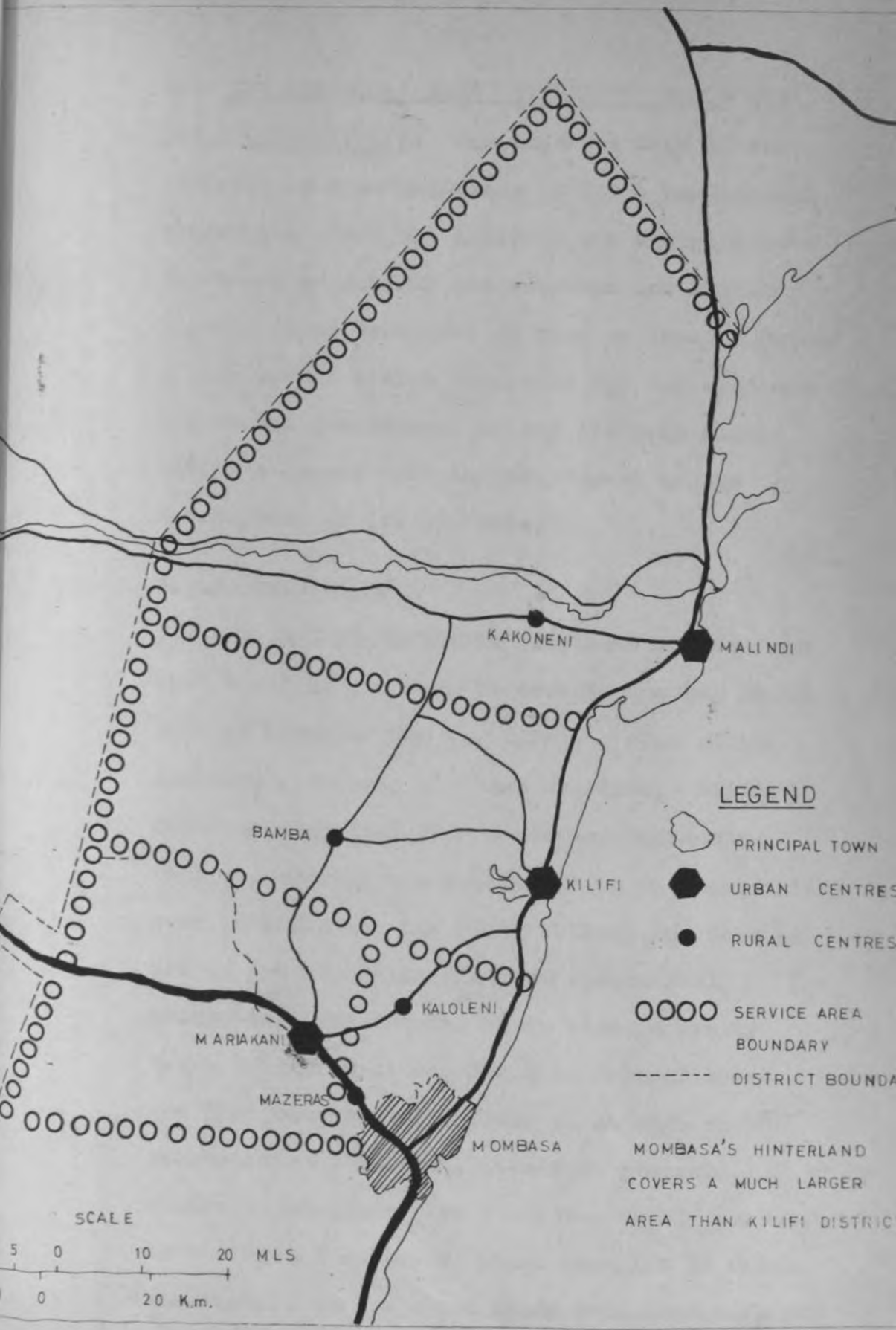
3.2.1. Kilifi's hinterland is variable depending on the criterion considered. Administratively, since Kilifi town is the headquarters of the district, the entire district forms its hinterland. Even though, a number of district functions operate from Malindi town serving particularly the Malindi Sub-district identified with Malindi division, see map 3. Most of the other social services have their highest form at district level at the headquarters in Kilifi town. Health for example is represented by the district hospital which in fact serves even parts of Tana River district while at the same time certain areas

under its jurisdiction Kilifi district are catered for by the hospitals at Kaloleni, Malindi and Mombasa. Rough boundaries are indicated on map 3 to show these service areas.

3.2.2. In terms of the population served Kilifi as an urban centre should serve 120,000 people as per government standards. The area which holds this much population is indicated on map 3. The rest of the district should be served by Mariakani, Mombasa and Malindi at urban level of service. Of course Mombasa provides higher levels of service to the entire coast Province and other parts of Kenya and East Africa. The population maps on section show that Kilifi is located densely populated southern and central divisions and will continue to enjoy this position even if the population is "ideally" distributed.

3.2.3. For the purpose of analysing the regional setting, the entire district of Kilifi is regarded as Kilifi town's region.

MAP 3 SERVICE AREAS



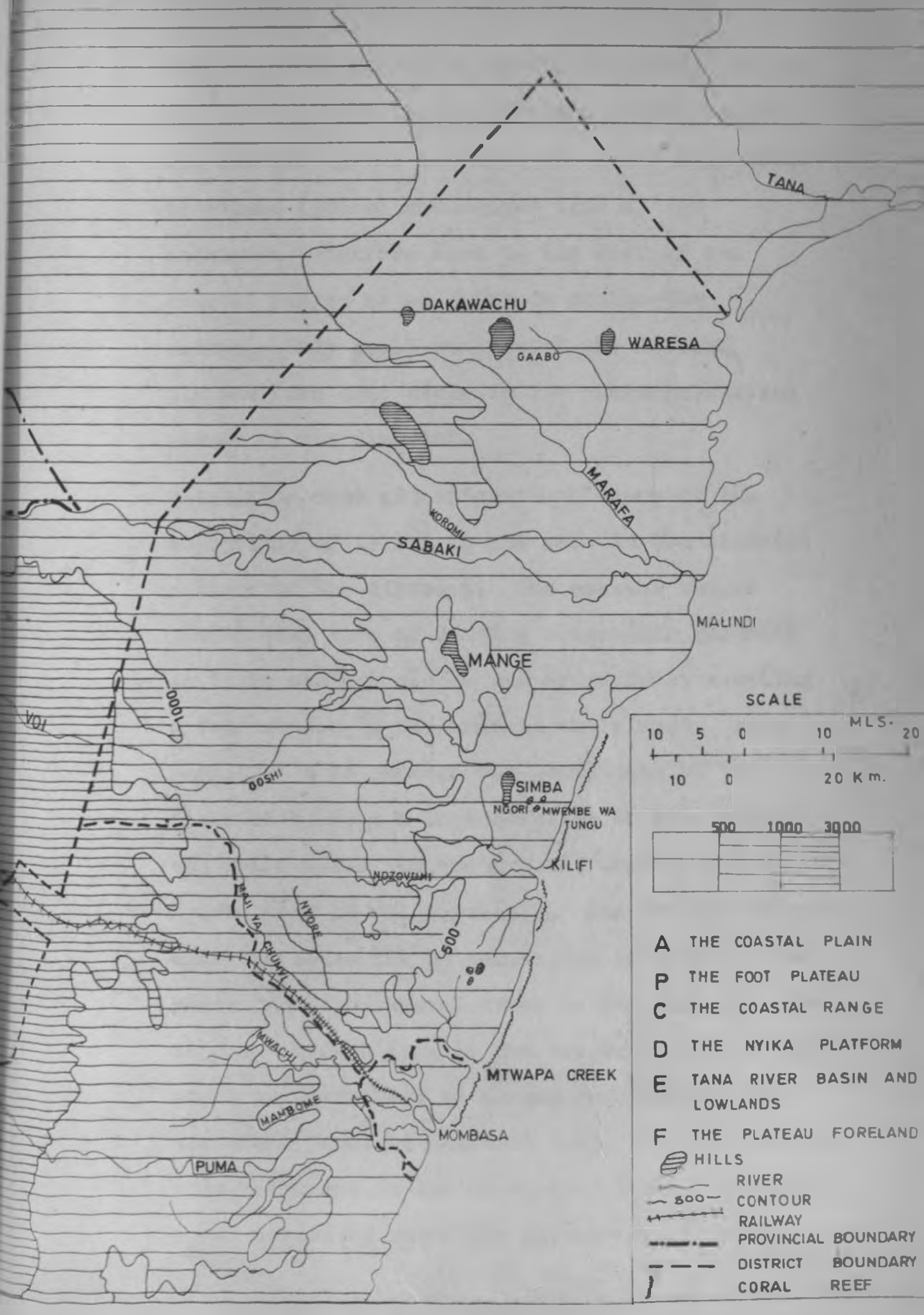
3.3 THE PHYSICAL BASE OF KILIFI DISTRICT:

3.3.1 INTRODUCTION: The physical base of the district is examined so far as it forms the natural stage upon which man exploits the environment's resources to satisfy his economic and social needs. It is described so that an idea is gained of the possibilities available for the economic and social development of the district since Kilifi's growth will largely depend on the development of its hinterland.

3.3.2. Topography

3.3.2.1 Kilifi district's altitude ranges from sea level in the East to over 900 metres in the west as shown on map 4. Like the rest of the seaboard districts of Coast Province, Kilifi district comprises four basic physiographic regions, namely; the coastal plain in which Kilifi town is situated; the foot plateau; the Coastal Ranges and the Nyika platform successively westwards. The coastal Plain lies generally below 30 metres except north of Malindi where the land occassionally rises to as high as 60 metres above sea level. The foot plateau varies in altitude from 60 metres to 135 metres. It includes a series of hills examples of which are Mwembe wa Tungu and Mtumi between Kilifi and

AP 4 TOPOGRAPHY AND DRAINAGE



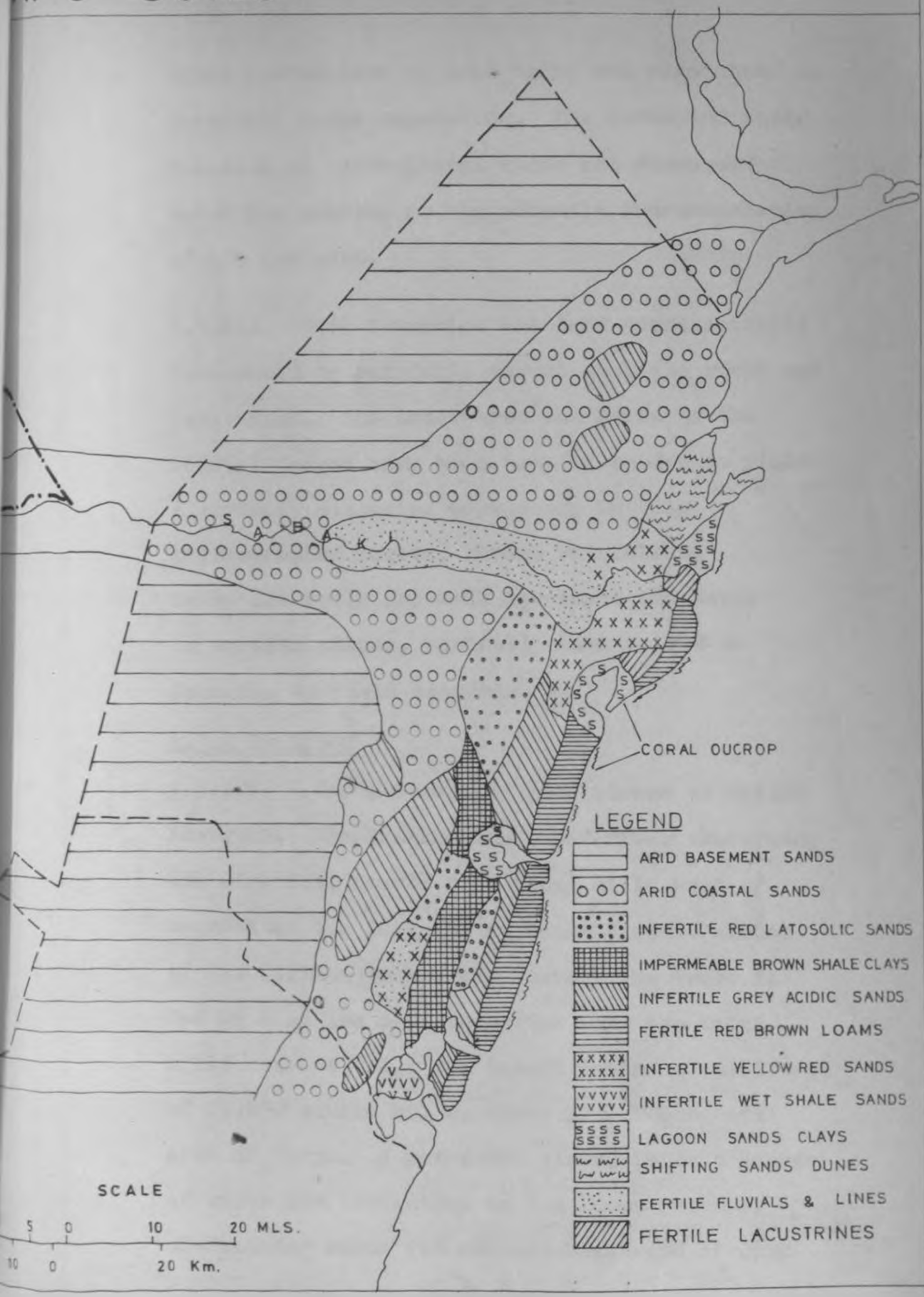
Mtwapa creeks rising to over 120 metres. Behind the foot plateau lie the Coastal Ranges between 180 and 420 metres in which are found such hills as Jibana (300 m) and Ranges (310 m) An undulating Platform lies to the west of the coastal ranges at an altitude of 150-300 metres. Only small pockets of the Eastern plateau fore land occur in the southern-western corner of the district.

3.3.2 The most significant influence of the topography of Kilifi is its role in the climatic pattern of the district. The coastal ranges play a dual role of causing orographic rainfall in their eastern slopes and effectively creating a rain shadow in the area to their west. As a result of this pattern the settlement of the district depicts a concentration in its eastern one third while the western two thirds is very sparsely if at all populated. The coastal ranges also influence the communication pattern in that roads from the coastal areas to the interior have to pass through gaps in the ranges while the main roads run parrallel to ranges particularly the Mariakani Bamba to Makoneni road. However Kilifi town is linked to its hinterland through various roads discussed under the appropriate section

3.3.3. Geology: In the Coastal Plain are found corals, sands and alluvial deposits. The geology of the Foot Plateau consists of wind blown sands in its Eastern portion and impervious shales, limestones and sandstones in the other parts of the physiographic region. Sandstones and grits occur in the Coastal Ranges as well as in the Kyika Platform physiographic regions. As parent material the geologic elements have had profound influence on the soils of the district.

3.3.4. Soils: The soils of the district are shown in map 5. In the Kyika platform are found arid basement sands punctuated only by the fertile fluvials and lines and arid coastal sands of the Sabaki Valley. The arid coastal sands are very widely spread covering most of the coastal ranges and the foot plateau in the North Eastern, Central and southern parts of the District. Parts of the Coastal Ranges and the Foot Plateau also have unfertile grey acidic soils and fertile red brown loams. Infertile red latosolic soils occur mainly in the Foot Plateau region. In addition to the fluvials and lacustines, the Sabaki Valley also consists of infertile yellow sands. The Coastal plain consist of fertile yellow lacustrines. A

AP 5 SOILS


CORAL OUCROP
LEGEND
ARID BASEMENT SANDS
ARID COASTAL SANDS
INFERTILE RED LATOSOLIC SANDS
IMPERMEABLE BROWN SHALE CLAYS
INFERTILE GREY ACIDIC SANDS
FERTILE RED BROWN LOAMS
INFERTILE YELLOW RED SANDS
INFERTILE WET SHALE SANDS
LAGOON SANDS CLAYS
SHIFTING SANDS DUNES
FERTILE FLUVIALS & LINES
FERTILE LACUSTRINES
SCALE
5 0 10 20 MLS.
10 0 20 Km.

close association of soil types and vegetation is described under vegetation. The soils and their relation to agricultural zones are discussed under the section on the economic characteristics of the district.

3.3.4.2. Soil formation has been substaintially influenced by rainfall, parent geologic rocks and vegeration. The sandstones and grits of the coastal ranges have been heavily eroded to yield a markedly dissected topography in this physiographic region. Where rainfall is heavy the soils are well developed and deep. In certain places, rainfall has resulted in leaching to yield latosols.

3.3.5 DRAINAGE

3.3.5.1. Map 4 shows the main rivers of Kilifi District. The Sabaki, the chief river traversing the district, starts from Ngong hills west of Nairobi as the Athi and from the Eastern slopes of Mt. Kilimanjaro as the Tsavo. The Tsavo is fed by a series of tributaries from the Taita hills west of Voi. The Sabaki drains a total area of 27,000 square miles, about 12 of the total area of Kenya. A permanent river, it is a source of water for irrigation in its lower reaches, of drinking water for man and beast and of fish

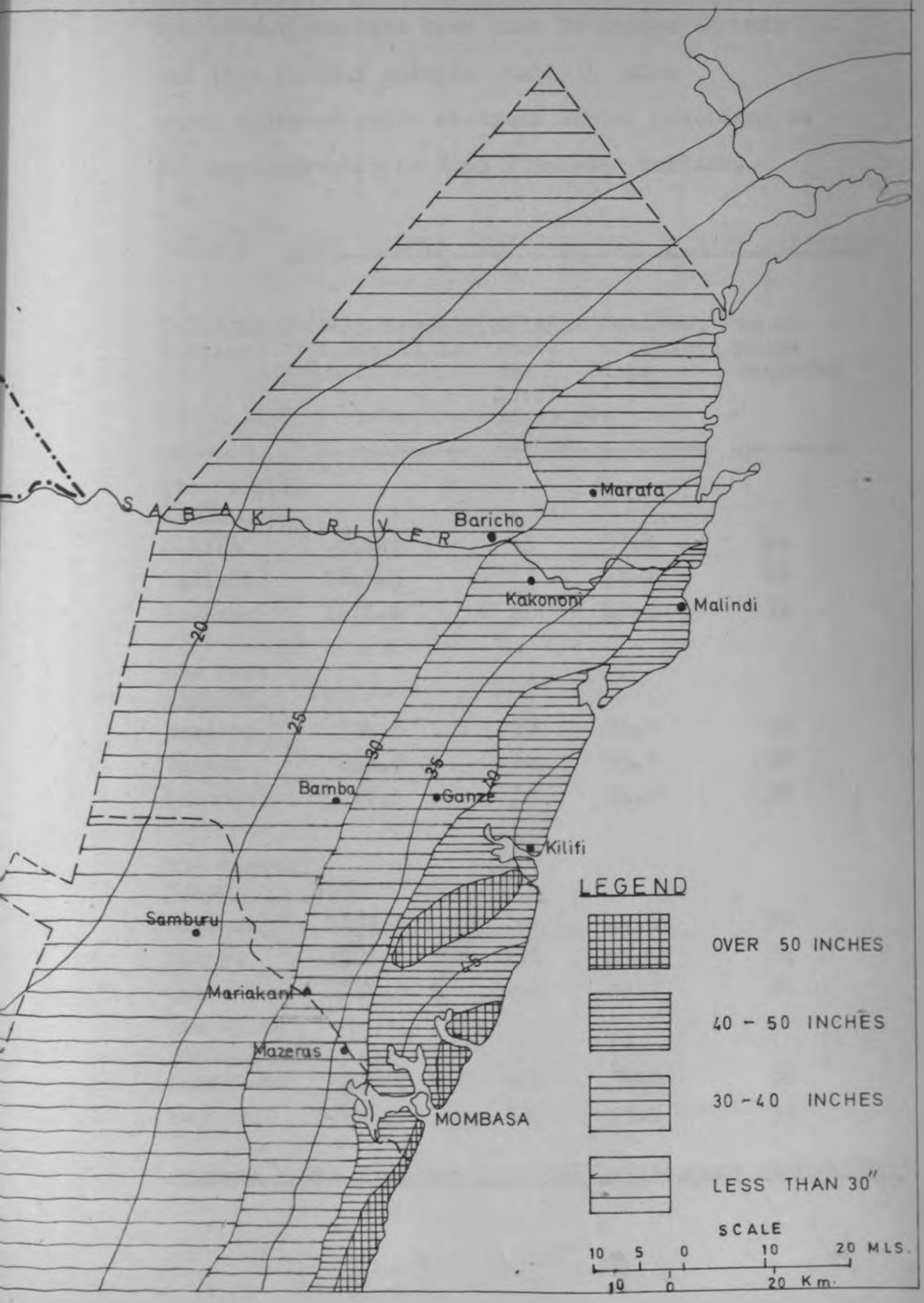
for local consumption. It holds the key to future water supply to both rural and urban areas in Kilifi District and Mombasa. Other, less important rivers include the seasonal Gashi also known as Mare and Voi in its lower and upper stretches respectively, the Marafa and Goroni both of which are tributaries of the Sabaki, the Adzovuni which together with the Mare empties into the Kilifi creek and the Maji ya Chumvi which drains the Mariakani area. Most of these are intermittent and seasonal.

3.3.5.2. A series of ox-bow lakes are found on the lower Sabaki. Except the Jilore ox-bow lake, which has a sub-surface recharge, all are salty.

3.3.6 CLIMATE

3.3.6.1. Rainfall: Three rainfall belts are identifiable in the district. A coastal belt bounded to the west the 40 inch (1016 mm) isohyet (see map 6) in which lies Kilifi town receives over 40 inches of rain per annum. Within this broad belt are pockets receiving between 45 and 50 inches and over 50 inches. The next belt receives between 30 and 40 inches, though, again, one can distinguish between the narrower sub-belt receiving 35-40 inches and the much wider portion receiving 30-35 inches. The third belt,

AP 6 RAINFALL DISTRIBUTION



the widest, receives less than 30 inches of rain and lies farther inland. Table 1 below shows represen ative stations listed according to the physio raphic re ions discussed earlier.

Table 1 MEAN ANNUAL RAINFALL IN KILIFI DISTRICT

RAINFALL station	Mean Annual rainfall in mm	Height above sea level in metres metres	Mean no. of rainy days	No of years recorded
The Coastal Plain				
Kilifi	941.3	3	37.1	44
Malindi	1047.3	3	41.2	69
Mombasa	1175.6	11	46.3	76
The Foot Plateau				
Garicho	734.8	70	2[illegible].9	15
Marafa	856.6	60	33.7	30
Makoneni	787.1	60	31.0	30
The Coastal Range				
Mazeras	1029.1	150	40.5	56
Chonyi	1181.0	250	46.5	24
Jaze	856.9	200	33.7	20
The Nyika Platform				
Mariakani	868.9	200	34.2	26
Samburu	596.0	300	23.5	33

Source: Coast Province Physical Development Plan 1971

3.3.6.2. In East Africa a minimum of 30 inches or 762 mm is necessary for the practice of permanent agriculture, while areas receiving 20-29 inches (508-762 mm) can only support semi permanent or shifting cultivation and those receiving 20 inches (508 mm) and less are only good enough for range activities. On this basis less than $\frac{1}{3}$ of Kilifi district is suitable for permanent agriculture while the remaining can support semi-permanent or ranceland activities except where irrigation is feasible. In terms of rainfall reliability only the area south of Kilifi town can expect to receive 30" 90 out of 100 years. The rest of the district can easily suffer crop failure in 20-30 years out of 100 (map).

Most of the rain falls in April to July with maximum in May.

3.3.6.3. TEMPERATURE AND [illegible] HUMIDITY

The entire district experiences generally high temperatures and relative humidity. Table 2 shows mean temperatures for three coastal stations.

Table 2 TEMPERATURE ALONG THE COAST

	mean maximum	mean minimum	mean air temps
Malindi	86.2°F	72.8°F	79.5°F
Kilifi	86.3	72.1	79.2
Mombasa	86.1	74.1	80.1

Source: Meteorological department reports

3.3.6.4 Table 3 depicts the relative humidity as recorded at the three stations.

Table 3 RELATIVE HUMIDITY ALONG THE COAST

Station	WET SEASON		DRY SEASON	
	a.m.	p.m.	a.m.	p.m.
Malindi	86	73	76	68
Mombasa	85	76	75	63
Kilifi (voi	77	49	77	50)

Source: Meteorological Department Kenya

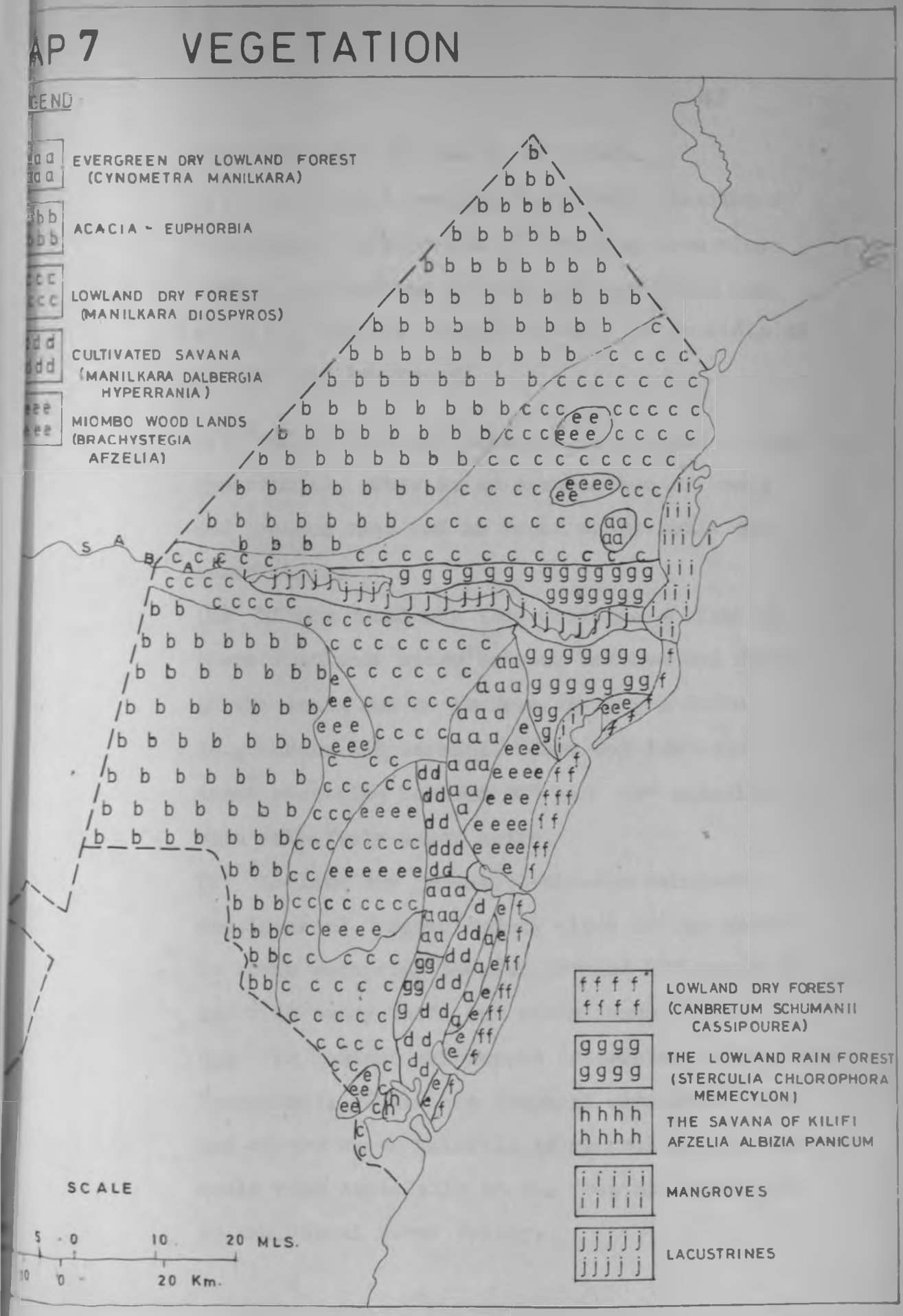
3.3.7 VEGETATION

3.3.7.1 The natural vegetation of Kilifi District comprices forests, woodlands and grasslands. Map 7 shows these various types of vegetation which are explained below. It is essentially a reflection of the soil map.

(a) This is the evergreen dry lowland forest (cynometra Manilkara). It occurs mainly in the Tokoke Forest Reserve but some patches of it are found south and west of Kilifi creek and north of the Sabaki River. The soils here are fertile and include red sands and dark red sands but are gradually getting impoverished through the process of lateritation

(b) This is the interior type of vegetation consisting of varieties of Acacia, Euphorbia and commiphora. Soils here are very sandy and the

AP 7 VEGETATION



rainfall below 20 inches per annum.

(c) The Savanna Lowland dry forest (Manilkara Diospyros) This covers a very wide area where rainfall is between 25" and 30" per annum and soils are fertile coastal sands. It consists of grasses and low trees.

(d) The "cultivated savanna" (Manilkana - Albergia Hyperrania). This is an association of trees and grasses also and is found where soils are heavy clays.

(e) Miombo Woodlands (Brachystegia - Afzelia) These woodlands occur between Mombasa and Kabai in the south and in pockets at Mangea Hills, Adu, Karaba and Karasuni. They coicide with areas receiving between 20" and 40" annually with relatively sandy soils.

(f) Lowland dry forest)Combretum schumanii cassipourea). Found mainly close to the shore in areas receiving between 30" and 40" annually an with sandy soils and sandy loams.

(g) The lowland rainforest (sterculia-chlorophora Memecylon). This is a tropical rainforest type and occurs where rainfall is generally high and soils rich especially in the Coastal Mangos and in the Sabaki River Valley.

(h) The Savanna of Kilifi (Afzelia-Albizia Panicum). This is found in areas with over 30" per annum and lateronal or anale-sandy soils. It is found on Mainland West Mombasa.

(i) Mangroves are found in pockets especially around the creeks.

(j) Lacustrines occur mainly in the Sabaki Valley.

3.3.7.2. The Arabuko Sokoke forest measuring 41,763 hectares of which 40,954 hectares are productive high forest is a gazetted forest Reserve.

3.4 [illegible]

3.4.1 In this section the economic characteristics of the district are discussed in order to assess the potential for further development of the available resources to support both rural and urban populations of the future in the district. The general picture of employment and the agricultural, mineral, tourist, fishing and forestry potentials are covered. The growth of Kilifi town will in many ways depend on the development of these various potentials.

3.4.2. Employment in Kilifi District

3.4.2.1 Table 4 below shows employment in the

modern sector recorded in 1971 for Kilifi district. The services sector comes out clearly as the most important employer in modern sector employment cadre with 49% of the total employment in the district. This reflects the significant role played by tourism as well as the large numbers of persons employed in public services such as administration, education and health. Agriculture ranked 2nd with 29.4% followed by Commerce (8.6%), manufacturing (6.3%) Transport (2.8%), mining (2.0%) construction (1.6%) and utilities (0.3%). The employment in manufacturing occured mainly in Kilifi town at the Kenya ashews factory which is currently undergoing expansion.

The total number of persons employed in the modern sector was 867½ or 3 % of the total population

TABLE 4: TOTAL EMPLOYMENT BY INDUSTRY IN KILIFI DISTRICT, 1971.

INDUSTRY	EMPLOYED	SELF EMPLOYED	TOTAL	%
Agriculture	2,434	131	2,565	29.4
Mining	184	-	184	2.0
Manufacturing	471	91	562	6.3
Construction	147	3	150	1.6
Electricity & Water	41	-	41	0.3
Commerce	195	564	759	8.6
Transport	236	17	253	2.8
Services	4186	71	4257	49.0
TOTAL	7,894	777	8,671	100.0
%	91	9	100	

Source: Central Bureau of Statistics

3.4.2.2. It must be stressed that many more persons are employed in the non-modern sector as subsistence farmers and fishermen.

3.4.2.3. Table 5 below shows that of the total number of persons employed in Kilifi district 926 were employed in Kilifi town while 2020 were employed in Malindi town, the two urban areas with a population of over 2000 in Kilifi district. For the sake of comparison the relevant figure for Mombasa, a much larger urban area, was 60,818.

TABLE 5: EMPLOYMENT BY INDUSTRY IN THE MAIN TOWNS OF KILIFI

INDUSTRY	KILIFI	MALINDI	MOMBASA
Agriculture	6	48	325
Mining and quarrying	18	-	197
Manufacturing	392	136	13739
Construction	72	32	2942
Electricity and Water	36	15	1100
Commerce	149	218	9173
Transport	63	119	16166
Services	280	1452	17175
TOTAL	926	2020	60818

Source: Central Bureau of Statistics

3.4.2.3. Employment growth is shown in table 6 below. Between 1968 and 1971 total modern sector employment in Kilifi district grew at an average

of 2.25% per annum from 6,969 to 8671.

Construction showed the most rapid growth from 3 in 1960 to 150 in 1971 averaging 1,225% growth per annum; largely because of the increased activity in that industry all over the country. Mining and quarrying shot up also from 18 to 184 because of the opening up of the Kinangoni lead and zinc mine in the southern part of the district and in order to satisfy the needs of the construction industry. Generally all the industries grew fairly rapidly except Transport and manufacturing industries.

TABLE 6: GROWTH OF EMPLOYMENT BY INDUSTRY IN KILIFI DISTRICT 1960 - 1971

INDUSTRY	EMPLOYMENT 1968	1971	1971-1968	% growth P.a.
Agriculture	2,537	2,565	28	0.25
Mining and Quarrying	18	184	166	230.5
Manufacturing	563	562	- 1	- 0.025
Construction	3	150	147	1225.0
Electricity and Water	22	41	19	21.6
Commerce	135	759	624	115.5
Transport	248	253	5	0.5
Services	3,443	4,257	814	5.9
TOTAL	7,424	8,671	702	2.25

Source: Central Bureau of statistics

3.4.3 AGRICULTURAL POTENTIAL

3.4.3.1 Kilifis agricultural potential has been assessed by two studies by the department of Physical Planning of the Ministry of Lands and Settlement. One of these is the Coast Province Regional Physical Development Plan of 1971 in whose preparation the present author participated the second is the effort of the Regional planning section of the Department in a paper entitled "Summary of the Physical Planning Department's findings on the urbanization problem in Kenya".

3.4.3.2 The results of the first study are summarized in Table 7. Map 8 shows the agricultural zones. A total of 13 agricultural zones were identified including: four classified as A_2 namely KaloleniCoplands, Vipingo Croplands, Tezo Roka croplands, and Malindi croplands; three comprising the A_4 category i.e. Kilifi Shale Belt, Kilifi Coast and Kilifi North Coast; two categorized as B_1 including Kilifi Marginal Zone and Merikebuni Marginal zone; the B_3 Marafa Gravel zone; the two C_1 rangelands of Kilifi and Mungale; and the Sabaki flood plain categorized as D.

3.4.3.3. The zonation was based on the following precipitation and edaphic criteria:

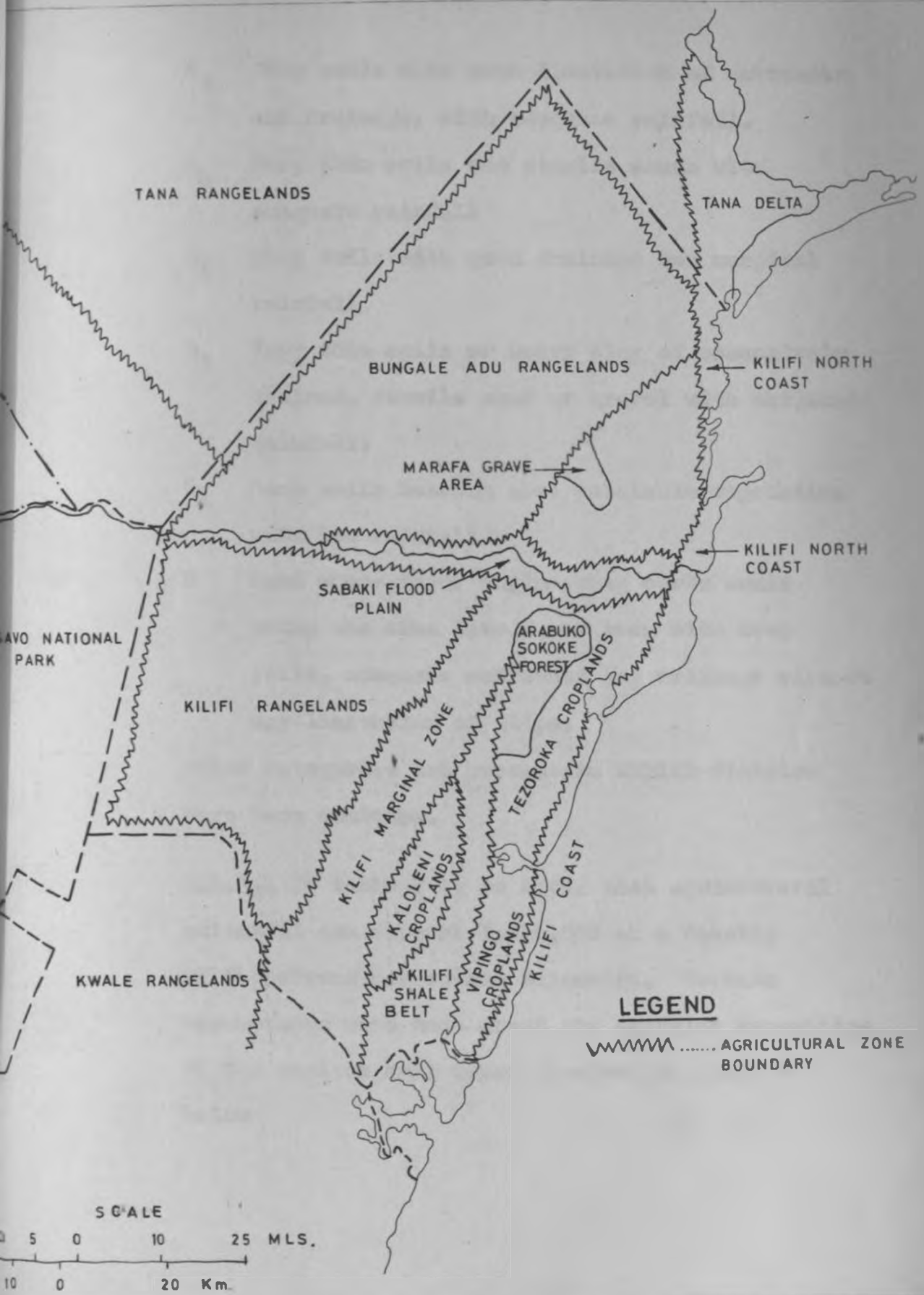
TABLE 7 KILIFI AGRICULTURAL POTENTIAL ZONES.

AGRICULTURAL ZONE	PHYSICAL ATTRIBUTES			ECONOMIC ATTRIBUTES		DEMOGRAPHIC	
	GEOLOGY AND SOILS	RAINFALL IN MM.	AREA IN SQ. KMS.	LAND TENURE	MAIN PRODUCE	EXISTING POP	P/ KM 2
KALOLENI CROPLANDS-A2	and stones and sandy soils	750	565	Trust	Subsistence tree crops	80000	140
VIPINGO CROPLANDS-A2	Deep white/ sands.	1000	200	Freehold settlement	Tree crops sisal Dairying subsistence	40000	200
TOZO KOKA CROPLANDS-A2	Deep white/ red sands.	1000	180	Settlement	Tree crops cotton subsistence	25,000	140
MALINDI CROPLANDS-A2	Deep white/ red sands	750	150	State Freehold settlement	Tree crops cotton subsistence	30,000	200
KILIFI SCRUB BELT.-A4	Heavy eroded clay	1000	400	State Trust	Cattle	5,000	12.5
KILIFI COAST A4	coral recent sands	1000	160	State Freehold	Fishing subsistence tourism	6,000	38

ZONE	PHYSICAL ATTRIBUTES			ECONOMIC ATTRIBUTES		DEMOGRAPHIC		
	GEOLOGY AND SOILS	RAINFALL IN MM.	AREA IN SQ. KMS.	LAND OWNERSHIP	MAIN PRODUCTION	EXISTING POP.	D/KM 2	POTENTIAL POP.
KILIFI NORTH COAST -4	Coral recent sands	750	50	state trust	Fish cattle	2,000	40	4,000
KILIFI HANGINAL ZONE D I.	Sandstones sandy soils	750	1700	Trust	Subsistence crops.	60,000	35	272,000
MARIKEBUNI MARGINAL ZONE 51.	Deep white/ red sands.	750	550	State freehold Trust	Treecrops sub-crops cattle	20000	36	88,000
MALAPA GRAVEL AREA -53.	Sterile sand grovel	750	50	state	cattle	-	-	2,500
BUNGALS AND RANGELANDS 01.	Sandstones	500	4,450	state leasehold trist	Cattle	4000	0.9	156,000
KILIFI RANGELANDS. 01.	Sandstones sandy soils	500	3,420	Trust	Cattle	3000	0.9	120,000
SABAKI FLOOD PLAIN D.	Alluvium	750	300	state freehold	Pineapples tree crops sub-crops.	19000	63.0	150,000
TOTAL	-	-	12,175	-	-		24.2	1,146,0

Source Coast Province Physical Development Plan 1971

MAP 8 AGRICULTURAL POTENTIAL ZONES



A_2 Deep soils with some limitation of nutrients and drainage, with adequate rainfall.

A_4 Very thin soils and sterile sands with adequate rainfall

B_1 Deep soils with good drainage but marginal rainfall

B_3 Very thin soils or heavy clay of excessively drained, sterile sand or gravel with marginal rainfall.

C_1 Deep soils bearing good palatable vegetation with low rainfall.

D Land where major engineering works would bring the area into A_1 or area with deep soils, adequate nutrients and drainage without any limitation of slope.

Other categories not present in Kilifi district have been ommitted.

3.4.3.4 In table 7 it is shown that agricultural potential can support 1,146,000 at a density of 94 persons per square kilometre. Certain assumptions were made about the carrying capacities of the various soil types as shown in table 8 below

TABLE 8 CARRYING CAPACITIES OF VARIOUS ZONES

Zones	NO OF HECTARES NEEDED TO SUPPORT A FAMILY OF 5 PERSONS	
	HA AT SUBSISTENCE	HA AT SUBSISTENCE £100
A_2	2.0	6.0
A_4	6.5	25.0
B_1	3.0	4.5
B_3	10.0	20.0
C_1	14.0	25.0
D	1.0	2.5

3.4.3.5 Assumed per capita hectarage per zone at subsistence and subsistence + £100 for the zones are respectively: A_2: 0.4 and 1.2, A_4: 1.3 and 5; B_1: 2 and 4. C_1: 2.8 and 5; D: 0.2 and 0.5. Considering the £100 income level alone it can be seen that the assumed productive capacity in £ per hectare were: A_2 £17; A_4 £4: B_1 £22; B_3 £5; C_1 £4 and D £ 40.

3.4.3.6 The assumptions and findings of the second study are shown in table 9 below. The assumed per hectare value ranges between £50 and £0.4 unlike in the 1st study where it varried between £20 and £4. While in the earlier study the per capita value was £20 in the second it was £25. The differences in the numbers of people absorbable, therefore, must be attributed mainly to the differences in assumed per hectare value of productive capacity.

3.4.3.7. In Kilifi District the important zones are 3, 4, 5 and 6. The estimated population capable of being supportedb by agriculture is 627,074 at an average of 51 persons per square kilometre.

3.4.3.8 Assuming a per capita income of £20-£25 therefore between 620,000 and 665,000 people can be supported by agriculture.

3.4.4. AGRICULTURAL EMPLOYMENT

Table 4 showed that agriculture accounted for 29.4% of total modern sector employment out of a District total of 8,671 thereby being the second most important employer after services which include tourism. Agriculture was also the

TABLE 9: AGRICULTURAL POTENTIAL "B"

L E	AREA IN KM^2	PRODUCTIVE CAPACITY HA.IN £P.A	VALUE OF AGRICULTURAL PRODUCTION IN £1000 p.a.	POPULATION AT £25 per in 100 Capita	DENSITY PER KM^2
	0	100	0	0	0
	0	70	0	0	0
	1050	70	7,350,000	294,000	280
	2700	30	8,100,000	324,000	120
	7770	50/=	193,350	7,334	0.9
	890	10/=	44,500	1,740	22
	0	5/=	0	0	0
	0	No Value	0	0	0
AL	12410	-	15,687,850	627,074	51

es: The zones have the following soil and rainfall characteristics.

. Well drained fertile soils with over 40 inches per annum.

. Well drained fertile soils with 30-40 inches per annum.

. Medium quality soils with over 40 in p.a.

. Medium quality soils with 30-40 in p.a.

. Good quality soils 20 - 30in p.a.

. Very poor soils over 20 in. p.a.

. Good or medium soils less than 20 inches p.a.

. Lithosols with less than 20 in. Koch rice.

basis of 562 or 6.3% of employment in the manufacturing industry since these industries are agro-based. The Kenya Cashews at Kilifarani is based on cashew nuts grown in Kilifi District. Employment in modern sector agriculture has been growing at an average of 0.25% per annum since 1960 as shown in table 6. However, it should be emphasized that the bulk of the people outside modern sector employment depend on agriculture for their subsistence. In the towns, agriculture is less significant as a direct employer as shown in table 5.

3.4.5 TOURIST POTENTIAL

3.4.5.1 Map 9 shows the main tourist assets of Kilifi district, including: beaches, the marine National Park, places of historical interest, lakes, streams and forests. Tsavo National Park borders the district on its western boundary.

Beaches

MAP9 TOURIST ASSETS

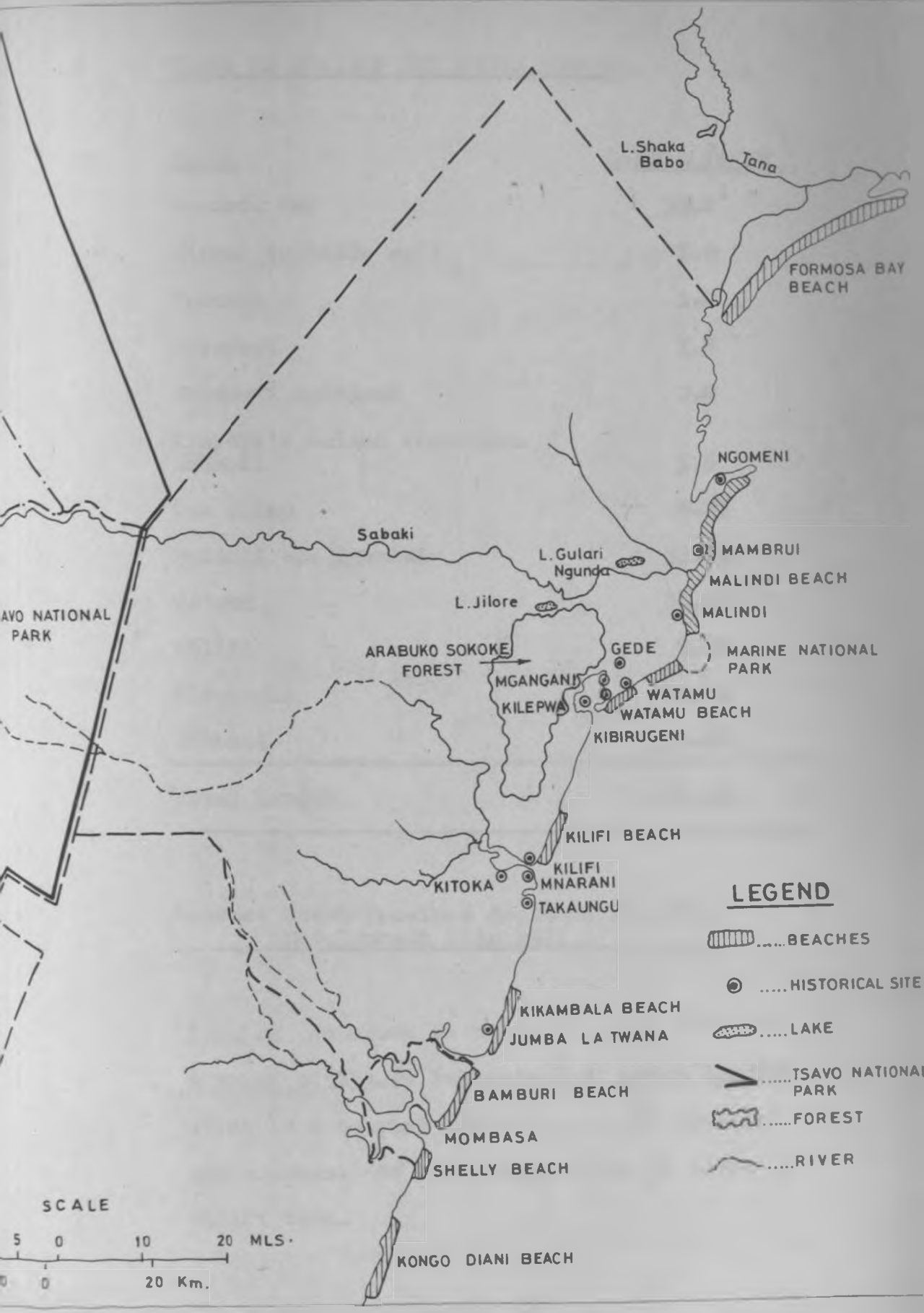


Table 10 BEACHES AND BEACH LENGTHS

Beach	Length in KM
Formosa Bay	32.0
Kipini (outside map)	7.0
Pamamba	1.0
Barareni	1.5
Barareni Mainland	2.0
Kinyole's Island (Robinson Island)	5.5
Ras Kitau	0.25
Malindi Ras Ngomani	33.00
Watamu	16.00
Kilifi	9.00
Kikambala	10.00
Mombasa	16.00
Total length	133.25

Source: Coast Province Regional Physical Development Plan 1971

3.4.5.2 As shown in table 10 above there is a total of 133.25 kilometres of beach length which is a tourist asset for Kilifi district and Mombasa. Of this total 9 km. is found at Kilifi town.

This beach asset has already attracted tourist hotel development as shown in table 11 below. A total of 78 hotels

TABLE 11 EXISTING HOTEL DISTRIBUTION

AREA	NO OF HOTELS	NO OF BEDS
Malindi	15	2705
Kilifi	1	80
Mikambala	5	792
Mombasa	57	7210
TOTAL	78	10,735

Source: Kenya: The Development of Beach and Sea or Front Policies and Programmes 1973 (republished)

with 10,735 beds have been built. The Malindi area covers Malindi/Sgomeni and Watamu beaches the Mombasa area includes Nyali, Msland and Likoni beaches.

3.4.5.3. The beach asset in Kilifi district can, however, form the basis of the development of more tourist hotels with a total bed capacity of 11,000 as shown in table 12.

TABLE 12 THE ALLOCATED HOTEL BED CAPACITY

AREA	HOTEL BED CAPACITY	POSSIBLE EMPLOYMENT at 0.5 employees per bed
Malindi	40,000	20,000
Kilifi	5,000	2,500
Kikambala	11,500	5,750
Mombasa	15,000	7,500
Formosa Bay	70,000	35,000
TOTAL	141,000	60,750

Source: Coast Tourist Resort Report, 1971

Excluding Mombasa and Formosa Bay, there is capacity for 56,500 beds in Kilifi district. 5000 beds would be developed in Kilifi town. At an average of 0.5 employees per bed as suggested in the study on Coast Tourist development. then there is potential employment in tourism of 60,750 people for Mombasa to Formosa Bay, 2,500 in Kilifi town and 20,000 in the Watamu-Malindi-Bas Ngomeni area.

3.4.5.4. As shown in table 4 tourism and other services accounted for 49% of the total modern sector employment in Kilifi district by far the largest employment sector. Table 5 shows that in Kilifi town services and tourism accounted for

280 out of 926 employed. Services have grown at the impressive rate of 5.9% per annum (see table 6) between 1968 and 1971 and can be expected to grow further.

3.4.5.5 Historical sites:

These include Mgomeni, [illegible], Malindi, Gede, Mangani, Kibirumani, Kilepwa, Kilifi, Mnarani, Kitoka, Jumba la Mtwana and Mombasa as well as many others. They are shown on map 7. Gedi and Mombasa in particular have special significance as table 13 below shows.

TABLE 13 [illegible]

	1969	1970	1971	1972	1973	1974
Fort Jesus	49,906	59,054	65,404	69,184		
Gedi	17,630	18,885	21,353	23,726		
TOTAL	67,536	77,939	86,842	92,910		

Source: Statistical Abstracts Central Bureau of Statistics

3.4.5.6. Other attractions

Other attractions include the interior based Tsavo National Parks, the Marine Park near Malindi, and places of scenic beauty like Rangea hills, Maloleni escarpment, Arabuko Sokoke Forest and the Sabaki River with its ox-bow

lakes Jilore and Gulari Ngunda.

3.4.6 FISHING

3.4.6.1 Table 14 shows the quantity and value of fish in Kilifi District. It is quite clear that fishing is not as important in Kilifi town as in Malindi town. The value and quantity of fish landed at fishing depots in the district as well as Mombasa has however increased from 2272 tons and £173,000 in 1969 to 4180 tons and £294,000 in 1972 showing an obvious increase.

3.4.6.2. The fishing depots are shown on map 8 and include Nyomeni, Malindi, Watamu, Kilifi, Takaungu and Mombasa. In addition the Sabaki River is a source of fish for local consumption.

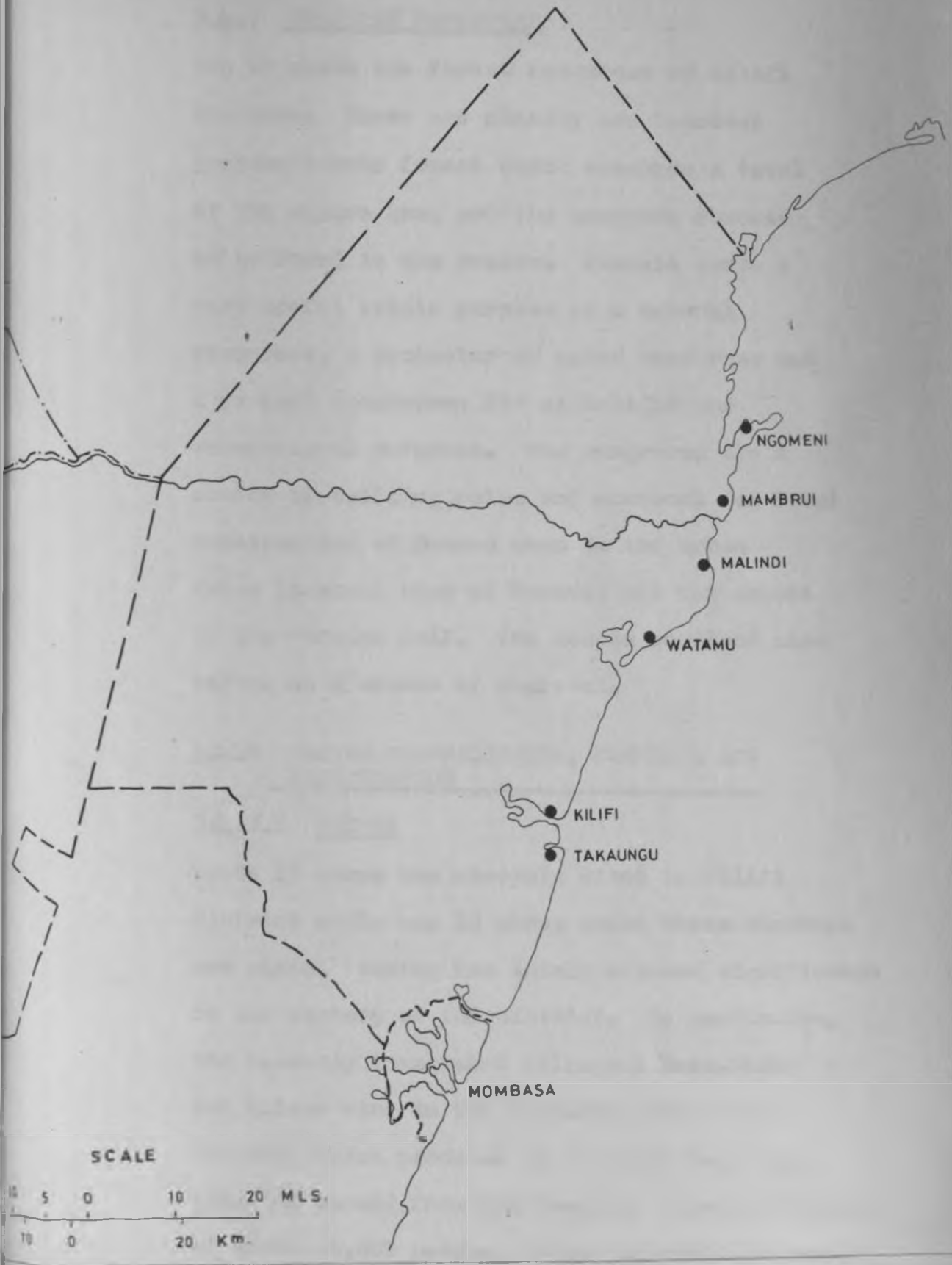
Fishing employs about 1730 people in Kilifi district most of whom operate from Malindi. An estimated 154 operate from Kilifi.

3.4.6.3. The Industry could be expanded to provide more employment especially for the small fishermen who should be encouraged to form cooperatives and secure loans to get more modern fishing equipment.

MARINE FISH	1969		1970		1971		1972	
	QUANTITY M.TONS	VALUE K£'000	QUANTITY M.TONS	VALUE K£'000	QUANTITY M.TONS	VALUE K£'000	QUANTITY M.TONS	VALUE K£'000
Malindi	1,200	67	442	26	928	71	1,547	71
Kilifi	117	8	109	7	310	23	172	17
Mtwapa	121	9	118	8	-	-	-	-
Mombasa	446	55	787	78	11,847	164	2,176	168
Sports fishing	125	10	82	6	102	8	108	7
TOTAL	2029	149	11538	125	13,187	266	4,003	263
CRUSTACEANS								
Malindi	15	3	7	2	6	2	2	1
Kilifi	8	2	13	3	14	4	4	1
Mtwapa	1	-	2	-	-	-	-	-
Mombasa	39	9	12	112	119	35	57	23
TOTAL	63	14	34	7	139	41	65	24
OTHER MARINE PRODUCTS								
Malindi	15	2	-	-	2	1	2	2
Kilifi	-	-	-	-	-	-	-	-
Mtwapa	-	-	-	-	-	4	-	-
Mombasa	1,655	8	126	4	175	5	110	55
TOTAL	100	10	126	4	177	10	112	57
ALL FISHERIES	2,272	173	1,798	136	1,350	312	4,180	294

Source: Central Bureau of Statistics

MAP 10 FISHING DEPOTS



3.4.7 FORESTRY POTENTIAL

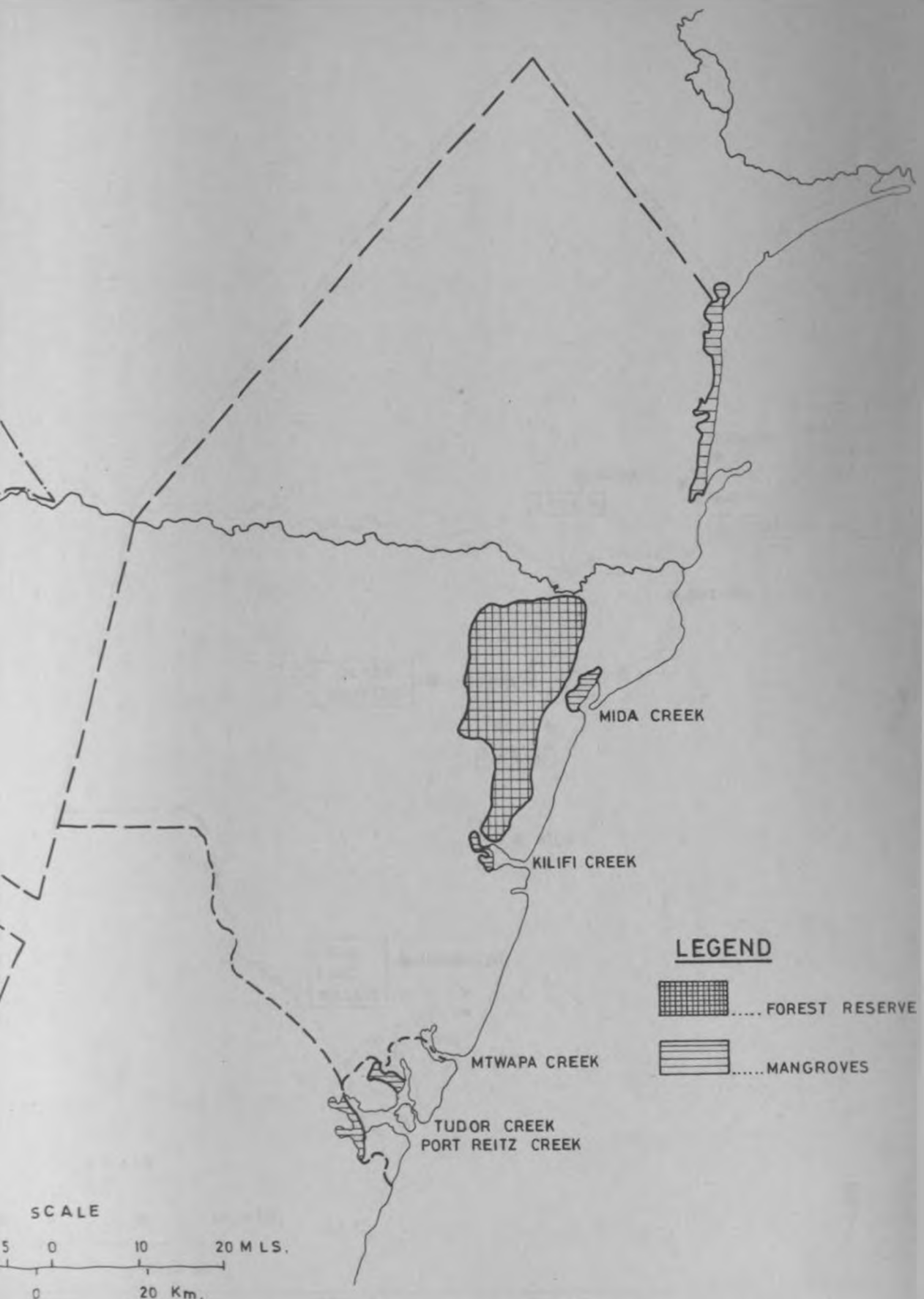
Map 10 shows the forest resources of Kilifi district. These are chiefly the Gazetted Arabuko/Sokoke forest which measures a total of 391 square kms. and the mangrove forests to be found in the creeks. Forests serve a very useful triple purpose as a natural resources, a protector of water resources and a natural ecosystem for scientific and recreational purposes. The mangroves are a source of building poles and charcoal for local construction of houses even in the urban areas (swahili type of houses) and for export to the Persian Gulf. The acacia woodland also serves as a source of charcoal.

3.4.8 MINING MANUFACTURING, COMMERCE AND CONSTRUCTION

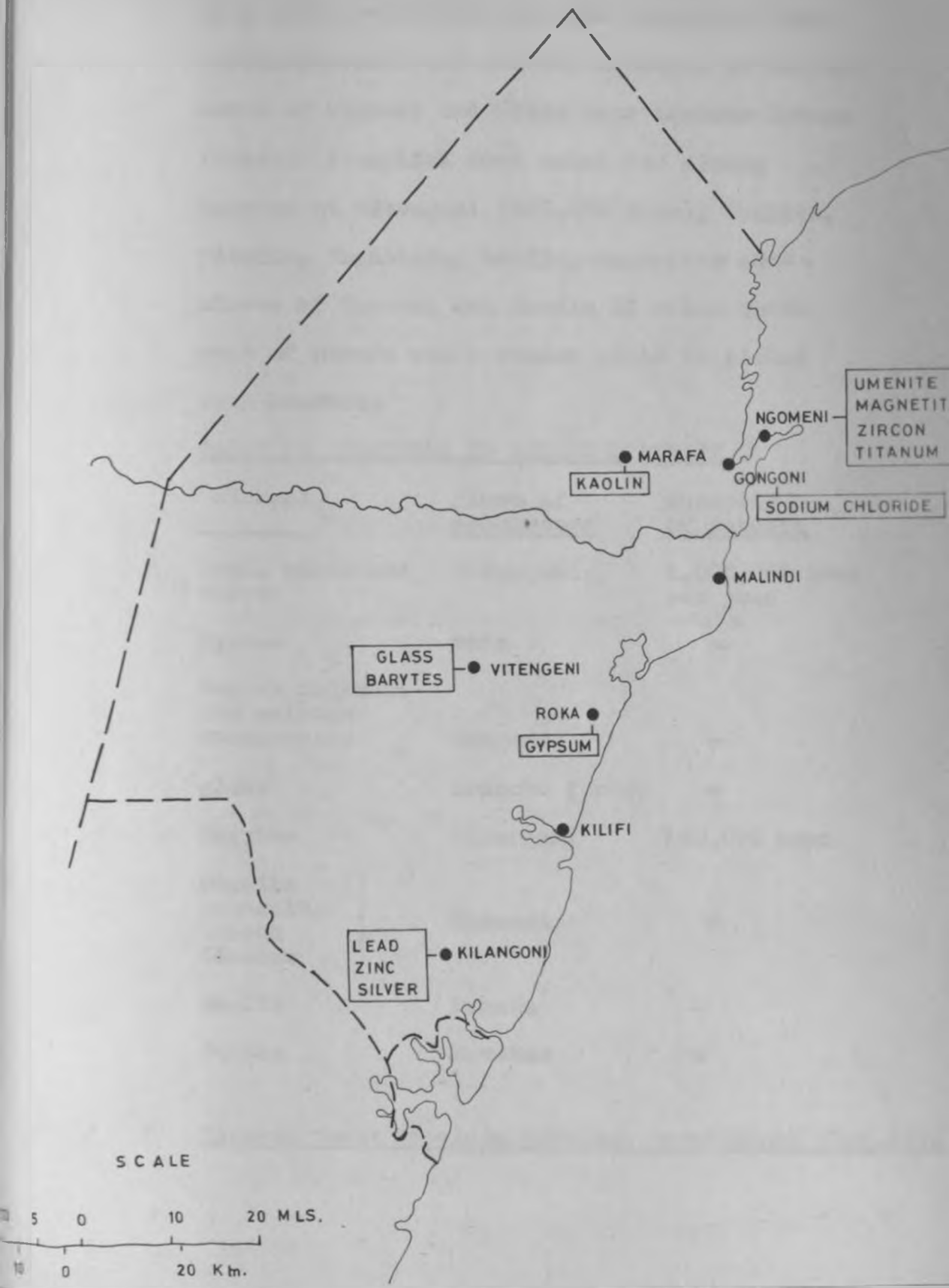
3.4.8.1 MINING

Table 15 shows the minerals mined in Kilifi district while map 12 shows where these minerals are mined. Mining has lately assumed significance in the economy of the district. In particular, the recently inaugurated Kilangoni lead, zinc and silver mine in the southern part of the district which produces up to 1,000 tons each year and should form the basis of a new settlement of about 10,000 people. Other minerals are mined

MAP 11 FORESTS



MAP 12 MINERAL DEPOSITS



on a small scale. They include gypsum at Roka, sodium chloride and sodium carbonate at Gongoni north of Malindi and Glass near Arabuko Sokoke forest. Potential does exist for mining Barytes at Vitengeni (100,000 tons), Ilmenite, Titanum, Magnetite, Rutile, magnazite and zircon at Kgomeni and Kaolin 12 miles north west of Marafa while Pumise could be picked from beaches.

TABLE 15 MINERALS IN COAST DISTRICT

Mineral	Place of occurrence	Quantity of deposit
Lead, zince and Silver	Kilam,oni	1,000,000 tons per year
Gypsum	Roka	-
Sodium Chloride and calcium bicarbonate	Gongoni	-
Glass	Arabuko forest	-
Barytes	Vitengeni	100,000 tons
Ilmenite) Magnetite) Zircon) Titanum)	Kgomeni	-
Kaolin	Marafa	-
Pumise	Beaches	-

Source: Coast Province Physical Development Plan, 1971

3.4.8.2.

Employment in mining and quarrying increased from 18 in 1968 to 166 in 1971. In 1971, it accounted for 2.0% of total employment in the district. In Kilifi town only 18 people were employed in this industry in 1971.

3.4.8.3 MANUFACTURE

Manufacturing accounted for only 6.3% of the total employment in Kilifi District in 1971 as shown in table 4. Of the total of 562 manufacturing employees, 136 were in Malindi, mainly in the Malindi Ginneries Ltd. while 302 were in the cashewnut factory at Kilifi, both figures being comparatively small in relation to that for Mombasa of 13,739, Mombasa being a much larger centre. There was hardly any change in manufacturing employment between 1968 and 1971. The plans to expand the cashewnut factory at Kilifi will however significantly alter this picture for the better.

The main manufacturing industries in Kilifi district are the Malindi Ginneries Ltd., the Kenya cashews of Kilifi town, Kilifi Plantations and Vipingo sisal estates both of which produce sisal fibre, Dida, Mwangombe and Arabuko saw mills which produce sawn timber and the Mariakani milk scheme. Table 16 below shows

the position of these manufacturing industries as at 1968. While it is true that the position of sisal on the world market has declined since 1968 and that this situation resulted in the reduction of the number of persons employed in the sisal industry, there is a possibility that such persons have been regarded in 1971 as being employed in the modern sector

TABLE 16: INDUSTRIES IN KILIFI DISTRICT, 1968

ENTERPRISE	PRODUCT	AMOUNT OF PRODUCTION	NO OF PERSONS EMPLOYED
Malindi	Cotton	£50,000 - £200,000	105
Kenya Cashews	Nuts	1,200 tons	366
Kilifi Plantations	Sisal	675 tons	488
Vipingo Sisal Estates	Sisal	3,500 tons	1,161
Dida saw mill	Saw timber	-	55
Mwasangomber saw mill	Sawn timber	-	38
Arabuko saw mill	Sawn timber	-	3
Mariakani Milk Scheme	Diary Products	-	
	Milk	600,000 gallons	
	Cheese	15,000 lbs.	
	Ghee	230,000 lbs.	
	Cream	3,000 gals.	
	Yorghurt	1,000 gals.	
	Dried milk	250,000 lbs.	
			2,214

Source: Physical Development Plan, 1971.

3.4.3.4. Future manufacturing will depend on expansion of industrial crops such as cashews, cotton and sisal. In the meantime Kilifi town accounts for a sizeable proportion of the employment in the manufacturing industry in the manufacturing industry in Kilifi District. The cashewnut factory is planned to increase its out put from 1,200 tons to 1,500 tons per annum and triple its labourforce from 300 in 1973 to 1,300 by end of 1977.

3.4.3.5. Commerce

As shown in table 17 below, there were 515 commercial establishments in the urban, rural, market and some of the local centres in Kilifi district. Only 9% were in Kilifi town while 30% were in Malindi and 16% were in Mariakani, all these three being designated urban centres.

Most of the urban and rural centres get their supplies from Mombasa. The smaller centres however, get their supplies from Malindi, Kilifi and Mariakani. It therefore appears clear that Kilifi does not serve the entire district in terms of commercial services: its hinterland must be deemed to be limited to only a portion of the district.

TABLE 17. COMMERCIAL ESTABLISHMENTS IN KILIFI DISTRICT, 1969/1970.

	DUKAS	MAIZE MILL	HOTELS	RESTAURANTS BARS BEER HALL TEMBO CLUBS	PETROL STATIONS	BANKS	MARKETS	FURNITURE SHOPS TIMBER DEALER TIN SMITHS	HIDES & SKINS	BYCLE REPAIRS GARAGES WATCH REPAIRS	WATER KIOSKS	LA
MALINDI	90	-	9	3	4	2	3	45	-	-	-	1
KILIFI	30	-	2	3	2	1	1	1	-	1	2	1
MARIAKANI	54	1	4	6	2	3	1	2	2	2	-	1
MAZERAS	30	1	6	3	-	-	1	-	-	-	-	-
KALOLENI	30		3	3	1	-	1	2	-	1	1	-
BAMBA	12	1	2	2	-	-	3	-	1	1	1	-
KALOLENI	10	1	1	1	1	-	1	-	-	-	-	-
GEDE	8	1	1	1	-	-	1	-	-	-	-	-
GANZE	6	-	-	-	-	-	1	-	1	-	-	-
VIPINGO	17		1	1	-	1	1	-	-	1	-	-
GONGONI	1		1									

TABLE 17. COMMERCIAL ESTABLISHMENTS IN KILIFI DISTRICT, 1969/

	DUKAS	MAIZE MILL	HOTELS	RESTAURANTS BARS BEER HALL TEMBO CLUBS	PETROL STATION	BANKS	MARKETS	FURNITURE SHOPS TIMBER DEALER TIN SMITHS	HIDES & SKINS	BYCLE REPAIRS GARGES WATCH REPAIRS	WA KI
WATAMU	11		1	2	1	-	1	-	-	-	
MABAI	25	1	4	3	1	-	1	-	-	1	
MAMBRUI	4										

SOURCE: - D.[illegible]. Tailor : Development of central places in the Coast Prov[illegible]
Carleton University, Ottawa 1, CANADA, 1969.

69

3.5. [illegible]

3.5.1 Population density and distribution as at 1969

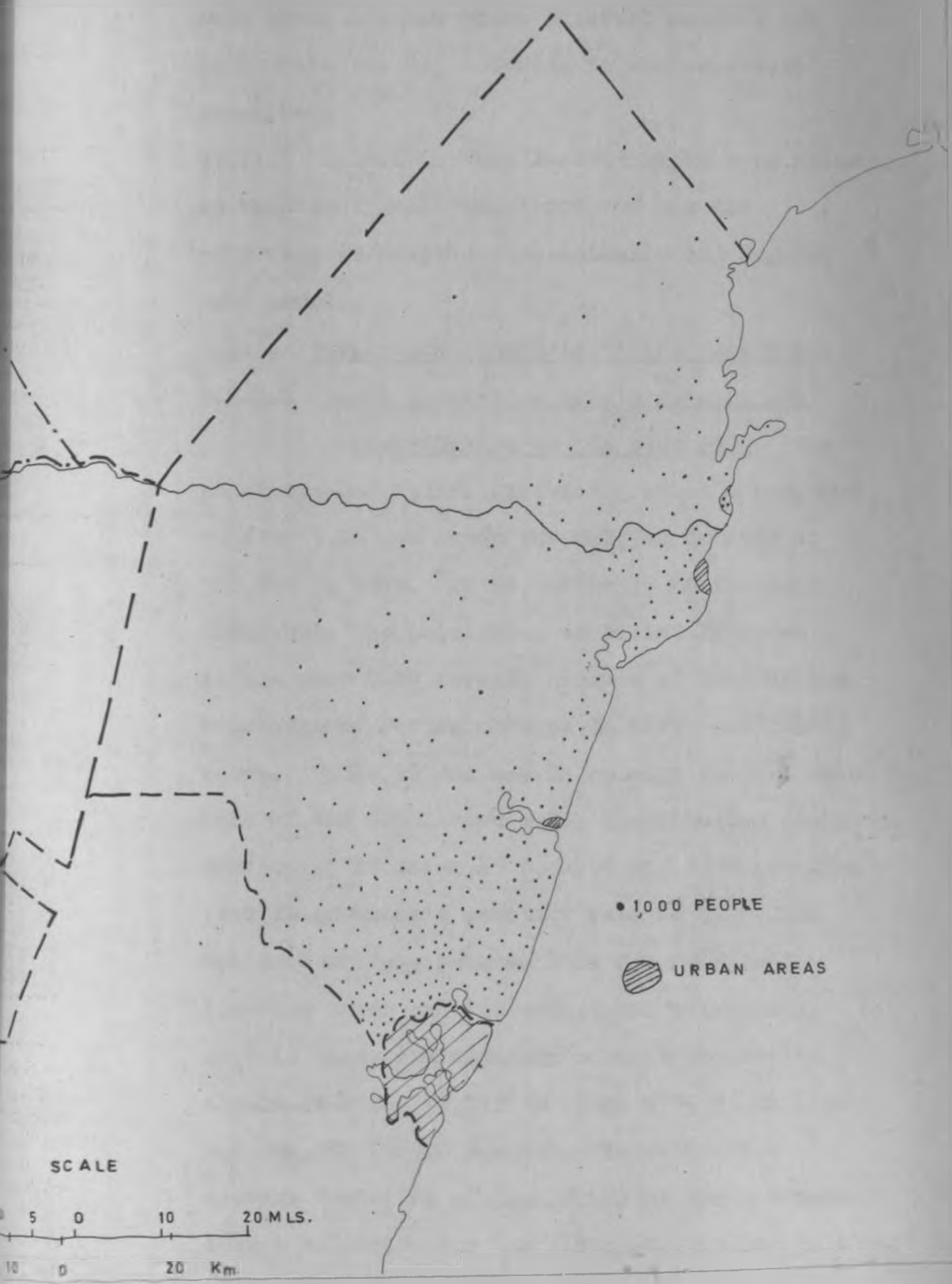
3.5.1.1. Table 18 and map 13 show population distribution in Kilifi district as at the time of the 1969 census. In 1969 Kilifi district had a total population of 307,560 and an area of 12,593 square kilometres with an average population density of 24 persons per square kilometre very much above the provincial average of 11 persons per square kilometre. The southern division contained the largest population of 112,493 distributed at an average density of 101 persons per square kilometre. Southern division was followed by Central division (54,162 people) Northern (47,239), Malindi (44, 505) and lastly Malindi "A" (35,750). The highest population densities occured in Jibana and Mabai locations of the southern division with respectively 211 p.s.k. and 222 p.s.k. while the lowest densities were found in the Chakama location of Malindi "A" division and Marisha location of Malindi "B" location with 3 p.s.k. each.

3.5.1.2 The population distribution pattern reflects the economic opportunities of the environment. The majority of the people live in the southern portion of the district and in a

...LE 18: POPULATION DENSITY AND DISTRIBUTION BY DIVISION AND LOCATION IN KILIFI DISTRICT AS AT 1969

...VISION/LOCATION	POPULATION	AREA SQ KMS.	DENSITY PP KM²
...ntral	54,162	586	92
...vueni	11,418	127	90
...wapa	11,402	89	128
...nju	10,605	97	109
...zo-Roka	20,737	272	76
...RTHERN	47,239	3,300	14
...koko	3,112	157	20
...nze	8,955	381	24
...tengeni	8,419	685	12
...[illegible]	5,873	95	62
...mba	20,880	1,565	13
...[illegible]	112,493	1,115	101
...ibana	7,903	37	211
...loleni	13,927	97	143
...uruma	14,662	84	175
...ibe - Kambe	7,423	63	117
...bai	14,652	66	222
...honyi	23,358	219	107
...ayafungo	16,077	268	63
...riakani	13,691	270	49
...ALINDI "A"	35,750	1149	31
...ilore	4,752	271	18
...agambra	3,341	89	37
...ambrui	2,604	15	176
...anda	20,487	190	108
...arashi	3,068	86	36
...hakama	1,498	499	3
...ALINDI "B"	44,505	6,419	7
...ede	10,516	120	87
...agarini	18,952	520	36
...arafa	3,977	222	18
...dugumi	2,354	34	68
...du	4,843	511	9
...aricho	3,863	1,139	3
...ILIFI TOWNSHIP	2,662		
...ALINDI TOWNSHIP	10,757		
...ILIFI DISTRICT	307,568	12,593	24
...OMBASA	247,043	214	1,155

P13 POPULATION DISTRIBUTION 1969



belt along the sea where rainfall amounts are high while the day interior is very sparsely populated.

3.5.1.3 Kilifi is thus located in an area which is relatively well populated and has the potential to develop substantially and support more people.

3.5.2. Population growth in Kilifi District:

3.5.2.1 Rural population growth density and distribution to the year 2000. The population of Kilifi District grew at a compound rate of 3.1% per annum for 247,382 in 1962 to 307,568 in 1969. It is difficult to forecast accurately the population of Kilifi District in the year 2000 largely because of lack of kno knowledge of future changes in birth and death rates. Table 19 and map 14 attempt to give some idea of the population size, distribution and density by location 1980, 1990 and 2000 assuming that it grows at a constant rate of 3.4%, the national average between 1962 and 1969, and ignoring inter and intra-district migrations. On this basis the district's rural population should grow to 423,042 in 1980, 579,095 in 1990 and 706,265 in 200 resulting in respective average densities of 34,470 and 63 persons per square kilometre for the district. Figure 3 shows this growth graphically.

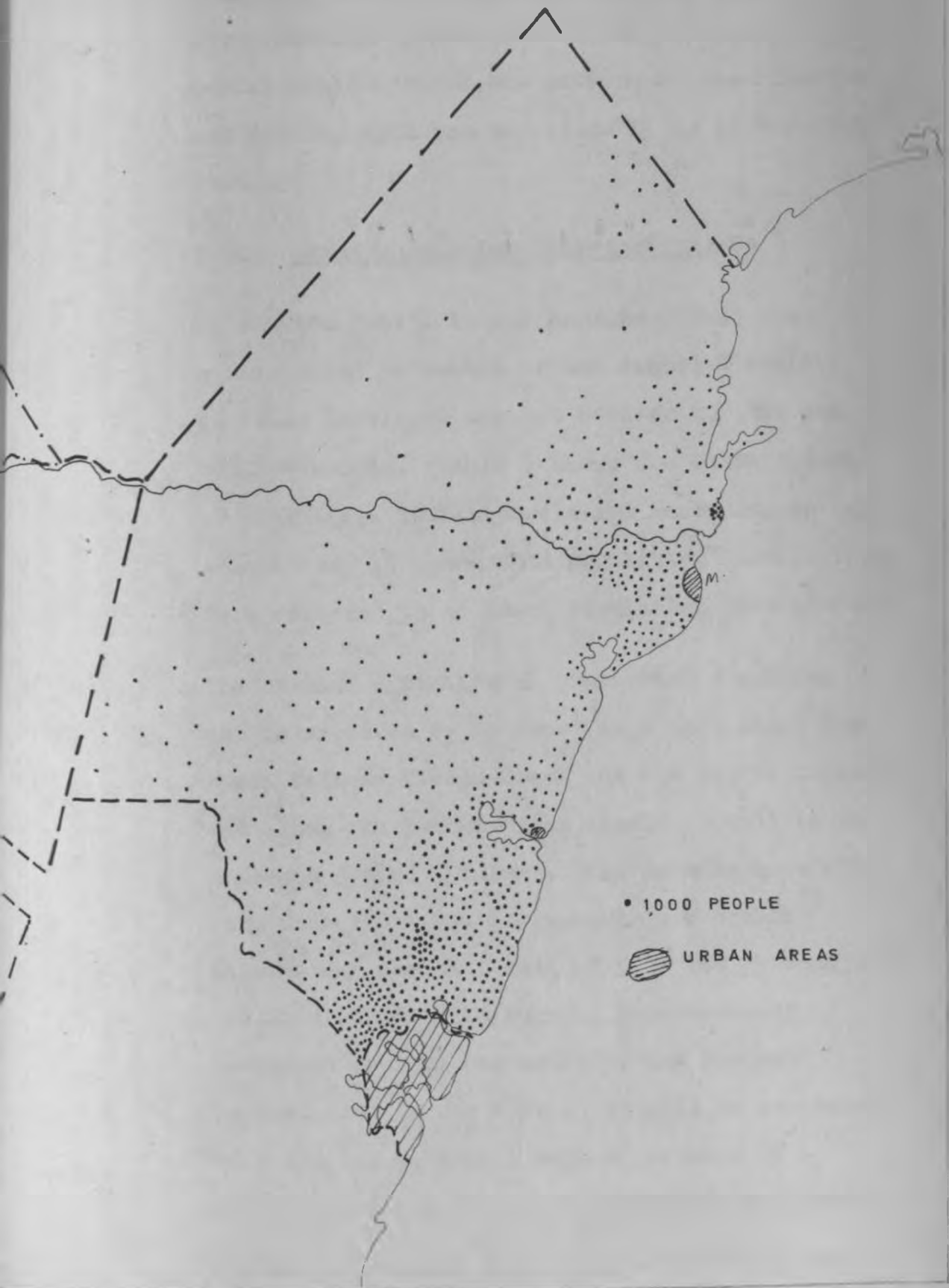
PROJECTED AT 3.4

Location	Area in Sq.Km.	1969 pop.	d/Km^2	1980 pop.	d/Km^2	1990 pop.	d/Km^2	2000 pop.	D/Km^2
MAVUNI	127	11,418	90	16,505	130	23,067	182	32240	254
MEWAPA	89	11,402	128	16,474	190	23,025	259	32181	362
JUNJU	97	10,605	109	15,322	158	21,415	221	29930	309
MSEO-ROKA	272	20,737	76	29978	110	41,898	154	58559	215
	586			782779	134	109105	187	152910	262
SOKONI	157	3,112	20	4498	29	6286	50	8786	56
GANZE	381	8,955	24	12942	34	18,069	47	25,283	66
VITENGENI	685	8419	12	12162	18	17,006	25	23,768	35
KAINA	95	5873	62	8507	87	11,863	124	16,581	175
BANDA	1565	20880	13	30176	19	42,180	27	58,953	38
	3300	47239	21	68207	21	95424	29	133171	40

JIBANA	37	7903	211	10909	295	[illegible]	[illegible]	[illegible]	[illegible]
KALOLENI	97	13,972	143	20133	205	28139	365	39367	405
KURUMA	84	14,662	175	21189	252	25793	444	41371	493
RIBE - KAMBE	63	7,423	117	10728	170	15028	239	21004	333
RABAI	66	14,652	222	21174	320	29621	448	41362	627
CHONYI	219	22,358	107	32285	147	45124	206	63081	288
KAKAFUNGO	268	16,877	63	24395	91	27090	101	37853	141
MARIAKANI	279	13,691	49	19733	71	27587	99	38557	138
	1115	111,493		16046	144	213630	192	303905	273
JILORE	272	4,752	18	6869	25	9600	35	13408	50
DAGAMBRA	89	3,341	37	4828	54	6748	76	11837	133
MAMBRUI	15	2,604	176	3772	250	5260	351	7359	490
GANDA	190	20,487	108	29546	156	41295	217	57704	304
GARASHI	86	3,068	36	4434	52	2670	72	8704	101
CHAKAMA	499	1,498	3	2167	4	3026	6	4230	9

MALINDI "A"	1149	35	31	51616	45	72199	63	92592	81
GEDE	120	10516	87	15189	127	21228	177	29669	247
MAGARINI	520	18952	36	27391	53	38292	70	53502	103
MARAFA	222	3977	18	748	26	8034	36	11233	51
MADUNUNI	34	2354	68	3403	100	4756	140	6647	196
ADU	511	4843	9	7000	14	9784	19	13266	26
MARICHO	1139	3863	3	5883	5	6343	7	11390	10
MALINDI "B"	6419	44505	7	64314	10	88437	14	103501	16
KILIFI	12593	307,568	24	423042	34	579095	47	7 6285	63

P14 POPULATION DISTRIBUTION, 2,000



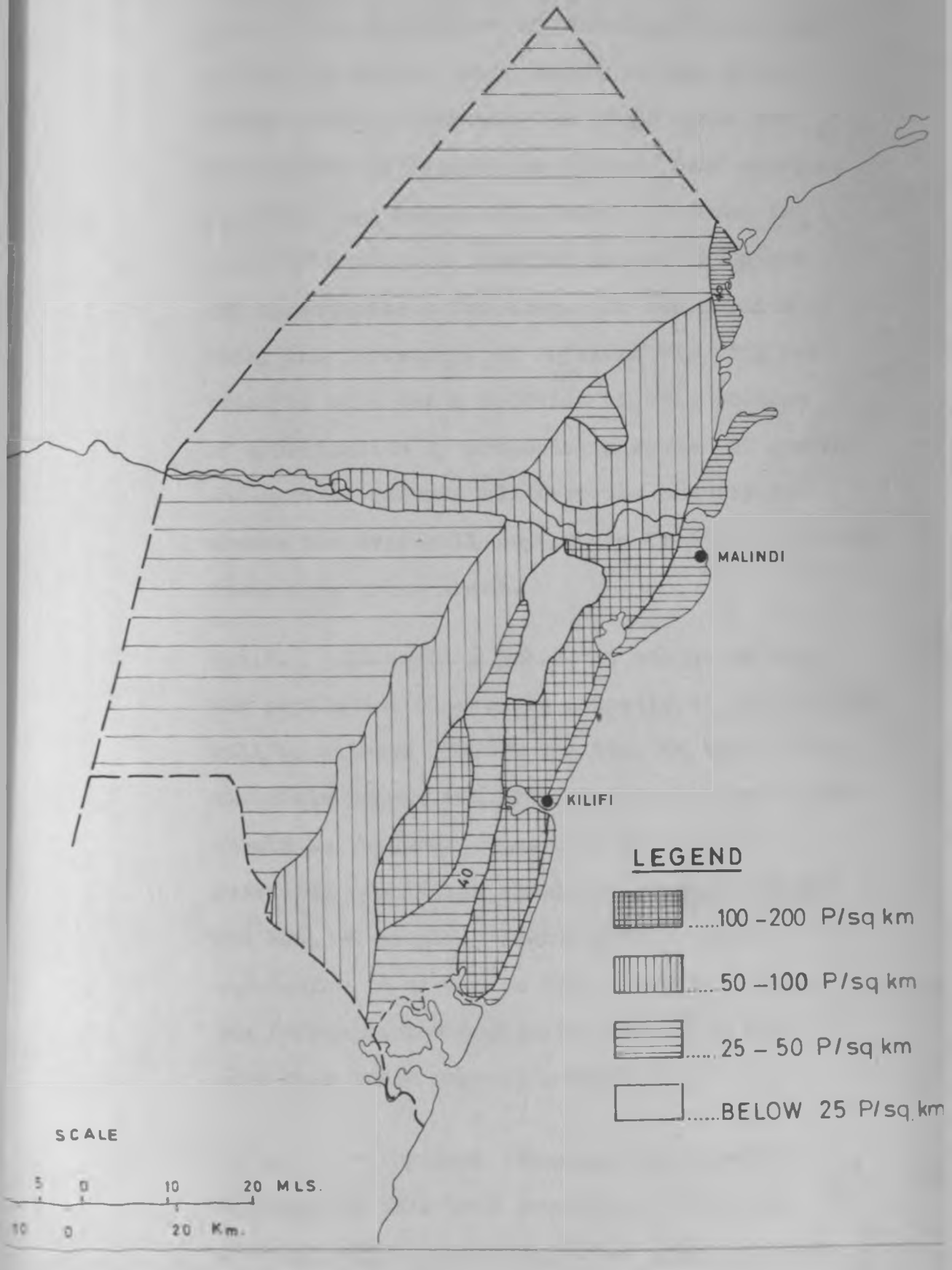
Since the figures represent straight line projections of population of the various administrative units the pattern of distribution and density will remain basically as at the 1969 census.

3.5.3 Ideal Population distribution:

In section 3.4.3. it was explained that the agricultural potential of the district could if fully developed support between 620,000 and 665,000 people. Table 7 shows the distribution of this agricultural population according to the zones. Map 15 shows this population distribution, here referred to as ideal population distribution.

The highest agriculrural population densities can be expected to be found in a belt along the coast between Mtwapa Creek and the Sabaki River and along the Sabaki River itself as well as in a pocket around Kaloleni. The density here will vary from 100 - 200 per persons per square kilometre. The next belt of 50 - 100 persons will lie in a middle belt running from Mazeras/ Mariakani area in the south to the Ngomeni/ Gongoni area in the north. It will be separated from the 1st belt by a belt of between 25 - 40 pp sqaure km, and the Arabuko/Sokoke forest. Kilifi and Malindi can thus grow to serve the population belt while Kaloleni and Mariakani grow in the interior to serve the other relatively densily populated areas.

MAP 15 IDEAL POPULATION DISTRIBUTION



3.6 URBANIZATION IN THE REGION

3.6.1 The phenomenon of urbanization is here to stay in Kenya. As a result of the steep income gradient between the urban areas and rural areas (6:1) and the limited land carrying capacity many people will drift to towns in serch of employment whether or not there are Job opportunities for them. In recognition of this, the Department of Physical Planning has tried to work out a solution to this problem of urbanization by proposing a system of growth and service centres all over the country to absorb the overspill population from agricultural areas into urban areas.

3.6.2. In section 3.4.3. it was noted that the population obsorbable directly in agriculture will be between 620,000 and 665,000 while the districts population projected to the year 2,000 should be 706,300. Thus by that time the overspill population should be between 121,300 and 126,300 people. Taking into account population in-migration from other districts, the /urbanizable" population should be much more than these figures suggest.

3.6.3. The Physical Planning Department's proposal is that this population should be absorbed into a number of urban areas as shown in table 20 below.

TABLE 20: POSSIBLE DISTRIBUTION OF URBAN POPULATION IN KILIFI'S REGION BY THE YEAR 2000.

TOWN	1969	2000	AS UPHELD GROWTH RATE
KILIFI	2662	25,000	6.75
MALINDI	10,757	74,000	6.9
MOMBASA	247,073	1,393,000	5.5
MARIAKANI	-	4,500	-
Total (i)	260,492	1,516,500	
(ii)	13,419	133,500	

Source: Physical Department

3.6.4 It should be noted that Mombasa has to serve the entire country unlike the other towns which serve relatively local interests. The high figure shown here should be seen as offering only limited opportunities to Kilifi District's overspill population. Excluding Mombasa therefore these towns should cater for 133,500 people between them.

3.6.5. Projected at their present growth rate the populations of these towns would be as shown in table 21 below

TABLE 21 PROJECTED URBAN POPULATION

	1962-69 rate	1969	1980	1990	2000
Kilifi	3.6	2,662	3,930	7,050	10,050
Malindi	7.0	10,757	22,700	41,700	82,000
Mombasa	7.5	243,073	444,000	747,000	1,333,000
Mariakani	-				4,500
Total (1)		260,492	470,630	795,758	1,469,550
(2)		13,419	26,630	48,750	96,550

It is clear that the three centres of Malindi, Mariakani and Kilifi could not alone cater for the urbanisation problem of Kilifi District since they could only absorb 96,550 persons by the year 2000 if they grew at their present rates. Either they are made to grow faster or other centres in the district should be promoted to take up some of the agricultural overspill. Of course some will go to the larger towns elsewhere in the Province and the rest of the country as well as to the districts with some absorption capacity.

3.7 INFRASTRUCTURE

3.7.1 Hierarchy of Growth and Service Centres

3.7.1.1. In Kenya a hierarchy of service centres has been evolved to take care of the problem of urbanization as well as provide services to the rural population. The hierarchy consists of principal towns, urban centres and sub-local centres, Rural centres, market centres and local centres. The principal towns, urban centres and Rural centres are designated growth centres while the market, local and sub-local centres are service centres mainly. Centres can graduate into various levels of the hierarchy and new centres can spring up anywhere if they serve a special function such as industrial towns or new ports.

3.7.1.2. Principal towns are those towns in which already substantial investment has been made in infrastructural, industrial and commercial development and which must therefore be given priority in development for urbanization. There are 11 such towns in Kenya. Urban centres are centres planned to accommodate over 10,000 people and serve hinterlands of 120,000 people. Rural centres should have population of 2000-5000 people and serve 40,000 people in their hinterlands, market centres are meant to have less than 1000 and serve 15,000, and local

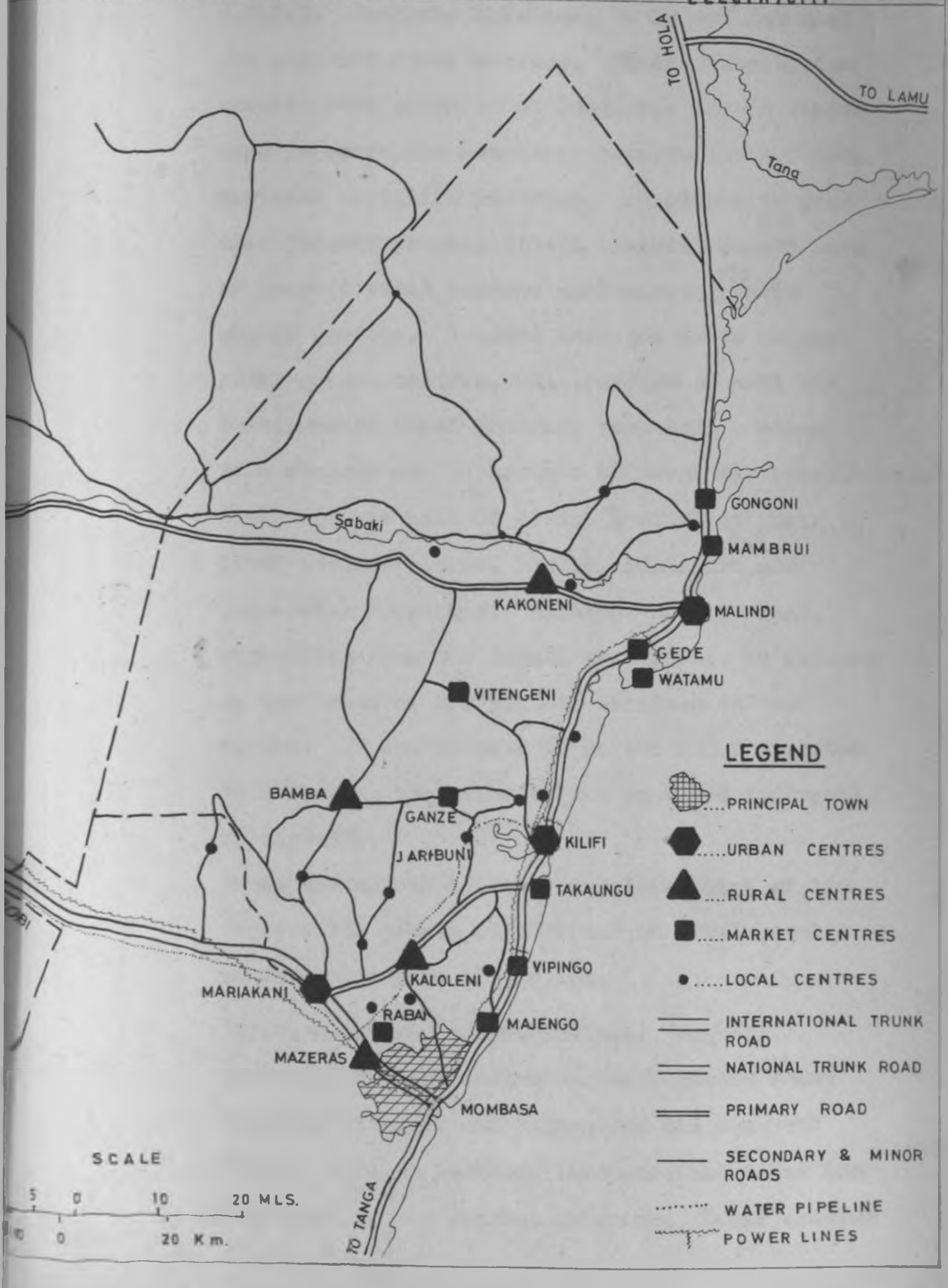
centres with 200-500 resident population to serve 5,000 in their hinterlands.

3.7.2. The pattern of growth centres

3.7.2.1 Map 16 shows the pattern of growth centres, service centres, their related road network and respective hierarchies. Three urban centres, four rural centres, ten market centres and 21 local centres constitute the lot of proposed growth and service centres. Clearly the growth and service centres and road network concentrates, as does the population distribution, into the wetter half of the district at the sea end. The very sparsely populated interior is conspicuous for lack of any designated growth centres, although once the resource of ranching starts being exploited one expects the settlement pattern to alter for the better.

3.7.2.2. Urban growth centres include Kilifi, Malindi and Mariakani. Mariakani, an important centre in itself, straddles the boundary between Kilifi and Kwale districts. Malindi with a population of 10,000 as at 1969 nearly four times that of Kilifi. If another district were created as observed elsewhere, then Malindi would obviously be its headquarters; Malindi appears to be the focal point of the district, a terminus for Tana River and Lamu routes.

AP 16 HIERARCHY OF GROWTH AND SERVICE CENTRES AND ROADS WATER AND ELECTRICITY



3.7.2.3. Mazeras, Kaloleni, Bamba and Kakoneni are proposed rural centres. Their distribution ensures that there is at least one such a centre each to serve the Northern, Western and Southern portions of Kilifi District. Ideally with just over 300,000 people, Kilifi District should have at least 6 rural centres each serving about 40,000 persons. Granted that the three higher order growth centres, will perform as well the functions of rural centres, then this minimum of 6 centres can be assumed to have been established. These centres will of course perform at their level administrative, health, education and commercial functions. Kaloleni's hinterland, stretching from the Sabaki to Mazeras, is defined on the basis of the medical services in the centre. It can be said to be the major interior town serving the needs of the populace indirectly or directly.

Bamba serves the sparcely populated area of its region: its growth will depend on development of agricultrue in its region.

3.7.2.4 Market centres include: Mongoni, Mambrui, Gede and Watamu on the Northern Coast Takangu, Vipingo, and Majengo on the Southern Coast, Mabai in Southern interior; and Ganze and Vitengeni in the central interior. Local centres

include: Jimba, Kibe, Mbuyuni, Junju, Gongoni, Kinangoni, Gotani, Mtulu, Kwa Demu, Kitangoni, Sokoke, Roka, Chakama, Jilore, Kakuyuni, Ganda, Garashi, Garicho, Marikebuni and Marafa, scattered all over the coastal half of the District with few in the central area.

3.7.3. Road Network.

3.7.3.1. Mombasa - Kampala international trunk road skirts the district along its southern border. A national trunk road links Mombasa, Kilifi, Malindi through to Hola in Tana River District and beyond. Primary roads include: Kilifi - Kitangoni - Kaloleni, Mazeras - Rabai - Kaloleni; and Malindi - Kakoneni through the dry interior. The rest of the centres are linked by secondary roads. These roads shown on map 16.

3.7.3.2. Kilifi town is linked to its hinterland by the primary road: Kilifi-Chasimba-Kaloleni-Mariakani and the secondary road Kilifi-Kibarani-Ganze-Kamba. A series of other roads

connect various parts of the hinterland with these two main distribution limbs as well as the trunk road from Mombasa through Malindi northwards. In the hinterland is an important secondary road running from Mariakani in the south through Kamba, to Makoneni in the North. The vast rangelands of the western hinterland hardly have any links with Kilifi town.

3.7.3.3. On the basis of the road network therefore, Kilifi's hinterland does not go beyond Kamba in the interior although administratively the district headquarters caters for the entire district. Most of the roads are impassable during heavy rains and Kilifi's effective role is hindered to that extent. As pointed out elsewhere these roads need to be improved if Kilifi's role is to be enhanced and the hinterland better served.

3.7.4. Other communications:

Postal services are better distributed than telephones being available at least at every rural centre. There is need to

improve these services in order to serve better the communication needs of Kilifi district.

3.7.5. Water Supply:

3.7.5.1. The problem of water supply is general along Kenya's Coastline affecting all the six districts of Coast Province. In Kilifi like in the other Districts water is required both for rural and urban consumption. Various efforts have been and are still being made to improve the situation.

3.7.5.2. The newly created Ministry for Water Development is responsible for a number of large public Water Supplies in the district including Malindi, Kilifi, Mariakani, Gede, Mazeras, Jaribuni, Kibe and Kaloleni. The Kilifi County Council also manages a number of water schemes including a dam supply at Ganze, borehole supplies at Marafa and Samba, about 175 dams and tanks and over

90 bore-holes elsewhere. The Mombasa pipeline Board, statutory board, supplies water to a number of centres and rural areas in Kilifi District. From the Mazeras reservoirs of the water from the Mzima springs runs a pipeline northwards through Kaloleni to Jaribuni and to a reservoir near Sokoke Hill. From this reservoir supplies go to the settlement scheme of Tezo, Roka and Ngerenyi and Kilifi and the beach developments.

3.7.5.3. As part of the Government's increased concern for rural water supply development, the Ministry of Water Development has embarked on massive Coastal Water Supply Scheme based on the river Sabaki, the main river flowing through the District, which scheme will be interconnected with the Mzima Water Supply System. The Mombasa and Coastal Supply Project, as the scheme is officially known, will cost about K£21,072,000. It will consist of

an intake 40 Kilometres west of Malindi with a raw water pupping station and modern treatment plant at the intake site. It will also comprise a treated water pumping station, main transmission pipeline to the existing reservoir at Changamwe as well as 2 booster pumping stations on the main transmission line and subsidiary transmission pipeline serving Malindi, the inhabited coastal areas between Malindi and Mombasa and Kilifi hinterland with bulk storage reservoirs at the head of each distribution system. Existing bulk storage installations will be augmented.

New distribution systems will be creat·d in areas which are not on a public water supply. It has a design capacity of 72,000m^2/day which should be sufficient up to 1984 to serve the needs of the areas covered. After that date augmentation

of the bulk supplies will be necessary.

3.7.5.4. It thus appears that Kilifi town and hinterland will have adequate water supplies to support development of the rural areas as well as the townships which at present direly need this water.

If it is implemented, this scheme should mean that until 1964 Kilifi has no worry about availability of water for development.

3.7.6. EDUCATION:

There are 9 secondary schools and numerious primary schools in Kilifi district. The secondary schools are located at Mariakani, Merikebuni, Malindi, Kibarani, Bamba, Mbaya, Yundo, Kaloleni, Kibe, Rabai, and Mariakani, apparently well distributed in relation to the population distribution in the district.

3.7.7. Health:

There are 3 hospitals, 4 health centres and 29 dispensaries in Kilifi District. The

Hospitals are at Malindi, Kaloleni and the district Hospital at Kilifi with respectively 57,161 and 99 beds. Hospitals also perform the functions of dispensaries to the population within their immediate hinterland. The district population/bed rationstands at 1,250 persons i.e. per bed below the national standard of 1,000 persons per bed. Health centres exist at Mariakani, Rabai, Tsangwa and Garashi while dispensaries are scattered all over the populated areas of the district.

3.7.8. Electric supply to the Coast Province is via a 132 K.V. power line running along the railway line. A branch of this, a 33 - KV power line, runs northwards along the Mombasa/Malindi road with 11 kw spurs serving Bamburi, Vipingo, Kilifi and Gede. Map 16 shows these power lines.

3.8. <u>THE RELATIONSHIP OF KILIFI TO THE REGION.</u>

3.8.1. The foregoing discussions has established the major physical, economic, social and infrastructural characteristics of Kilifi's region, essentially the district and Mombasa. In this section an attempt is made to summarize the relationships implicit in the discussion between Kilifi town and its region.

3.8.2. Firstly, it must be stressed that a town can hardly exist without performing some functions to its region as was pointed out at the beginning of this chapter. Kilifi performs certain functions to varying extents to its region. Being the district headquarters, Kilifi town is the origin of the district administration and therefore renders the various administrative services to the entire district. All other administrative centres of the district take orders and instructions from the district headquarters at Kilifi. The people's local government in the form of the County Council also operates from here. Kilifi also

performs certain functions such as health services and educational services to its hinterland.

It must also be remembered that Kilifi town is the centre of certain manufacturing activity. Virtually all the cashewnuts grown at the coast are processed at the Kilifi Kenya Cashws elsewhere in this thesis. The town therefore depends on the crop which is grown in the region.

Along with the administrative, health, educational, police and judicial functions which the town renders to its region, it also serves the hinterland population in terms of commercial facilities. Admittedly this it does on a more limited extent but it is nevertheless a service it renders to the region.

3.83. Secondly, it should be emphasized that a town cannot perform these functions in the absence of certain important factors. One of these is communication

links with the hinterland. Kilifi is linked to the hinterland by roads of varying degrees on which buses, lorries, cars, bicycles and pedestrians travel to facilitate exchange of goods and services. It is also linked to other important urban areas like Mombasa and Malindi by telephone and other postal services. It is served by power which enables it to manufacture certain required goods. The second most important factor in determining the extent to which Kilifi can provide goods and services to its region is the demand for these goods and services. This demand depends on population numbers, needs and means in the form of incomes. The survey of the economic characteristics revealed a lot of potential in agriculture, forestry, tourism, mining and so on all of which should provide more employment and increase incomes which should help increase demand for Kilifi's goods and services. The survey on population characteristics revealed that the population of the region

growing rapidly and provided that the incomes are available the resultant demand should stimulate activity in Kilifi town and enhance its growth. Thirdly, since water is a most essential utility for any town, its steady availability must be guaranteed. Kilifi town will have to rely on water supplies from Mzima springs and from the Sabaki River both of which are relatively far from the town. It will have to share this water with other towns and rural areas along the Coast.

3.0.4. Thirdly, the town experiences negative relations with its region which can affect its growth. The fact that Malindi and Mombasa are so close to Kilifi and are connected to it with a good all-weather road means that they usurp much of the hinterland which should support Kilifi. Mariakani, when it grows to be large, will also probably exercise this influence. For example, in terms of tourism, Malindi, Mombasa and Watamu have

clearly outstriped Kilifi. However, this relationship must not be viewed only from the negative side since it has a positive side to it. Not all the relationships between Malindi and Mombasa on the ore hand and Kilifi on the other are competetive. Indeed, Mombasa being in a higher order of centres, does filter down to the level of Kilifi certain benefits like leaving the supply of intermediate goods and services to lower order centres to Kilifi and other urban centres. Besides most of the factors listed earlier as being positive could just as well be negative. For example, if the economic potential of the district remains unexploited then Kilifi cannnot reap the full benefit. Just in the same way if the fast growing population does not possess adequate income then their demand for goods and services will be ineffective which would not do Kilifi any good.

PART TWO

THE URBAN STRUCTURE

CHAPTER FOUR

THE GEOGRAPHICAL SETTING OF THE TOWN

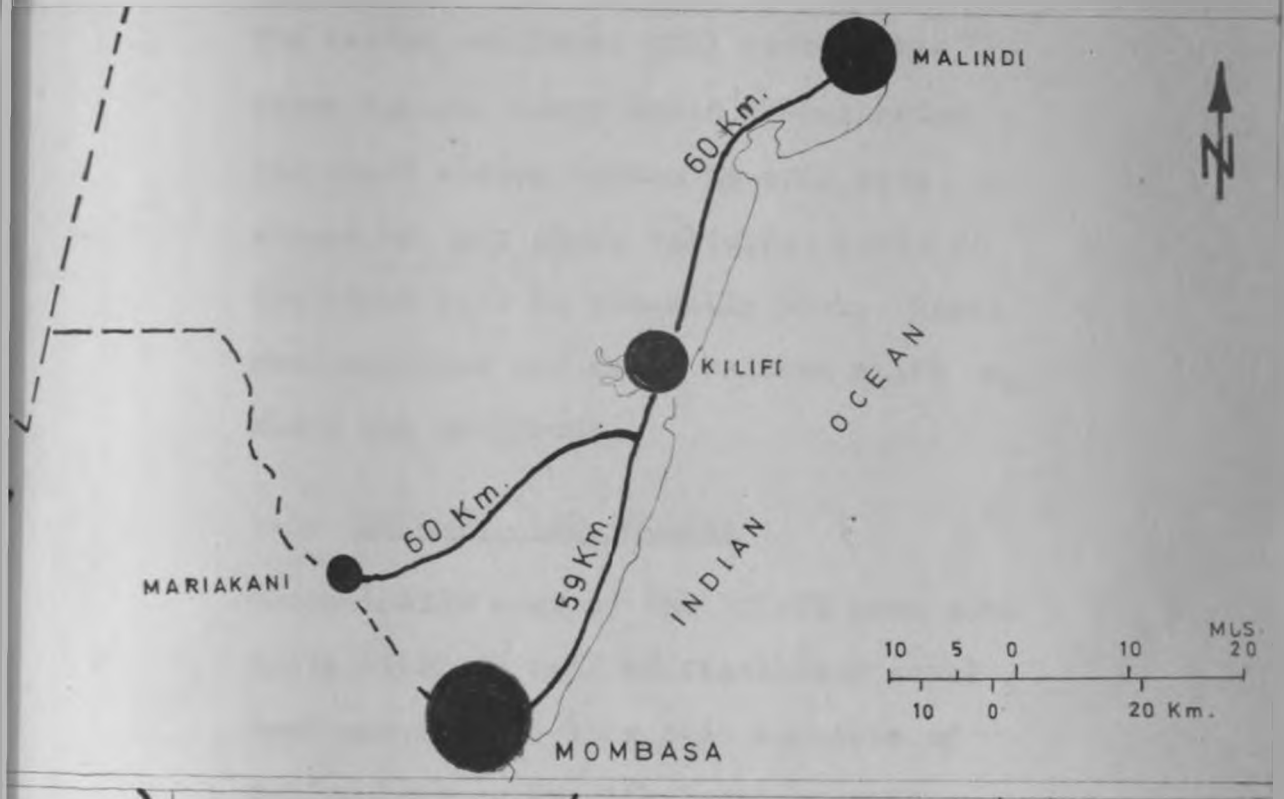
4.1. Location

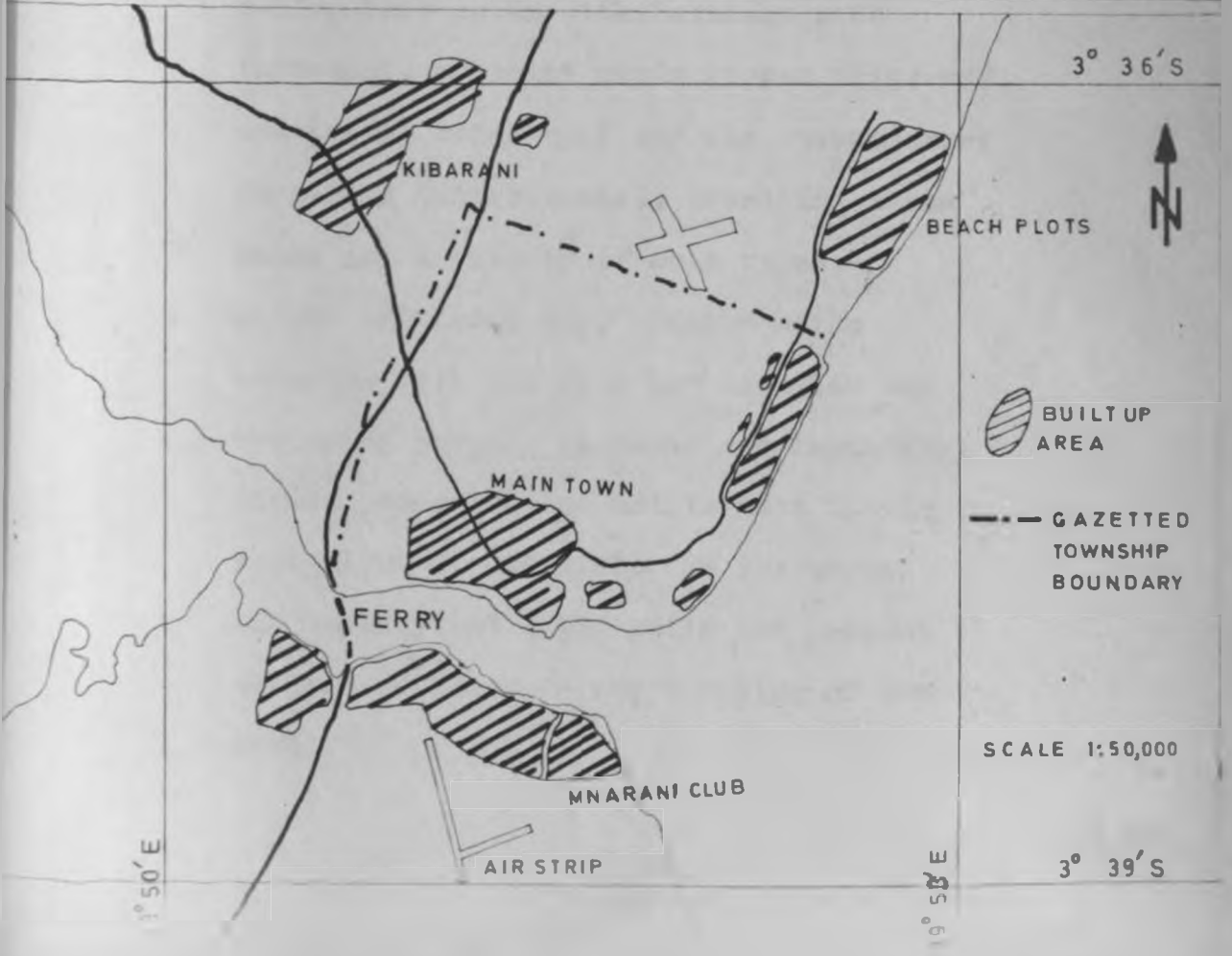
The town is situated at a distance of 37 miles (59km) north of Mombasa, 38 miles (60.8km) south of Malindi and 38 miles (60.8km) from Mariakani (see map 17a). It lies on the Indian Ocean around the Kilifi Creek, scattered between longitudes 39° 50' E and 39° 53' E and latitudes 3° 36' S and 3° 39' S (see map 17b). The altitude is generally between sea level and 150 feet above set level.

4.2. Terrain:

The town site is generally flat except for a couple of hills: one on the Eastern flank rising to over 130 feet above sea level and another to the north of the built up area of the main town attaining an altitude of over 140 feet. A third hill exists further north rising to over 140 feet.

P17 LOCATION OF KILIFI TOWN





The second mentioned hill carries the water tanks. Steep walls characterize the creek slopes broken in soft rock places by very short valleys. South of the creek land is generally flat. Coral reef outcrops and sandy beaches exist along the sea front.

4.3. GEOLOGY AND SOILS:

Geologically most of the Vilifi town site falls within a belt of fossilized coral reef materials. This belt consists of sedimentary rocks with baratasa beds (miocene), magarini sands (upper pliocene) and fossil coral reef and its contemporary deposists (pliostocene). Overlying these rocks are a variety of soil types: miombo and coral rag. Miombo soils coincide with the 25 - 40" isohytes and are sandy varying in depth and fertility, highly permeable and acidic with little agricultural potential. On the whole the geology and soils would not present serious problems in the building of the town.

4.4. DRAINAGE:

Kilifi town site is not traversed by any streams. However, sewage disposal can be adequately handled by the sea. Some areas near Kibarani factory and similarly depressed areas elsewhere get marshy during heavy rains and cannot therefore be readily built upon without adequate drainage works.

4.5. CLIMATE:

4.5.1. Rainfall.

Rainfall is caused by the South East monsoons which blow on shore mainly from March to August. The maximum amount of rainfall occurs in May and the minimum in January. Short rains come in October and November. Table 22 below and Figure 3 shows the rainfall situation in Kilifi as recorded at the two main stations of Kibarani and the District Commissioner's Office.

TABLE 22 MEAN MONTHLY AND ANNUAL RAINFALL AT KIBARANI AND DC's OFFICE KILIFI, 1971, IN MM.

	NO OF YEARS FOR AVERAGE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
KIBARANI	31	19.7	12.3	47.4	142.3	256.8	117.8	87.1	66.3	65.9	8088	90.3	53.6	1040.3
DC's Office	48	17.9	15.5	37.2	124.3	269.7	115.8	75.6	56.9	55.9	72.1	73.9	41.9	956.7

Alititude Kibarani 25 ft. ASL 39° 50' E 3° 33' S.
Longitude DC's
Office 10 ft. ASL 39° 51' E 3° 40' S.

Source: Meterological Department.

4.3.2. Temperature:

The mean maximum monthly temperature ranges from 81.6°F in July to 90.6°F in March while the mean minimum temperature ranges from 69.1°F in July and August to 75.5°F in April. The highest maximum ever recorded was 99°F in March and the lowest minimum ever recorded was 61°F in January. The hotest month of the year is April when the temperature stands at 87.7°F while the coldest month of the year is July with a temperature of 75.3°F. It is thus clear that temperatures are fairly high all the year round. Table 23 and figure 4 depict the temperature of Kilifi town as recorded at Mibarani station.

4.3.3. RELATIVE HUMIDITY, CLOUD COVER AND WINDS.

Relative humidity is fairly high ranging from 68% in February to 77% in May and June and averaging around 72% per year.

TABLE 23 MEAN AIR TEMPS; HIGHEST MAXIMUM AND LOWEST MINIMUM RECORDED AT KIBARANI, IN °F

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC	YEAR
MEAN AIR TEMPS	80.7	81.5	82.9	87.7	79.9	77.1	75.3	75.6	76.7	78.3	80.0	80.4	79.2
HIGHEST RECORDED MAXIMUM	93.0	95.0	99.0	95.0	92.0	89.0	88.0	86.0	89.0	89.0	92.0	92.0	99.0
LOWEST RECORDED MINIMUM	61.0	63.0	70.0	75.5	69.0	61.0	65.0	65.0	63.0	66.0	63.0	68.0	61.0
MEAN MAXIMUM	87.7	89.9	90.6	89.8	84.9	83.0	81.5	82.1	84.2	85.6	87.0	87.7	86.3
MEAN MINIMU-	72.6	73.0	75.2	75.5	73.0	71.1	69.1	69.1	69.2	71.0	73.0	73.1	72.1

IG 4 TEMPERATURES AT KIBARANI

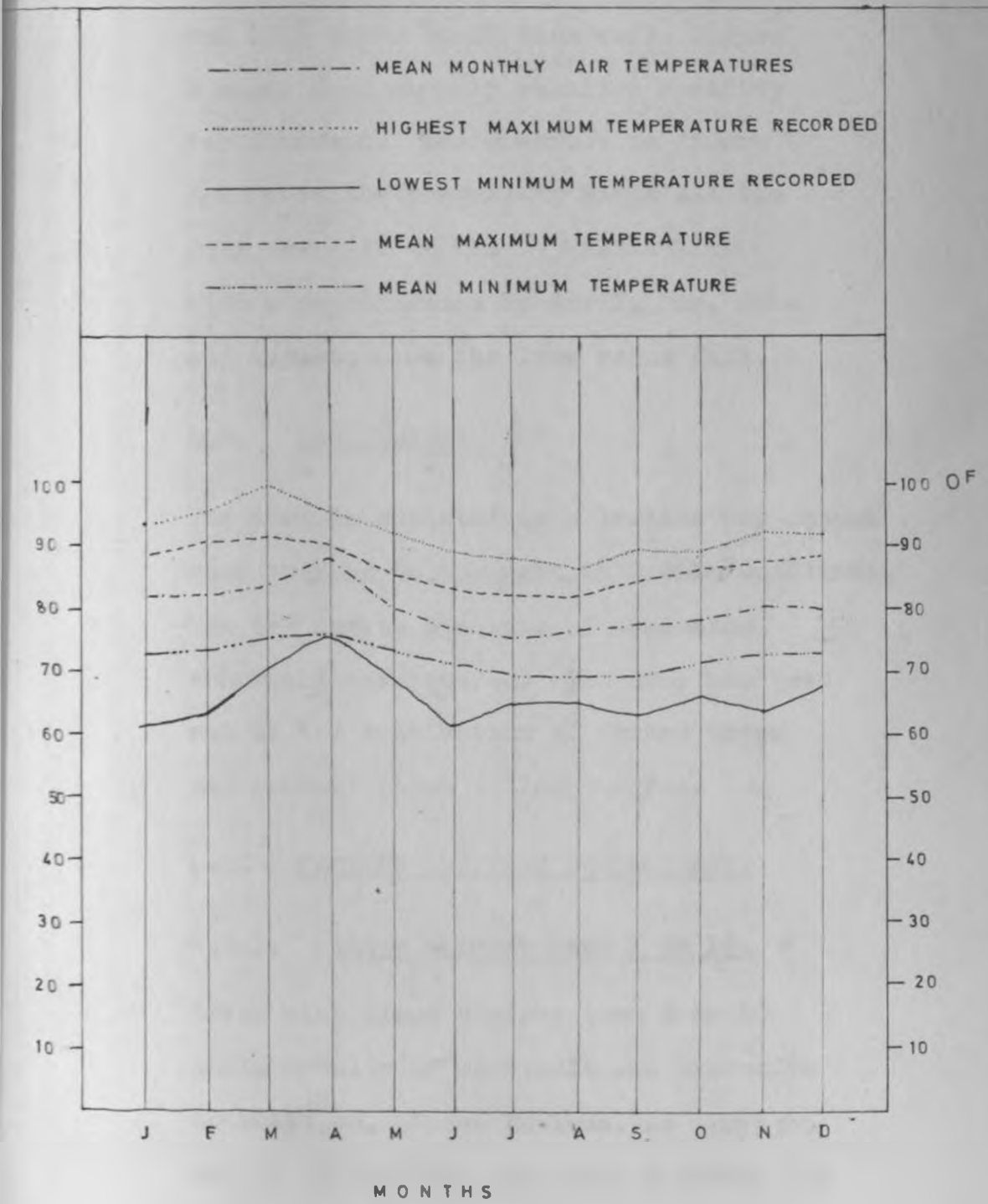


Table 24 shows relative humidity, wind speeds and cloud coverage at 0600 hours and 1200 hours local time while figure 6 shows mean monthly relative humidity for Kibarani. The windrose in figure 5 indicates the prevailing winds all the year round to be the S. Easterlies with a predominance in April, May, June and August, when the long rains fall.

4.6. VEGETATION:

The town is situated in a lowland dry forest zone bounded to the west by Miombo woodlands. The dry forest consists of combretum schumanii cassipourea. The area has been put to the cultivation of cashew trees and coconut palms in large areas.

4.7. FACTORS LIMITING DEVELOPMENT.

4.7.1. Slopes Steeper than 1 in 10.

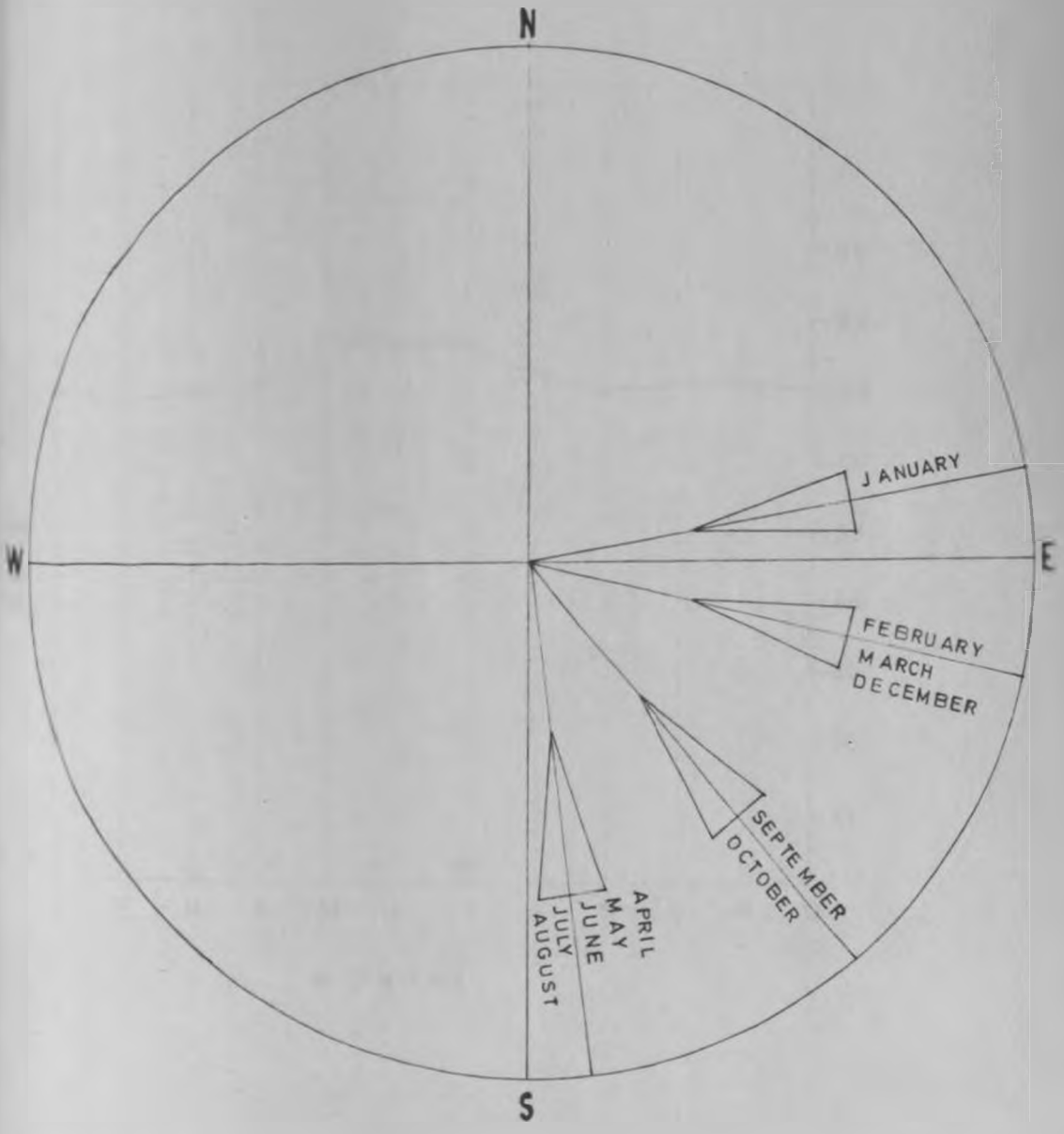
Areas with slope steeper than 1 in 10 would usually be difficult and expensive to build on. These include, as shown on map 18 in the bag, the hills in town, the

TABLE 24 RELATIVE HUMIDITY, CLOUD COVER AND WIND SPEEDS AT KILIFI

	JAN	FEB	MAR	APRI	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC	YEAR
HUMIDTY %	69	68	69	70	77	77	76	73	70	71	71	70	72
CLOUD (eights)													
0600 HRS	4.7	4.5	4.2	4.8	5.3	4.5	4.7	4.5	4.4	4.2	4.0	4.3	4.5
1200 HRS	2.8	2.8	3.1	4.2	4.8	4.4	4.7	4.2	3.5	3.3	3.0	3.0	3.7
EVERAGE WIND SPEED (Knots)													
0600 HRS	6	5	5	6	7	8	7	7	7	6	5	5	6
1200 HRS	11	11	11	11	11	12	12	11	12	11	9	10	11

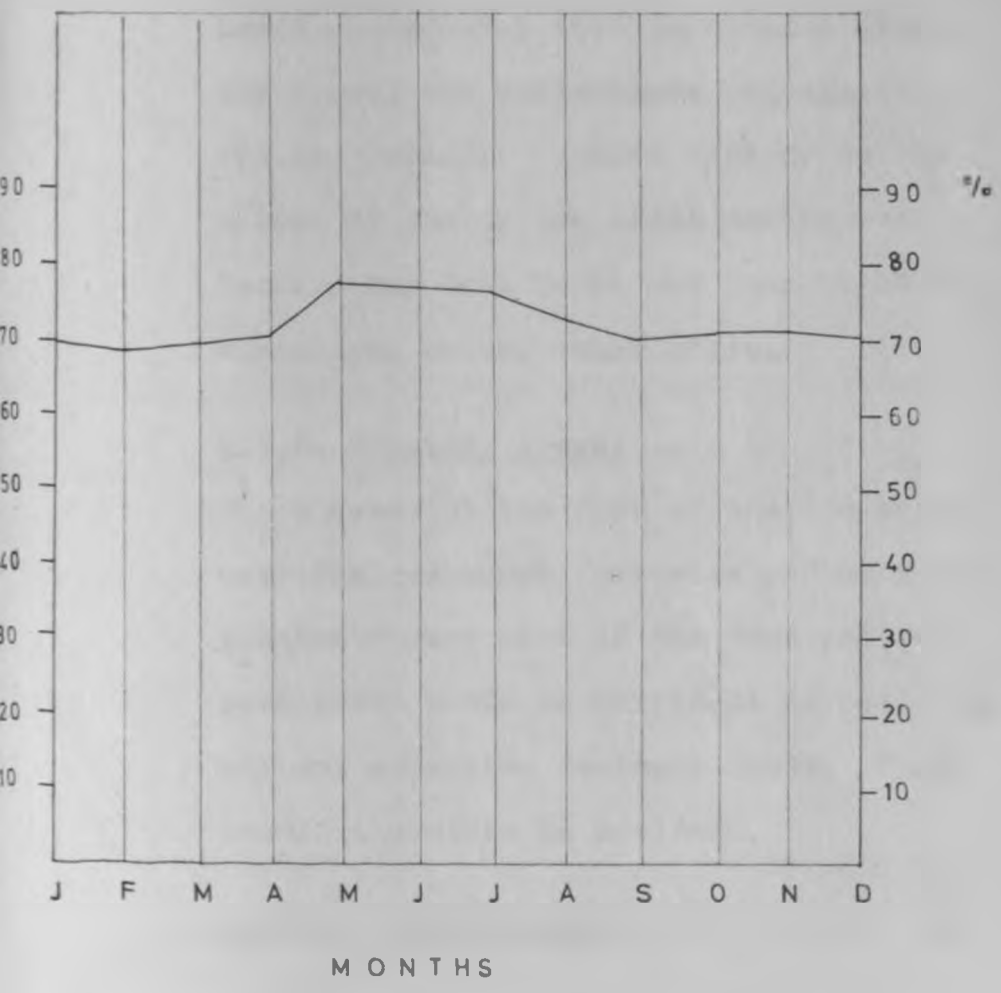
Sourse: Meteorological Department.

FIG 5 WINDROSE



SOURCE METEROLOGICAL REPORTS

6 MONTHLY RELATIVE HUMIDITY AT KILIFI



creek slopes, the low scarp near the cashewnut factories and a few scattered areas elsewhere in town. While it is admittedly expensive to build on such sloping land, in a generally hot and humid environment such as obtains along the coast, the hill-slopes can have a cooling relief. Indeed already on the slopes of one of the hills medium cost housing has been built and this might be encouraged on the other hills.

4.7.2. Marshy Areas:

These occur at the foot of the low scarp near the cashewnut factories and near the planted forest east of the town centre. Such areas would be difficult to build on without expensive drainage works. They should therefore be avoided.

4.7.3. [illegible]

There are important coconut, sisal and cashewnut plantations around the town which are a valuable source of income.

The cashews play an important role in the running of the cashewnut factories at Kibarani, Kisal also supports a factory further south while coconuts could be the basis of a future factory in the area. These have to be protected from urban encroachment.

4.7.4. Settlement schemes:

North of the gazetted township boundary, are the settlement schemes of Mtondia and Tezo Rokn. These represent important agricultural land and should not be encroached upon either.

4.7.5. The denied forest area

This is in the main town area near the Catholic Church. The forest is helping drain the marshy area and is also very beautiful. It should be protected.

CHAPTER FIVE

[illegible]

5.1 [illegible] between 1962 and 1975

TABLE 25 [illegible], 1962 - 1969

Year	Total population	Percentage Change per annum	Source
1962	2,001		Kenya census 1962
1969	2,662	3.6	Kenya census 1969
1975	3,292	3.6	Projected

At the time of the 1962 census Kilifi town had a population of 2,001. By the 1969 census this population had grown to 2,662. The compounded growth rate between 1962 and 1969 was therefore 3.6% per annum. Projected at this rate, Kilifi should now have a population of about 3,290.

5.2 [illegible]

5.2.1 Table 26 shows that there were more males than females in the town at the time of 1969 census. This tendency has been until recently normal for Kenyan towns because in the past more males than females tended to migrate from rural areas into urban areas.

This tred is however changing and the sex ratio is tending towards balance as a result of many more women moving to urban areas in search of jobs after scho l and those who are married s ayin with their husbands. Kilifi can be expected to follow this tred with time. The able and age pyramid (fi .7) reveals that c ildren under the e of 9 years form a substantial pro ortion 31.9% of the total populat on. The rest of the a e roups seem to be evenly distributed with the old e population, 60, being only 3.1 of the total populati n.

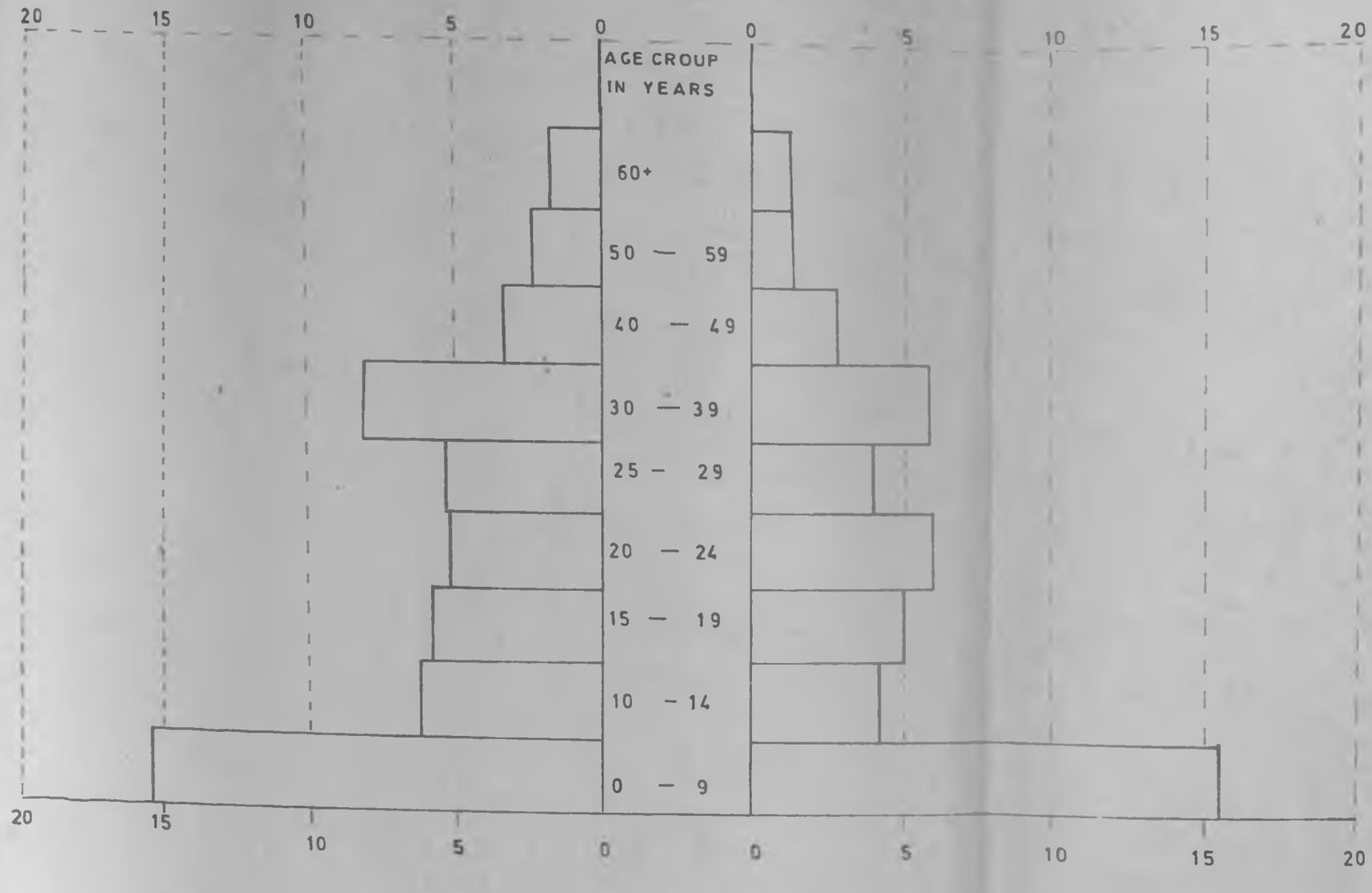
TABLE 26 AGE SEX STRUCTURE

AGE	MALES	%	FEMALES	%	TOTAL	%
0-9	435	16.4	411	15.5	846	31.9
10-14	166	6.2	115	4.2	281	10.4
15-19	149	5.6	133	5.0	282	10.6
20-24	134	5.0	157	5.9	291	10.9
25-29	141	5.3	105	4.0	246	9.3
30-39	214	8.0	153	5.8	367	13.8
40-49	91	3.4	75	2.8	166	6.2
50-59	64	2.4	38	1.4	102	3.8
60	45	1.7	36	1.4	81	3.1
TOTAL	1,439	54.0	1,223	46.0	2,662	100

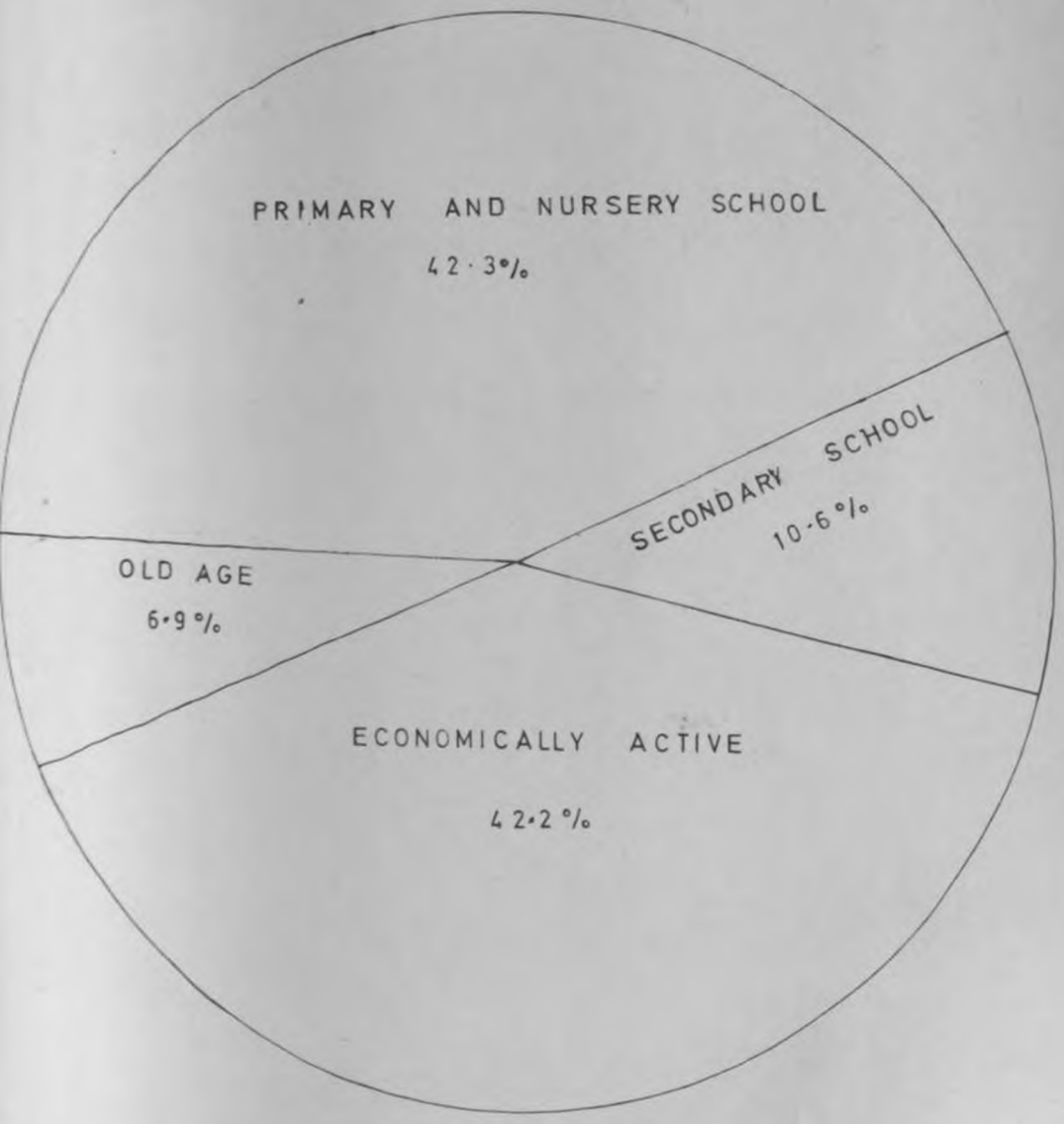
Source: Population census 1967

5.2.2. Table 27 and figure 8 show the population of Kilifi town broken down according to activity

FIG 7 AGE SEX PYRAMID



G 8 ACTIVITY GROUPS



groups including school age population, economically active population and old age population. School age population, primary, secondary and nursery, accounts for 52.9% of the total population while 40.2% of the population is economically active and 6.9% are olf age people. The secondary school age population could also be considered as economically active where the persons involved do not proceed to obtain places in secondary schools. In such a case the economically active population would vary from 40.2% to 50.8%

TABLE 27 ESTIMATES 1969 - 2000

Activity Group	Population				
	1969	%	1980	1990	2000
Primary and Nursery (0 - 14)	1,127	42.3	1,662	2,982	4,251
Secondary School (15-19)	282	10.6	416	747	1,065
Economically active (20-49)	1,130	40.2	1,580	2,834	4,040
Old Age (50)	183	6.9	272	487	694
TOTAL	2,662	100	3,930	7,050	10,050

Source: 1969 Population census

5.3 OCCUPATIONAL STRUCTURE

As at 1971 about 37.8% of the total population was gainfully employed, the remaining 62.2 being children, old age persons and unemployed persons (adults). 30.2% of the 1,005 gainfully employed persons were engaged in manufacturing industry mainly in the Kenya Cashewnut factory at Mibarani; 23.5% were employed in services; 16% in agriculture and fishing, 12.2% in Commerce, 7.2% in Construction, 6.0% in Transport; 3.6% in electricity and water 1.0% in quarrying. The services componet included about 5% persons employed in tourism. Kilifi, therefore, does not have a strong economic base which therefore needs to be diversified and strengthened.

TABLE 20: OCCUPATIONAL STRUCTURE, 1971

OCCUPATION	NO OF PEOPLE	%
Agriculture and fishing	160[1]	16.0
Mining & Quarrying	18	1.8
Manufacturing	302	30.2
Construction	72	7.2
Electricity & Water	36	3.6
Commerce	122	12.2
Transport	60	6.0
Services	235	23.5
TOTAL	1,005	100.5

Source: Central Bureau of Statistics.

I includes an estimate of the number of persons employed in fishing at 154.

5.4 FAMILY STATUS

30.7% of the population of the town as at 1969 were married while 69.3% were children relatives, and others. Table 29 also shows that 22.2% of the population were classified as heads of households of whom 18.8% were men while 3.4% were women. A large proportion of the population were children of the families in Kilifi.

Relatives of the head of the households constituted another large proportion of 23.8% old parents of the head of the households comprised only 0.8%. The average family size as at 1969 was 4.5 persons per family. The ministry of Finance and Planning has adopted an averate family size of 5 persons in their report on housing needs for urban areas, of 1973.

TABLE 29 RELATIONSHIP TO HEAD OF HOUSEHOLD:

		%
Heads of household	592	22.2
Men	500	18.8
Women	92	3.4
Wives	317	11.9
Children	845	31.7
Relatives	633	23.8
Non-relatives	255	9.6
old parents	20	0.8
TOTAL	2,662	100.0
Married	817	30.7
Single	1,845	69.3
TOTAL	2,662	100.0

mm. Average family size 4-5 in at 1969. The Ministry of Finance and Planning has, however, assumed this to have risen to 5 persons per family.

5.5. ETHNICITY

79.9% of the town's population were people from the coastal Bantu mainly the Kyriama group of the Mijikenda but also including Pokomo, Taveta, Taita, Swahili and Bajun. Of the people from outside Coast Province, the Central Bantu Group constituted 4.9%. These came from Central Eastern Province and comprised Kikuyu, Embu, Meru and Kamba. Non-Konyan Africans came after the Central Bantu Group of migrants with 4.4%, followed by Luo (3.9%) and Luhya (2.4%). Of the non-Africans Arabs formed 3.1%, Europeans 2.1% and Asians 1.3% of the population. Thus from table 30 it is evident that most of the inhabitants of Kilifi town are from Coast Province but that a significant 25.1% are people from outside the Province.

5.6 EXISTING POPULATION DISTRIBUTION, 1975

Existing population distribution derived from aerial photograph interpretation coupled with an assumed family size of 5 persons and a family factor[1] of 2.5 is shown in table 31. The highest densities of over 200 persons per hectare occure in the Swahili

1. Family factor here means the number of families resident in one dwelling house.

TABLE 30 TRIBAL COMPOSITION OF THE POPULATION

ETHNIC GROUP	NO OF PEOPLE	%
Coastal Bantu	1991	74.9
Central Bantu	132	4.9
Western Bantu	62	2.4
Nilotic	104	3.9
Nilo Hamitic (K.S.)	11	0.4
Other Nilo Hamits	5	0.2
Western Hamitic	45	1.7
Eastern Hamitic	19	0.7
Non-Kenyan Africans	118	4.4
Europeans	57	2.1
Asian	34	1.3
Arab	83	3.1
Other	1	0.04
Total	2,662	100.04

Source: 1969 Population census.

TABLE 31 EXISTING RESIDENTIAL DENSITY DISTRIBUTION, 1975

ESTATE	AREA IN HA.	HOUSING UNITS COUNTED	AVERAGE FAMILY SIZE	FAMILY FACTOR	POPULATION	NET DENSITY PEOPLE/ HA.
SWAHILI HOUSING	8.0	170	5	2.3	1955	244.3
NGALA ESTATE	2.0	40	5	1.0	200	100
KANDENGE ESTATE	0.7	14	5	1	75	107.1
A.P. LINES	0.3	13	5	1	65	216.6
M.OW. $CAMP_1$	0.3	13	5	1	65	216.6
M.O.W. $CAMP_2$	0.3	10	5	1	50	166.6
TOTAL LOW COST	11.6	260	5	-	2410	
WATER TANK AREA	4.0	40	5	1	200	50
HOSPITAL AREA	2.0	20	5	1	100	50
MOSQUE AREA	0.5	5	5	1	25	50
TOTAL MEDIUM COST	6.5	65	5	1	325	50

ESTATE	AREA IN HA.	HOUSING UNITS COUNTED	AVERAGE FAMILY SIZE	FAMILY FACTOR	POPULATION	NET DENSITY PEOPLE/ HA.
TOWN ZONE	9	23	5	1	115	12.7
NORTH BEACH	40	32	5	1	160	4.0
SOUTH OF CREEK	10	20	5	1	100	10.0
NORTH WEST OF FERRY	5	5	5	1	25	5.0
TOTAL HIGH COST	65	80	5	1	400	
ALL RESIDENTIAL AREAS	82.1	415	5	1	3135	

Source: Aerial Photograph interpretation.

housing area (244.3), A. . lines (216.6) and M.[illegible].
Camp$_1$ (216.6). Densities of 100 - 200 p.[illegible]. are found in [illegible]. Camp$_2$ (166.6), Kalenge Estate (107.1) and Kgala Estate (10). All medium cost housing areas carry an average population density of 50 persons per hectare. High cost housing areas have densities below 15 persons per hectare.

5.7 POPULATION PROJECTION:

Assuming that the population will grow at 3.6% per annum over the 25 year period then the town should have 3,930 by 1980, 7050 by 1990 and 10,050 by 2000. The projection was done using the formula:

$$A = P\left(1 \frac{r}{100}\right)$$

where A = Population in 1980, 1990 2000 as the case may be.

P = Population in 1969

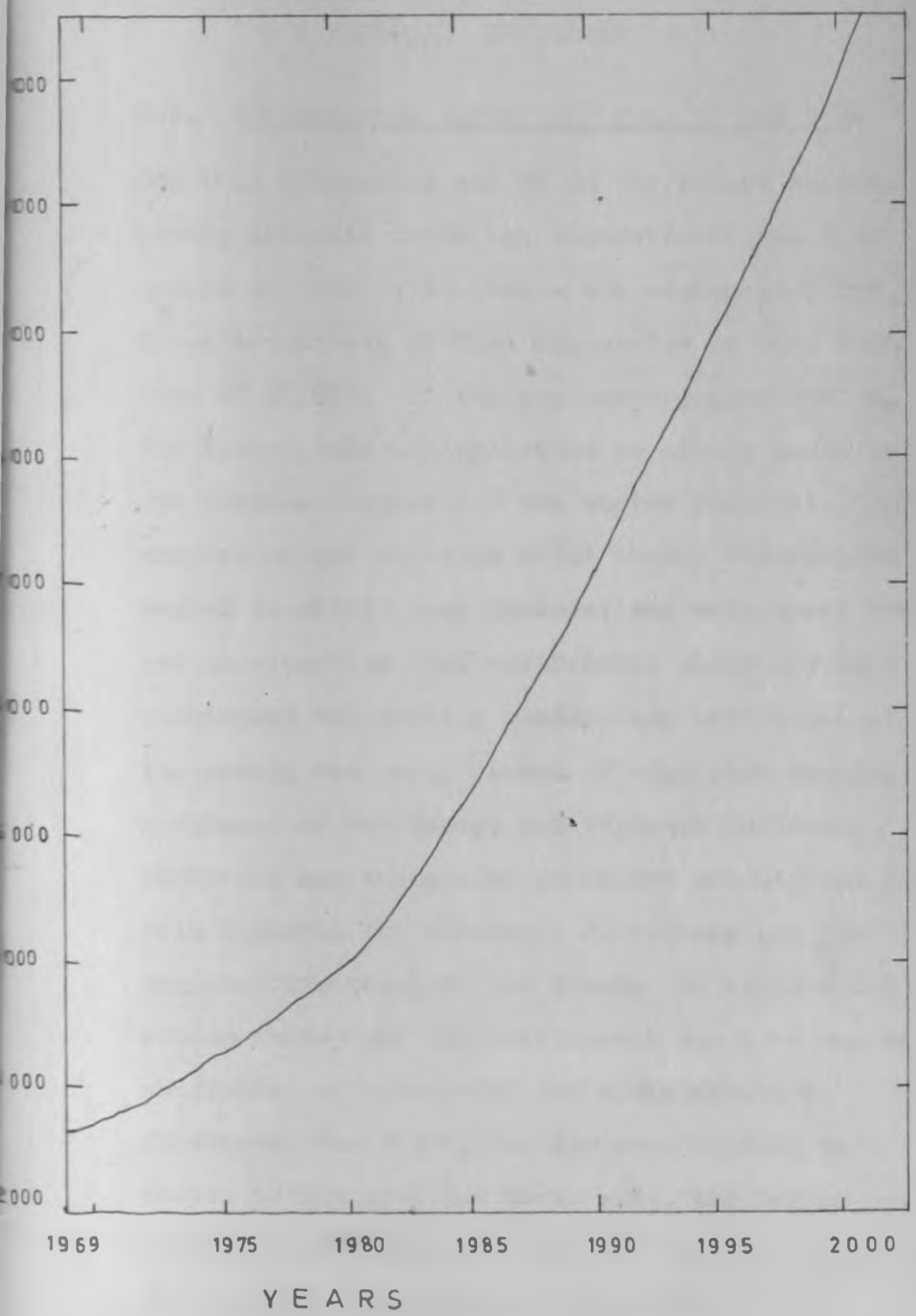
r = rate of growth per annum

n = number of years.

TABLE 12: POPULATION PROJECTION TO 2000

YEAR	1969	1975	1980	1990	2000
POPULATION	2,662	3,290	3,930	7,050	10,050

9 POPULATION PROJECTION 1969-2000



6.1.

For this discussion map 20 in the pocket refers. In purely academic terms the conventional two types of models of urban structure - the explanatory and the normative models do find expression in this small town of Kilifi. Of the explanatory theories[1] -, the two which could be applicable to Kilifi would be the multiple nuclei and the sector theories. In respect of the multiple nuclei theory distinctive nuclei in Kilifi town include: the main town; the low density/high cost residential along northern coastline; the similar residential belt south of the creek; the small pocket of high cost housing northwest of the ferry; the Kibarani Cashewnut factories and the nearby secondary school; the saw mill opposite the cashewnut factories; and the Kibarani Club South of the creek. As regards the sector theory one can distinguish the town centre consisting of commercial and administrative functions, the '[illegible]', the low cost housing as a sector to its west and north west, the medium cost housing sector north of the '[illegible]' and the high cost sector along the creek and coastline.

These two explanatory theories have interesting implications for Malifi's growth. The sector theory as a basis of growth would result in the town's low coast and medium cost housing growing towards Kibarani Industrial Area along the Malindi road. In itself this would augur well for the town since the people in low and lower middle income group would rightly be located in close proximity to their places of work i.e. the town centre and Kibarani Industrial Area.

Low density/high cost housing should on the other hand continue to expand close to the sea, beaches and creek. Servicing of the town would be in phases probably starting from the existing development. The multiple nuclei model implies sectorial development of the main town with a scattering of isolated nuclei growth. A certain degree of independence of service would have to be guaranteed at considerable additional cost to each separate nucleous. Since the objective of this thesis is to evolve a physical structure plan that would eventually integrate and optimize the potentials of the various elements for the overall good of the whole town, one has to regard these two models in terms of merger possibilities.

In terms of the normative perspective of Urban Structure Theory - i.e. the linear, concentric or dispersed city forms - the linear and the dispersed become immediately obvious in Kilifi. While the dispersed form is very evident, one does get a generalized impression of the linear form as the basis of Kilifi's structure. The linearity at once clear from the expanding low density along the sea front merges in with the main town centre as part of the entire linear structure. However, the town's main industrial area is 2½ kilometres northwestwards from the town centre, at Kibarani across the Mombasa Malindi Road. And there are gaps in the existing predominantly linear structure.

Thus not all activities associated with Kilifi town are located within the gazetted town boundary. The cashewnut factory at Kibarani with the nearby secondary school, much of the beach development and Kwarani Club are outside the town boundary. Land tenure played an important role in the siting of the cashewnut factory as did the altitude and westerly location of the site. Low density/high cost housing was best suited to the sea frontage while the Kwarani Club's location is advantageous for water sports in the Kilifi creek and beaches.

Taking into consideration all these facts it is

inevitable that for the town to be properly integrated two things have to be done. Firstly, the Kibarani industrial area should be linked to the main town. This can be achieved by a linear form of development in the intervening space. Secondly, the southern mainland can continue to be linked to the main town for a considerable length of time through the existing ferry. However, at some point after 2000, a bridge will become inevitable across Kilifi creek.

6.2. Land tenure

Four basic categories of land ownership are found in Kilifi town including Government land set aside for the main town area; unallocated government land; government land held by other parties on leasehold; and freehold land. Map 19 in the pocket shows the location of each of these categories of land.

6.2.1. Government land set aside for the town

Included here is a portion of the land for which the Physical Planning Department of the Ministry of Lands and Settlement prepared a plan in 1964 amounting to 100 hectares. The plan referred to, however, touched on freehold land. The area has now been extensively developed for urban purposes. With the town's growth encroachment on other categories of land ownership will be inevitable.

6.2.2. Unallocated government land

Large areas of unallocated government land exist outside the existing gazetted township boundary. The biggest portion lies north of the township and is occupied by settlement schemes and squatters. At the beach and large tracts of this land remain unallocated. Another portion lies near the old Kibarani factory as a cashewnut experimental farm. A small bit of unallocated government land, about 2½ hectares, lies in the north western portion of the gazetted township site close to the beach. Beach development can continue northwards without any problems in respect of land ownership.

6.2.3. Leasehold land:

Leasehold land inside the township boundary amounts to over 25 hectares. It is found mainly along the beaches. Outside the town boundary the land exists in pockets along beaches and south of the creek. Kibarani Secondary School stands on a leasehold plot surrounded by unallocated government land. The 350 acre Kibarani factory land is on leasehold. The leases vary from 25 to 999 years. Land for industrial expansion is obviously not a major problem.

6.2.4. Freehold land:

Within the township boundary freehold land accounts for 380 hectares. It forms a large continuous belt

between the built up environment and the northern township boundary. Outside the township boundary this category of land occurs as pockets in the expanse of leasehold land west of the Malindi - Mombasa road and across the Kilifi creek onto the Southern Mainland.

6.2.5. In conclusion it may be said that the proposed linear town development between the main town and Tibarani industrial area will take place on freehold land which will therefore be acquired or swopped with government land.

6.3. Existing Land Use: (map 20 in the pocket)

Table 35 gives the breakdown of the area devoted to various urban uses in Kilifi town. A total of 140 hectares have been developed.

Residential land use alone accounts for 55.6% followed by Public purposes (19.3%) and transport (13.6%). Industrial and Commercial land uses occupy relatively small areas. This is typical of small Kenyan towns. Because Kilifi town is surrounded by large tracts of wildscape, recreational land is not included here inspite of the rather large area devoted to the Golf Course.

It is important to notice that Kilifi town is not served by piped sewarage as explained subsequently.

as a result the densities which planners have recommended have tended to be relatively low since plots must be large enough to accommodate pit latrines or septic tanks as the case might be. It is unlikely that over much of the plan period, Malifi will receive the priority of being provided with sewerage facilities. Therefore, these densities, low as they are, have to be assumed to prevail well into the 1990's.

TABLE 13 DETAILED LAND USE, 1975

LAND USE	AREA IN HECTARES	PERCENTAGE OF DEVELOPMENT AREA
RESIDENTIAL	82	58.6
INDUSTRIAL	4	2.9
COMMERCIAL	3	2.1
PUBLIC PURPOSES	27	19.3
TOURISM	2	1.4
UTILITIES	3	2.1
TRANSPORT	19	13.6
TOTAL	140	100.0

6.4 PROPOSED PLAN.

6.4.1 OBJECTIVES OF THE PHYSICAL STRUCTURE

The proposed physical structure of Kilifi town attempts to satisfy the following objectives:

(a) To integrate the Kibarani Industrial area with the main town by development of the intervening space in a linear form.

(b) To preserve and enhance the existing good features of the town. In particular preserve and enhance the good recreational landscapes afforded by the hills the creek, beaches and the sea for present and future generations.

(c) To provide adequate space for accommodation of all requisite urban uses to serve a population of 10,000 by the year 2000.

(d) To integrate the northern and southern portions of the town eventually by means of a bridge across the creek.

(e) To provide a traffic system which caters satisfactorily for motorists pedestrians and cyclists, particularly between the main town and the Kibarani industrial area.

(f) To strengthen the economic base of the town by developing industrial, commercial and tourist potential of the town.

(g) To provide for the social and cultural needs of the town's populace up to the year 2000.

6.4.2. LAND USE REQUIREMENTS.

34 PROPOSED LAND MIX, 1980-2000.

USE	1980		1990		2000	
	HA	%	HA	%	HA	%
DENTIAL	75	49.9	148	58.7	215	60.9
STRIAL	13	8.6	16	6.3	18	5.0
ERCIAL	4	2.6	7	2.8	11	3.1
IC PURPOSES	30	20.0	33	13.1	42	11.7
ISM	3	1.9	7	2.8	12	3.4
ITIES	2	1.3	3	1.2	4	1.1
SPORT	23	15.7	38	15.1	56	15.7
L	150	100	252	100	356	100

As shown in table the total town area should be 150 hectares in 1980 252 in 1990 and 356 in 2000 assuming that the low densities prevail in the absence of piped sewerage facilities. The net land requirements amount to 10 hectares in 1980; 102 in 1990 and 200 in the year 2000. All this land should be available within the gazetted township boundary for most of the purposes while industrial land at Kibarani should fully cater for Kilifis requirements by the year 2000. The highest percentage of land will be devoted to

residential development at relatively low densities. This large amount of residential land substantially increases the total land requirements for the town. If sewerage facilities were made available within the plan period then these densities could be increased and the amount of residential land needed would consquently be considerably reduced. Of the other uses transportation in terms of roads and foot paths will take up 15.7% of the total land required thus ranking second after residential land use. Public purposes follow with 11.7%. It is quite obvious therefore that Kilifi will continue to be a residential and service town with a very small industrial base.

CHAPTER SEVEN
HOUSING.

7.1. THE EXISTING HOUSING.

The existing housing stock falls under three cost categories: high cost, meduim cost and low cost. As Kilifi does not have piped sewerage, residential densities are remarkably low to facilitate use of pit latrines and, in the high cost housing areas, septic tanks. Table 35 shows these densities.

7.1.1. High Cost Housing.

There are two basic types of high cost housing. Built along the beaches and the creek is a resort type of housing used by retired up country gentry and other tourists. The plots here are extremely large measuring between 5000 M^2 and 12,500 M^2. Along the northern beach, plots average 12,500 M^2 giving a net density of 0.8 plots per hectare. North west of the Kilifi ferry plots are about 10,000 m^2 on average obtain the resultant net density being 2 plots per hectare.

The second type of high cost housing.

TABLE 35 EXISTING HOUSING, 1975

ESTATE	AREA IN HA	HOUSING UNITS	PLOT SIZE	DENSITY PLOTS/ HA	POPULATION	DENSITY PERSON/ HA
SWAHILI HOUSING	8.0	170	450m^2	213	1955	244.3
NOALA	2.0	40	500m^2	20.0	200	100.0
KADENGE	0.7	14	500m^2	20.0	75	107.1
A.P.LINES	0.3	13	230m^2	43.3	65	216.6
M.O.W. CAMP 1	0.3	13	230m^2	43.3	65	216.6
M.O.W. CAMP 2	0.3	10	300m^2	33.3	50	166.6
TOTAL LOW COST	11.6	260	368.8	22.4	2410	207.7
WATER TANK AREA	4.0	40	1000m^2	10.0	200	50
HOSPITAL AREA	2.0	20	1000m^2	10.0	100	50
MOSQUE AREA	0.5	5	1000m^2	10.0	25	50
TOTAL MEDIUM	6.5	65	1000m^2	10.0	325	50

TOWN ZONE	9.0	23	5000m²	2.2	115	[illegible]
NORTH BEACH	40.0	32	12,5000m²	0.8	160	4.0
SOUTH CREEK	10.0	20	5000m²	2.0	100	10.0
NORTH WEST OF FERRY	5.0	5	10,000m²	1.0	25	5.0
TOTAL HIGH COST	64.0	80	8,000m²	1.3	400	6.3
ALL AREAS.	82.1	415	--	--	3135	--

occurs in the main townchiefly for senior civil servants. The average plot here measures 5000m^3 yielding a density of 2 plots per hectare. The existing high cost housing stock totals 80 units distributed as follows: 32 units along the northern beach, 20 in the Mvarani area, 5 to the north west of the ferry and 23 units in the town zone near the central area.

7.1.2. Medium Cost Housing

Medium cost housing is provided near the central area with 40 units near the water tanks, 5 near the mosque and 20 within the hospital compound. Plots average about 1000 m^2 giving 10 plots to the hectare.

7.1.3 Low Cost Housing.

Low cost housing comprises the Swahili type of housing, main found in a zone west of the commercial zone, planned low cost housing provided by, the National Housing Corporation on behalf the county council and the Ministry of Works and plolice lines. Plot sizes vary from 230m^2 in the Ministry of Works camps to 500m^2 in the planned National Housing Corporation schemes of Kadenge and Ngala Estates. There are 20 to 43 plots to the hectare.

7.1.4. Business Cum Residential plots

Business cum residential plots are found in the commercial zone and measure about 450 m2. These are usually occupied by the owners of the commercial business in the town centre but some may be rented out to workers in town.

7.2. PROJECTED NO OF HOUSE HOLDS.

In table 36 the general housing requirements are shown for the entire population projected to the year 2000. In 1975 the shortfall stands at 316 housing units. This reflects the existing situation of overcrowding in the swahili type of housing where about 12 persons live in one house. By 1980 the shortfall would have risein to 371. In the year 2000 an additional 1595 units would be required.

TABLE 36 NUMBER OF HOUSE HOLDS 1969-2000

FAMILY SIZE	POPULATION	No.OF HOUSEHOLDS	EXISTING HOUSING STOCK	REQUIRED HOUSE
4.5	2662	591	415	76
4.5	3290	731	415	316
5.0	3930	786	415	371
5.0	7050	1410	415	995
5.0	10,050	2010	415	1595

7.3. HOUSING REQUIREMENTS ACCORDING TO INCOME GROUPS PROJECTED TO 2000

As shown in table 37 the housing requirements by the various income groups in the year 2000 will be 635 dwelling units (31.6%) for those earning less than Shs. 300/= per month, 762 (37.9%) for those in 300-599 income bracket, 404 (20.1%) for the 600-1499 income group and 209 (10.4%) for those who will be earning over 1,500/= per month. Thus, the total housing need will be 2010 dwelling units in the year 2000, 1410 in 1990 and 786 in 1980.

These projectives of income assume rising incomes hence the decling percentage of persons in the lowest income bracket and using percentages in the other brackets.

7.4. HOUSING PROVISION

7.4.1. Housing objectives.

(a) The main objective of housing will be provision of housing for everybody according to their means.

(b) The plan will assume the densities shown in table 38. An assumption is made that high cost housing consists of the resort type which requires more land than normal residential plots and that it will be provided along the beaches and creek and that the "normal" high cost residential housing will be builtin the main town area.

TABLE 37 HOUSING REQUIREMENTS BY INCOME GROUPS, 1975-2000

YEAR INCOME GROUPS AND DWELLINGS NEEDED.

	HOUSE HOLDS	LESS THAN 300		300 - 599		600-1499		over 1500	
		No.	%	No.	%	No.	%	No.	%
1975	731	341	46.6	226	30.9	111	15.1	54	7.4
1980	786	343	43.6	251	31.9	126	16.1	66	8.4
1990	1410	530	37.6	482	34.9	255	18.1	146	9.4
2000	2010	635	31.6	762	37.9	404	20.1	209	10.4

SOCERCE: Based on 1973-1978 income groups for Kilif as per Ministry of Finance and Planning report on Housing needs in urban and Rural areas in Kenya, 1973.

LE 38 PROPOSED PLOT SIZES

SING TYPE	UNSERVICED PLOTS		SERVICED PLOTS	
H COST	PLOTS SIZE IN HA	NET DENSITY PLOTS/HA	PLOT SIZES HA	NET DENSITY PLOTS/HA
Resort type	1.0	1	0.5	2
) Normal Residential	0.5	2	0.1	10
DIUM COST	0.1	10	0.05 (500 m^2)	20
W COST	0.05	20	0.025 (250m^2)	40

The table gives different plot sizes and densities for serviced and reserviced plots. For the purposes of the structure plan the figures for unreviced plots are used to project the land use requirements largely because it is assumed that Kilifi is unlikely to enjoy the priority of being provided with piped sewerage until after 1990's

(c) Housing will be provided in three categories: High cost, Low cost, and Medium cost.

7.4.2. LAND REQUIREMENTS.

Table 39$_a$ shows the projected land requirements for housing in 1980, 1990 and 2000, while table 39 (b) gives the additional land needed in each year. These figures iquire the resort type of high cost housing because this is difficult to fare cost. In 1980 a total of 74.9 hectares will be needed to accommodate 3930 persons or 786 households assuming that these plots will be unsewered. This also assumes elimininationation of the present shortfall. This need will have risen to 147.6 hectares in 1990 and 214.8 hectares by the year 2000. If by then piped sewerage will have become possible then the land required for housing would be very much less i.e. 52.4 hectares in 1990 and 76.0 hectares in the year 200.

E 31(a) RESIDENTIAL LAND REQUIREMENTS 1990-2000

	LOW COST	MEDIUM COST	HIGH COST (NORMAL) (RESIDENTIAL)	TOTAL
0				
sons per plot	5	5	5	5
ulation	2970	230	330	3930
ts needed	594	126	66	786
area Unserviced HA	29.7	12.6	33	74.9
viced HA	14.9	6.3	6.6	27.8
0				
sons per plot	5	5	5	5
ulation	5060	1215	715	7050
ts needed	1012	255	143	1410
area Unserviced	50.6	25.5	71.5	147.6
viced	25.3	12.8	14.3	52.4
0				
sons per plot	5	5	5	5
ulation	6985	2020	1045	10050
ts needed	1397	404	209	2010
area unserviced	69.9	40.4	104.5	214.8
viced	34.9	20.2	20.9	76.0

tal.

BLE 39 (b) ADDITIONAL LAND REQUIRED 1980,1990,2000.

	1980	1990	2000	TOTAL	GRAD TOT TAPAL
rviced					
	3.3	10.4	9.6	23.3	34.9
DIUM	0	6.3	7.4	13.7	20.2
GH	0	0	0	0	20.9
TAL	3.3	16.7	17.0	37.0	76.0
ERVICED					
W	18.1	20.9	19.3	58.3	69.9
EDIUM	6.1	12.9	14.9	33.9	40.4
IGH	0	7.5	40.5	48.0	104.5
OTAL	24.2	41.3	74.7	139.2	214.8

In terms of the net additional land required for residential development, 24.2 hectares will be needed by 1980, 41.3 between 1980 and 1990 and 74.7 between 1990 and 2000. If piped sewerage became possible after 1980 then only another 7.5 hectares would be needed by 1990 and 40.5 by the year 2000. This of course presumes redevelopment of existing residential areas at much higher densities.

7.4.3 DISTRIBUTION OF HOUSING

As shown on the proposed land use map in chapter six the Low cost and medium cost housing are provided between the central area and the industrial area at Kibarani. High cost housing near town centre is provided just across the golf cource while the resort type of housing will fill in the gaps along the beaches and creeks.

CHAPTER EIGHT

THE ECONOMIC BASE.

8.1. EMPLOYMENT.

The most recent figures on modern or formal sector employment in Kilifi are shown in table 40. Modern employment grew at an average of 10.9% over the five years between 1967 and 1971. As at 1969, the proportion of persons employed in the modern sector was 23.3%. By 1971, this proportion had risen to 35.9%. The ILO report on incomeres Employment and Equality of 1972 puts urban informal sector employment at 11.5% of the urban population in 1969 in which case the total employment in Kilifi in 1969 must have been of the order of 34.8% of the total population of the town. Assuming the I.L.O. reports stipulation that the 25-30% of total urban employment was in the informal sector and applying this proportion to the 1971 figures then in that year 47.6% of the population informal or formal sector. The remaining 52.4% were children or old age persons. This was a reasonably high rate of employment.

The objective of this plan is to provide 40% employment by the year 2000 i.e. enough hobs for 4,000 people in Kilifi town and this could take care of the projected economically active population in Kilifi town by the year 2000.

INDUSTRY	1967	1968	1969	1970	1971	% 1971.	GROWTH 1967-71	GROWTH %
Agriculture	-	-	-	4	6	0.7	2 (70-71)	25
Mining	-	-	-	6	18	2.1	12(70-71)	100
Manufacturing	362	333	349	352	302	32.7	60	-3.3
Construction	1	1	-	11	72	7.9	71	1420.0
Utility services	16	15	24	29	36	4.0	20	25.0
Commerce	10	9	25	32	149	16.0	139	278.0
Transport	-	13	28	26	60	6.4	47(68071)	72.3
Services	145	139	194	214	283	29.2	138	19.3
Total	534	500	620	674	926	100.0	292	10.9

SOURCE: Central Bureau of statistics Ministry of Finance and planning.

year 2000. In other words the problem for Kilifi is to maintain the same rate of employment growth or a slightly lower one rather than stepping up this rate.

8.2. THE AGRICULTURAL BASE.

Agriculture has played a very significant part in modern sector employment in Kilifi especially indirectly as a supplier of raw materials in the form of Cashew-nuts to the Kenya Cashews factory and it is likely to continue to be the basis of further industrialization in the town particularly in processing of crops like cotton and coconuts. Agriculture has contributed greatly to the employment of persons in the rural areas immediately around Kilifi town being the basis of the sisal factories south of the Kilifi creek.

In 1971, there were only 6 persons recorded as employed in agriculture in Kilifi town. This constituted a mere 0.7% of the total modern sector employment in the town. However, informal sector employment of people engaged in sale of agricultural produce must be assumed to be high. As shown in part I of this thesis, Kilifi town lies in an agriculturally high potential and productive area and agricultural production could form the basis of further industrialization mainly in processing of cotton, palm oil and kernels and maize milling.

Policy

Much of the land in the gazetted township boundary and around it will remain agricultural over the plan period since the town is planned to develop along linear patterns, along the coast and along the main Malindi/Mombasa mainroad linking up the Kibarani Industrial area and the existing main town.

8.3. THE INDUSTRIAL BASE.

Kilifi Kenya Cashews Factory at Kibarani, the only cashewnut processing plant in coast province, is the main component of the industrial base of Kilifi town. At present it employs 500 people. It is planned to have a total labour force of 1,300 people by 1980. Most of these will be in the low income bracket requiring low cost housing in close proximity to their place of work.

In 1971, this industry accounted for most of the employment in manufacturing which constituted 32.7% of the total modern sector employment. Assuming that manufacturing will maintain its present employment proportion in the year 2000, of the 4000 jobs expected to be created in Kilifi by the year that year, 1,308 should come from Manufacturing.

Thus the proportion of manufacturing jobs could easily be exceeded taking into account the fact that by 1980, already 1,300 jobs will be existent in one industry and considering that further industries could be created

in the town based on fish processing, cotton ginning and palm oil processing etc.

The objectives.

The objective therefore should be to raise the proportion of manufacturing employment from 32.7% to 45% i.e. to 1,800 jobs in manufacturing, leaving the non-manufacturing sector to take care of the remaining 2,200 jobs. According to the ILO report already cited 320 or 20% the industrial jobs could be in the informal sector.

Land requirements.

The requirements for industrial land at a standard of 100 persons per hectare will therefore be 13 hectares in 1980 and 18 hectares in the year 2000.

Provision of Industrial lands

Much of the Industrial land will be in the Tibarmi area in fact all the 18 hectares. The 320 persons employable in the informal sector should be provided for as part of the residential neighbourhoods, near the commercial areas.

5.4. [illegible]

As shown in table 41 below, in Kilifi are 35 commercial duka, 3 hotels including Mnarani club, 3 bars, one night club and one bank. Very little wholesale business takes place. Most of the retail business is in food and provisions, cloth, household goods. The hotels are in effect more eating places while the bars also provide some boarding and lodging facilities. There is only one open air market at which vegetables, fruits, fish and meat are sold. The market is built in temporary materials.

The source of commercial goods sold in Kilifi town is invariably Mombasa. Kilifi also supplies goods to smaller centres in its immediate hinterland.

TABLE 41 COMMERCIAL ESTABLISHMENTS IN KILIFI TOWN.

DUKAS	35
ENTERTAINMENT, ETC.	
NIGHT CLUBS	1
HOTELS	3 (RECREATIONAL AND TOURIST CLUB)

PETROL STATIONS	2
BANKS	1
MARKETS	1
FURNITURE SHOPS	1
LAUNDRY	1
WATER KIOSKS	2
[illegible]	1
FARMER'S CO-OPERATIVE	1

As Kilifi's population grows there will be greater need for a properly designed and built market which is the responsibility of the County Council or urban council when one gets established. Wholesale trade should also develop in response to development of the hinterlands economic potential. Banking facilities will also have to be developed and expanded.

At a standard of 1 hectare per thousand population, Kilifi town will require about 10 hectares for commercial development. Of these 3 have already been developed. The other 7 will be spread 3 in the existing main commercial centre where vacant land exists and four within the proposed low cost and medium cost housing as shown on map 21.

8.5: THE TOURIST BASE.

As explained in chapter three there is great potential in Kilifi town for reaction capable of supporting 5,000 tourist beds which would result in employment of 2,500 people at the rate of 0.5 persons employed per bed, if fully developed. The employment generation assumed here was derived from a study conducted by a Government working party on the tourist potential along the Kenyan coast.

It is unlikely that all the capacity would be developed within the plan period especially since strong competition emanates from Malindi Watamu, Kikambala and Mombasa. One could safely assume that within the plan period Kilifi would develop not more than 500 beds at most. Of these 88 are already developed at Mnarani club. The remaining 412 could form a basis for the development of two tourist class hotels which together with Mnarani could employ about 250 persons.

The two motels could require about 5 hectares of land each. Two sites have been earmarked on the plan in map 21.

8. Fishing.

Potential does exist for expansion of the fishing industry and it is proposed elsewhere in the report that a fishing cooperative to organize the fishermen and market their produce be formed.

CHAPTER 9.

SOCIAL SERVICES.

9.1. EDUCATIONAL FACILITIES.

Educational facilities have become a must in a country which lays emphasis on the eradication of three basic evils of ignorance, disease and poverty. Without education the right skills for fighting these problems cannot be available. In Kilifi town the education service at nursery, primary and secondary school levels. In addition there are other institutions of an educational nature including a village polytechnic, an orphanage home, a training centre and a tsetsefly research station. A discussion of each of these educational facilities now follows.

9.1.1. Nursery Schools.

Policy: Nursery schools are a necessary institution for preparing children for the primary schools as well as providing daytime care to children thus freeing mothers for other tasks. The policy adopted requires provision of a nursery school per 2,500 population on a minimum of 0.3 hectares.

Existing situation.

At present there are 2 nursery schools in Kilifi - Kibarani area. A self-help nursery school cum adult literary class exists near the secondary school at Kibarani. A conventional nursery school with 168 children in attendance located in the main town area has been selected to become a model nursery school for the whole of coast Province. It will be expected to have 25 children of 3 - 6 years of age at one sitting in each classroom. A moslem Madarasa teaching the Koran has a daily attendance of 150 children who also attend the conventional nursery school. The nursery schools at present occupy about 0.6 hectares.

Number of Nursery Schools required.

TABLE 14- NUMBER OF NURSERY SCHOOLS REQUIRED

1975 - 200

	1975	1980	1990	2000
POPULATION	3290	3930	7050	10050
SCHOOLS	1.3	1.6	2.8	4.0
AREA IN HA.	0.3	0.4	0.7	1.2

As shown in table 4.2 above, 1 nursery school according to the standard adopted should have been adequate for the population in Kilifi town in 1975, 2 in 1980, 3 in 1990 and 4 in the year 2000.

Up to 1980 the present nursery schools will probably be adequate to serve the population of Kilifi town and the present 0.6 hectares could be sufficient although there might be need to relocate the schools. In 1990, another 0.3 hectares would be required while the total area under nursery schools in 2000 would be 1.2 hectares.

Nursery Schools provision:

By 1990 a third nursery school would have to be built, it is proposed, in the proposed low cost housing areas. By 2000 a fourth nursery school would be built in the high cost zone, as shown on map 21.

9.1.2. Primary Schools.

The Policy: The policy adopted for Primary school education is to provide one primary school for

every 5000 population or every 2 nursery schools. Each primary school should be sited on a 2.8 hectare plot.

The existing situation.

One primary school exists in Kilifi town with 7 classes (standard 1 -7) and two streams, 6 teachers' houses, 12 classrooms in 4 blocks, 2 offices, 4 pit latrines and one rubbish pit. The school occupies a 3.2 hectare plot which is located near the low - cost housing areas of Swahili and Msala estates as shown on map 20.

Primary school and land use requirements.

Table 43 shows that one 3 - 4 stream primary school would be adequate up to between 1990 when a second primary school would become necessary. This school would start with one or 2 streams and eventually develop into a 3 - 4 stream one by the year 2000. A total of 5.6 hectares would be required by that time.

TABLE 43 PRIMARY SCHOOL REQUIREMENTS.

YEAR	1975	1980	1990	2000
POPULATION	3290	3930	7050	10050
NO. OF SCHOOLS	0.66	0.79	1.41	2.0
AREA IN HECTARES	2.8	2.8	5.6	5.6

Provision of Primary schools.

The present primary school would be adequate and continue to satisfy the needs of Kilifi's population until 1990. The second primary school which would probably be built between 1990 and 2000 would locate in the proposed low cost/medium cost areas as shown on map 21.

9.1.3. Secondary Schools.

Policy: The policy proposed here is to provide 1 secondary school for every 25,000 people on a site of about 4.8 hectares.

Existing situation.

One secondary school located at Kisarani serves not only Kilifi town but also part of its hinterland as evidenced by the boarding facilities

provided at the school. As an harambee school, it experiences all the problems facing other harambee secondary schools all over the country such as shortage of equipment, teachers and funds. Perhaps the least help that the government could render would be to take over the school. The school is situated on a site of 4.2 hectares which would appear quite adequate.

Secondary school requirements.

TABLE 1.4 SECONDARY SCHOOL REQUIREMENTS.

1975 - 2000.

YEAR	1975	1980	1990	2000
POPULATION	3290	3930	7050	10,050
NO. OF SCHOOLS	1	1	1	1
AREA IN HA.	4.8	4.8	4.8	4.8

From the point of view of Kilifi town's population needs, one secondary school would represent an overprovision. In line with the Ministry of education's policy of building mainly day secondary schools, this one secondary school would suffice. The present secondary school, however, serves not only Kilifi district but also the other districts of coast Province.

Provision of secondary schools.

The existing secondary school should serve the population of Kilifi adequately for quite some time. It needs government support to make it a fully fledged secondary school with proper teaching facilities. Should, in the interests of the hinterland, another secondary school be required in Kilifi then another site of 4.8 hectares would have to be provided.

9.1.4. The veterinary research station.

The present research station occupies 8 hectares and does not need expansion.

9.1.5. Village Polytechnics.

One village polytechnic already exists and another one has been planned to provide 6 trades including carpentery, mechanics, tailoring, masonry with 5 students per trade. The present one is sited on a 0.5 hectare plot. The second one would require about 2 hectares to accommodate all the necessary facilities.

9.1.6. Home training centre.

A proposal exists for a home training centre to provide education in family life. It would require about 0.5 hectares.

9.1.7. Orphanage Home.

One orphanage home exists at Mbarani near the temporary labour lines. The Kilifi community has planned to build another orphanage. It would require about 0.3 hectares.

9.2. HEALTH.

The necessity for health facilities in Kenya can best be seen in the country's efforts to deal with disease as one of the three evils already [illegible]. As a district headquarters Kilifi represents the highest health service in the district. Lower order health facilities are, however, needed to serve the town's population.

9.2.1. The Hospital.

The Existing Situation.

The health service is represented in Kilifi town at the level of a district hospital which serves

Kilifi district as well as parts of Tana River and Lamu Districts. As stated in chapter three, however, there are other hospitals elsewhere in the district, at Malindi and Kaloleni, which also serve parts of the district. The hospitals in Mombasa also cater for the southernmost part of Kilifi district.

The hospital at Kilifi is situated on a site of 7 hectares which is substantially undeveloped. There are 92 beds. It caters for 300 out patients daily. Its staff of 50 includes one doctor, who is also the medical officer of health for the whole district, one nursing sister, 12 enrolled nurses, 4 community nurses, 2 enrolled midwives, 10 ungraded nurses and 21 medical attendants. Problems facing the hospital include inadequacy of beds, staff and staff housing.

Proposals. Proposals exist for the expansion of the number of beds and building of additional staff housing. These could be accommodated on the present 7 hectare site. However, if need be the site could easily be expanded into the empty land to the north and north East of the present site.

9.2.2. Health centres, Dispensaries and clinics.

A district hospital of the scale of Kilifi hospital does cater for many people from outside the town with the result that congestion becomes a problem. It becomes necessary to provide some lower order facilities to cater for the immediate town population. A health centre is therefore proposed to provide all the three levels of service i.e. as a health centre, a dispensary and a clinic. The same health centre could serve as a maternity and child welfare clinic.

9.3. ADMINISTRATION.

Existing situation.

Administration includes local Central Government offices at County Council and district levels. With the exception of some departments or some departmental representatives situated at Malindi, virtually all government offices representing their respective Ministries are to be found in Kilifi town, the district headquarters. Both County and Central Government offices are located in the town centre. They together occupy 1.5 hectares. In addition police lines and workshops

occupy about 2.5 hectares while the Ministry of Works camp measures about 1 hectare. The Prison occupies a site of about 1.5 hectares.

Two problems confront administrative accommodation in Kilifi town. One is the need to serve the Prison Department out of the main town as required by that department's new policy of locating Prisons about 15 miles out of the town. Secondly, the present administrative offices are regarded as inadequate for the requirements of a district headquarters. This problem would be aggravated if Malindi subdistrict attained full district status thus making it necessary for some departments located in Malindi to be established in Kilifi. Thirdly, when Kilifi town attains the urban council status, probably during the plan period, it will require space for its own urban Council offices.

Provision of land for administrative services:

The prison department will have to move to a site outside the town. The site will be decided upon by various authorities and is outside the competence of the present exercise. Central Government offices will be provided as pool offices in a site measuring about 0.75 hectares on the

present prisons site. Another site of 0.15 hectare is reserved for the urban Council offices should these become necessary. As the town expands a Police division will become necessary and a larger site about 2 hectares will become necessary. This is provided for in the structure plan.

9.4. RECREATION AND ENTERTAINMENT.

Recreation and entertainment are essential components of healthy living and have to be provided for. Fortunately Kilifi is a small town in which people can have access to the countryside. It is also blessed to be near the sea with its beaches and fine creek.

9.4.1. PUBLIC HALLS.

There is no public hall in town except the building which is used also as a nursery school in which dances and other social events can be held. If the town grew to the status of an urban Council certainly a town hall would become a necessity. A site is reserved for a town hall.

9.4.2. CLUBS BARS AND HOTELS.

There are two important clubs in Kilifi. The Mnarani Club which also serves as a tourist hotel caters mainly for sea sporting events like fishing competitions, boat racing and swimming. It is a famous club which has existed for the last 20 years. It is the nucleus of present tourist activity in Kilifi town. The second club is that for the Senior Civil servants and caters for the social needs of the Civil servants in the district headquarters. A night club has recently been built in the main Commercial area but is already evoking complaints of noise pollution to the surrounding residential areas. There are about 3 bars and 2 tea shops or eating places in the town.

As the town expands more of these facilities will be required.

Motion pictures are usually provided by the Ministry of Information and broadcasting through mobile cinemas. By the year 2000 there will be justification for building a cinema to serve the

10,000 people expected to be living in Kilifi by that time.

9.4.3. PARKS AND PLAYING GROUNDS

There are no parks and play grounds set aside as such but much of the land fronting the creek could be used for this purpose. A golf course has been in use for a long time and occupies a large area near the D.C.'s house. Small open spaces have been incidentally incorporated in the residential areas. These ruin the risk of becoming dumping grounds for refuse on account of their small size. They should be enlarged in order to be more usefully employed as recreational open spaces.

9.4.3. STADIUM.

Kilifi town does not have a stadium. The only playing ground is at Kitarani near the Secondary School. As a district headquarters, Kilifi directly needs a stadium to handle district games and athletics which are very popular in the country. A site has therefore been proposed for this purpose.

9.4.5. [illegible]

The creek and surrounding cliffs could be further developed for the employment of the population. The calm creek waters provide an excellent opportunity for water sports like diving, swimming, skeeing and boat racing. The Mwarani club organises sports in the creek as well as along the beaches. The cliffs along the creek present a picturesquare view of the creek and the sea as well as being potentially important as resting places for those who want to enjoy the cool breeze from the sea. This facility is largely still idle.

The beaches are located far from the town proper and may not be patronized a great deal by the local people of the town. The beaches and creek could become significant recreational facilities for tourists and some local people. At present the beaches are fronted by private residential development. It will be necessary to assure public access to the beaches as well as provide for hotel development.

9.5. SOCIO - CULTURAL FACILITIES.

9.5.1. Religious Institutions.

There is one mosque in town serving the predominantly moslem community and churches catering for the christians. As the population grows there will probably be need for more mosques and perhaps one more church by the year 2000.

9.5.2. Libraries

There is no library at present. If adult literacy and cultural development of the population are seen as important then there will be need for a library. The library will be on the same side with the town hall.

CHAPTER 10.

UTILITIES.

10.1. WATER SUPPLY SYSTEM.

10.1.1. Sources and quantity.

Water is a necessity in urban living since almost all life's activities are dependent on it. Kilifi's water comes at present from Mzima springs which is also the source of water for Mombasa as well as other areas in Kilifi District. The average daily production of water averages about 335, 350 litres. This water is stored in water tanks on one of the hills in town as shown on map 20.

10.1.2. Water distribution.

The water is distributed throughout the town through a reticulation of pipes of various diameters ranging from ¾ to 2 inches. These pipes are shown on map 20. The daily consumption of water for all purposes averages around 310, 760 litres. With a 1975 population of 3290, the per capita daily consumption stands at 94.5 litres which is by far very

MONTH	AMOUNT FOR THE MONTH IN M^3	AVERAGE PER DAY IN M^3
JULY	8,862,000	295,400
AUGUST	7,497,000	249,900
SEPTEMBER	10,849,000	361,633
OCTOBER	9,192,000	306,400
NOVEMBER	9,912,000	330,400
DECEMBER	9,529,000	317,633
JANUARY	9,809,000	326,633
FEBRUARY	10,959,000	365,300
MARCH	8,257,000	275,233
APRIL	9,352,000	325,066
MAY	8,074,000	269,133
JUNE	10,131,000	337,700
TOTAL	112,873,000	
AVERAGE	9,322,750	310,758

Per capita daily consumption 94.5 litres.
Source: Ministry of Water Development.

high compared to a standard of 67.5 recommended by the U.N. for tropical areas. This high per capita consumption reflects the high consumption by Industry, tourism and public purposes. The domestic per capita water consumption stands at 70.6 litres per day while 13.6 litres per day and that for tourism is 8.5 litres per day.

The water consumption between December 1974 and June 1975 for the various major users as set out in table 4.6. The total number of connections are 242 per month. There are also 7 kiosks selling about 5830 litres of water per day to some of the residents. Peak hours of consumption are 6 - 8.00 a.m. and 5 - 7.30 p.m. The estimated loss of water is about [illegible] per day, due to leakages and other forms of wastage. The whole town is served by piped water supply.

10.1.3. Water Requirements.

Assuming that the present per capita consumption is maintained, 37[illegible],500 litres of water would be required in 19[illegible]0, 674,700 in

USERS	MONTHLY AVERAGE IN LITRES.	DAILY AVERAGE IN LITRES.	PER CAPITA
INDUSTRIAL			
OLD FACTORY	630,642	21,021	
NEW FACTORY	712,286	23,743	
TOTAL	1,342,928	44,764	13.6
PUBLIC PURPOSES			
Hospital	465,000	15,500	
Police	107,714	3,590	
Prisons	91,714	3,057	
M.O.W.	170,857	5,695	
TOTAL	836,285	27,842	8.5

TOURISM			
Naivasha club & Hotel	160,071	5,333	1.6
DOMESTIC AND COMMERCIAL	6,903,466	232,818	70.6
TOTAL	9,322,750	310,758	94.5

Source: Ministry of Water Development.

USER	PER CAPITA	1980	1990	2000
INDUSTRIAL	13.6	53,468	95,919	136,710
PUBLIC PURPOSES	8.5	33,281	59,662	85,015
TOURISM	1.6	6,366	11,420	16,281
DOMESTIC				
OTHER	70.6	277,460	497,740	709,440
TOTAL	94.5	370,495	674,741	947,446

1990 and 947,400 in the year 2000. The details of requirements by major users are shown in table 47. All these requirements are expected to be met from the Sabaki Water Scheme discussed in chapter 3.

10.2. Sewage disposal

Sewage disposal takes two forms in Kilifi town, pit latrines and septic tanks. The high density areas use mainly pit latrines. Public eating places, low density areas, government offices and clubs employ water-borne sanitation. In the high density areas plots have been kept as large as possible - ½ acre - in order to allow for use of pit latrines. As long as this situation obtains such an area should not be allowed to exceed 100 persons per hectare. With increasing population the town will need more widespread waterborne sanitation eventually with piped sewers. Meanwhile increasing use of septic tanks will become apparent while plots in the high density areas should not be allowed to fall below the minimum of ½ acre.

A site has to be set aside for future proper [illegible] works when need arises.

10.3. REFUSE DISPOSAL.

A former quarry near the old Kibarani factory serves as a refuse disposal pit into which a County Council tipper empties rubbish and litter. Some refuse is indiscriminately dumped and later burnt in several places in town. It is necessary to ensure that refuse is proper by disposed of preferably in such pits as disused quarries where appropriate instead of being thrown everywhere there happens to be a small hole. Over and above all a proper refuse disposal site has to be designated for the long term use.

10.4. CEMETERIES.

There are two cemeteries in Kilifi town - a Muslim cemetery near Kilifi Primary School and a conventional cemetery just north of the hospital. Objection has been raised by Kilifi Primary School authorities, health inspectors, and other officers to the continued existence of the Muslim cemetery on its present site. It has therefore to be moved elsewhere. The site near the hospital has been found too small and should be

expanded. As the town grows another cemetery will become necessary near the low and medium cost housing areas.

10.5. POSTAL SERVICES.

One post office serves Kilifi town with 140 line exchanges installed of which 97 are direct lines. The Post office authories regard Kilifi as a slow growing town and hence, the demand does not amount rapid expansion of telephone services. For example only 6 applicants are on the waiting list at present. With growing population and income this service will require expansion nevertheless. The major consummers at present are the Administration, Cashewnut factories and Mnarani club and the people in the low density/high cost housing along the beaches and creek.

10.6. ELECTRICITY.

Map 20 shows the distribution of power in Kilifi town. Kilifi is supplied from a 33 KV line which runs northwards from Mombasa to Malindi serving several other places. The main consumers are the Administration, Mnarani club, hospital,

high cost residential areas and the Cashewnut factories. There are no major plans for expansion. However, expansion will be inevitable with rising population and income.

CHAPTER 11.

TRANSPORTATION.

10.1. INTRODUCTION.

No thorough traffic survey was conducted. This section therefore considers the general problems of transportation facing Kilifi town and makes some general propodals of improvement of the transportation system.

10.2. THE EXISTING SITUATION.

10.2.1. Roads.

The main Mombasa Malindi road passes between the main town and the Kibarani Industrial area. It is an all weather tourist road with relatively fast moving traffic. The Ministry of Works ferry forms a link in this road across the Kilifi creek. The present junctions from the main road into Kilifi town are well spaced. The main road however poses danger to pedestrians crossing from the main town to the Kibarani Industrial area. This problem could be solved by means of pedestrian crossings on the main road.

The towns roads:

Kilifi town has benefited greatly from the third phase of the development of tourist roads. All important town roads have been bituminized. A tourist road runs up the coast northwards to the beach plots. A murum road links Kibarani with the main town area. The cashewnut factory has direct access to the main road. A number of tracks exist linking various parts of the town as shown on map 20.

THE BRIDGE.

The possibility of a bridge across the creek has not been seriously considered by the Government. The existing town plan does, however, propose a bridge to be built not in the near future. The proposed bridging point is, however, unsuitable because at the Kilifi end it falls in a traverse valley which lies in a soft rock area. An alternative site would therefore have to be considered.

10.2.2. The Pathways.

Several pathways exist where vehicular access has not been planned for. All the major roads in the town centre carry pedestrian ways along them.

More pathways and cycle tracks would be required especially to twik up the main town with the Mibarani industrial area.

10.2.3. Airstrip.

There are two airstrips one just outside the northern township boundary which appears to be discussed, and another one on south main land which serves the Mnarani Club mainly. The latter would appear to be adequate for the tourist requirements as well as urgent administrative matters.

10.2.4. Waterways.

No significant water transportation has dev-loped in Kilifi town..Dhows visit the town by sea. Fishing boats also land their catch at the local depot. Sporting boats use the creek and beaches.

10.3. TRANSPORTATION PROPOSALS.

10.3.1. Realignment of the main road.

Should a bridge be deemed necessary then the main road to Malindi would be realigned at its approaches to the creek. This is unlikely to take place until the last years of the plan period.

Nevertheless since land values do tend to increase over time, it would be advisable to reserve the road corridor in the early years of the plan period. In the meantime the ferry will continue to serve the purpose of crossing the Kilifi creek for north and south bound traffic. The deffered area to the west of the proposed road realignment could either become part of the town should the bridge not be realized or excluded if the road realignment took place. In the former case the area could be devoted to residential and light industrial use.

10.3.2. District roads.

In addition to the three existing district roads two of which link the town with the Malindi Mombasa road and one serves the beach fronting development, several others have been proposed in the proposed low cost and medium cost housing areas to link up these areas with the town centre and the Industrial areas. The main road leading northwestwards past Kibarani industrial area will also serve as a district road supplementing the two access roads to the industrial area.

10.3.3. MINOR AND ACCESS ROADS.

These ones would be designed at a later stage when the neighbourhoods are considered in detail.

10.3.4. Motorable tracks.

Some of the more important motorable tracks falling within the proposed urban area or linking up various parts of the area have been adopted. Some have been elevated to road status while those linking the beach development to the Malindi road industrial area,,the main town and around the golf course have been retained as tracks. Their further development would depend on the traffic demand.

10.3.5. Foot paths.

Only major proposed footpaths are shown on the map 21. It is assumed that minor ones will be incorporated in the detail design of the proposed neighbourhoods.

10.3.6. Bicycle tracks.

It is suggested here that district roads and major roads should also have bicycle tracks for use by bicyclists who might require this mode of transport particularly between residential areas and work places.

10.3.7. Airstrip.

The air strip at Mnarani club to continue to serve the town probably with some constant improvements and maintenance.

CHAPTER 12.

THE CENTRAL AREA.

12.1. INTRODUCTION:

The central area serves the important function of being the hub of a town's life. Located here are the town's administration, main commercial area, and cultural activities. The town centre should be designed well to permit free and smooth flow of traffic.

12.2. The existing situation.

Map 22 shows the existing land uses in the town centre of Kilifi. The town centre carries the main commercial and office development. There are two churches and a mosque. The only primary school in the town is located very close to the town centre. A Ministry of Works camp is very inappropriately located near the commercial area immediately around the town centre are residential areas. Council workshops, Police workshops and lines, the Prisons and Ap Lines are found near the hospital. Most of these uses require reorganization.

The existing road network leaves alot to be desired. Not only are the road reserves too narrow but some of the junctions are awkward and the cadastral boundaries require truncations at road junctions.

12.3. Proposed land use.

The proposed land use is shown on map 23. More commercial plots have been designed in the erstwhile empty land. Two markets have been proposed including one open air and one covered market. The police lines and police station have been given virtually the same plot as they occupied before. The land near the hospital has been reorganized in order to accommodate the K.C.C. camp, Administrative Police lines and Chief's offices, County Council workshops and future central government offices. The Prisons department will be expected to move out of the town as explained elsewhere in this report. A site has been reserved for the town hall and library. Two nursery school sites and one for a home training centre have also been proposed.

The road network has been improved chiefly by widening the road reserve and improving on the junctions. A new road has been proposed north of the commercial area. Another link has been proposed via the hospital. Both these are supposed to improve the circulation of traffic in the town centre. All major roads will have pedestrian and bicycle paths. Numerous other paths will criss cross between various points in the central area.

CHAPTER 13.

IMPLEMENTATION AND PHASING OF DEVELOPMENT.

13.1. RESPONSIBILITY FOR IMPLEMENTATION.

Since Kilifi town is still under the jurisdiction of the County Council its development depends very much on the initiative of the Kilifi County Council. However, various authorities are responsible for the various aspects of development of the town.

13.1.1. COMMERCE AND INDUSTRY.

Industrial and commercial development falls squarely on the private sector. Only the parastatal organization of Industrial and Commercial Development Corparation can play a major role in stimulating its growth. However, the County Council has the responsibility of attracting industry to Kilifi town. It can do this by making land and other facilities available cheaply as incentives. The Ministry of Commerce and Industry could also assist.

13.1.2. [illegible]

Residential development is the responsibility of various agencies. Normally high cost housing will be provided by the private sector except where senior civil servants are to be housed when the government puts up houses for them. Low cost and medium cost housing are the responsibility of the local authority in this case the County Council. It is assisted by the Ministry of Housing through the National Housing Corporation in constructing rental or tenant purchase housing. The private sector may also participate by putting up the Swahili type of housing.

13.1.3. SOCIAL SERVICES.

Social services are provided chiefly by the Government. Secondary schools will normally be aided while primary schools are now the responsibility of the Ministry of Education. Nursery Schools should be provided by the community itself on self-help basis. Health is a government responsibility except where private individual may undertake to provide clinics and dispensaries. Administrative offices are usually built by the local or central Government as the

case may be. Cultural facilities depend on the initiative of the community as stimulated by the Ministry of Housing and Social services which also deals with community development. The County Council has a major role to play in this respect.

13.1.4. Utilities:

Various authorities are involved in the provision of ulities in Kilifi town. The Ministry of Water development should provide water and sewerage services to Kilifi town. The responsibility for provision of power falls on the East African Power and Lighting Company under the overview of the Ministry of Power and Communications. Refuse disposal is the responsibility of the County Council. Posts and telecommunications fall on the Posts and Telecommunications authority of the East African Community.

13.1.5. Transportation:

The Ministry of Works deals with any trunk roads that may pass through towns. It is the responsibility of the local authority to build lower order roads. Since the County Councils have

had for quite sometime now alot of financial problems, the central Government does assist in maintaining some of the roads. In the case of Kilifi the tourist roads programme has been of great help to the County Council.

13.1.6. Land Administration.

This is the responsibility of the commissioner of lands who administers central Government land and trust land on behalf of County Councils. The Commissioner of lands will acquire on behalf of the County Council land required for urban purposes.

13.2. PHASING OF THE DEVELOPMENT.

The phasing has been done in three periods : the 1975 - 1980 short term period; the 1980 - 1990 and the 1990 - 2000 periods. The various developments are now listed according to these periods.

1975 - 1980.

1. Building of 371 chiefly low cost housing units take care of the present shortfall and additional population.

2. A total of 2[illegible].2 hectares will have to be acquired for this programme. 18.1 hectares will be needed for low cost housing and 8.1 hectares for medium cost housing.

3. 4 hectares will be set aside for industrial development.

4. 3 hectares in the existing commercial area in the town centre willbe developed for commercial purposes.

5. The tourist hotel site near the tsetse research station to be developed.

6. A fishing cooperation to be established.

7. 2nd nursery school to be built.in low cost housing area.

8. Construction of a village polytechnic and home training centre.

9. Expansion of hospital beds as well as build some new staff houses.

10. Removal of prisons Department from the main town area.

11. Construction of post offices for the Central Government.

12. Development of playing fields and small parks. Also development of a path along the creek for recreational purposes.

13. Ensure public access to the beach near the proposed motel.

14. Extension of water to new low cost and medium cost housing areas.

15. Maintenance of motorable tracks.

16. Building open air market in central area.

17. Removal of M.O.E. camp to new site near hospital.

18. Widening of road reserves with truncastions at junctions for site clearance.

19. New road link north of the commercial area and at the hospital.

1989 - 1993.

1. Additional 624 housing units on 41.3 hectares of which 20.9 hectares low cost, 12.9 hectares medium cost and 7.5 hectares high cost.
2. 5 hectares industrial land at Aibarani.
3. 3 hectares commercial development in low cost housing area.

4. 2nd tourist hotel.

5. Expansion of fishing.

6. 3rd nursery school.

7. Orphanage home.

8. Dispensary and clinics.

9. Urban Council offices.

10. Town Hall.

11. Stadium.

12. Library.

13. Post-us.

14. Refuse disposal site.

15. New cemetery.

16. Reservation of land for main road realignment.

17. District roads in proposed low and medium cost housing areas.

18. Expansion of motorable unpaved roads.

19. Covered market.

1990 - 2000.

1. Additional 600 units on 7.7 hectares of which 19.3 hectares of low cost, 14.9 hectares medium and 40.5 hectares high cost.
2. 5 hectares for industrial development.
3. 3 hectares commercial development in low cost/medium cost housing areas.
4. 2 tourist hotel sites to the north of Kilifi township.
5. 4th nursery school.
6. 2nd primary school for low cost housing.
7. Health centre.
8. Cinema hall.
9. Bridge across creek.
10. Realignment of main road at bridge approaches.

CHAPTER 14

SUMMARY AND CONCLUSIONS

14.1 The purpose of this study was to evolve an urban structure that would integrate the Mberani industrial area with the rest of the town of Kilifi. This was to be seen as case study of a wider phenomenon affecting many small urban areas in Kenya. The exercise was however limited to the specific case of Kilifi in order to evolve an elaborate urban structure that would adequately deal with the town's integration problems.

14.2 In the study a number of background aspects were covered which might well have gone very far into detail. The historical treatment was meant to expose the past activities which have had an impact on the development of Kilifi and its hinterland. It was discovered that the Arabs, Natives, Portuguese and British had considerable influence on the town and region. The most profound impact however came from the British colonial era. Much of what was established then still exists true. The cashewnut factory which is the main distorting element in Kilifi's urban structure has had fuller impact during the Independence era.

The physical, economic, social, demographic and infrastructural aspects of the region were extensively surveyed to reveal the nature of Kilifis region and potential for its development. It may be concluded that Kilifi has a rich hinterland likely to support a large population which the town and several others will be called upon to serve. Indeed it was clear that Kilifi's claim to the whole district as its region was only valid on administrative grounds but commercially and otherwise it shared the region with Mtwapa and Malindi and eventually Mariakani and Voi. It was also realised that Kilifi's growth would be dependent on the development of its hinterland's economic and social potential.

4.2 The urban structure of Kilifi was examined in its various aspects and it was found that the best way to integrate the town rationally was to evolve a linear form of town forming a U shape with one limb along the beach and the other forming the main town area, linking Kibarani industrial area and the rest of the town. Although no evidence was adduced, the proposed structure plan did envisage the contruction of a bridge across the Kilifi creek very late in the plan period or possibly early next century and accordingly made

reservation of the corridor of land necessary for road realignment and the bridging points. To maintain the structure plan gives adequate provision of land for all the proposed uses in Kilifi town up to the year 2000. Infact the overall town density is very low chiefly as a result of two factors.

Firstly it was assumed that Kilifi was unlikely to have piped sewerage within the plan period hence the plots should be large to be consistent with requirements for use of pit latrines and septic tanks. Secondly, the tourist nature of the high cost residential development along the creek and seashores results in large plots of well over 10,000 m^2 which completely distorts the residential densities of the town. If piped sewerage were feasible within the plan period, then the main town area would be much smaller and narrower than proposed.

The resultant urban structure does considerably yet nearer integration of the town and should adequately guide the future development of Kilifi town.

[illegible]

1. [illegible]: *Urban [illegible] Color and*, Journal of the Town Planning Institute, Vol. 50 No.7 19[illegible], pp.[illegible]-10

2. [illegible]rain Morris: *Urban Form*, Journal of the Town Planning Institute, Volume No.1, Jan.19[illegible] pp.3-10

3. [illegible]ord Albers: *[illegible] a Theory of Urban Structure*, Journal of the Town Planning Institute.

4. Chapin F.S.: *Urban Land Use Planning, Second Edition*, University of Ilnois Press, 1965.

5. Dean [illegible] and Woodall [illegible]: *Elements of Land [illegible]*, The Estates Gazette Ltd., London, 19[illegible].

6. Burgess [illegible]: *The Growth of the City: An Introduction to a research project*, Chapter II, pp [illegible], in "The City," by Robert [illegible] Park, Ernest [illegible] and Roderick [illegible], University of Chicago Press (Chicago), 192[illegible].

7. [illegible] — The Structure and Growth of Residential Neighborhoods in American Cities, Govt. Printing Office (Washington), 1939.

8. Rodwin Lloyd: The Theory of Residential Growth and Structure. The Appraisal Journal, July 1950 pp 295-317.

9. Harris C. D. and Ullman E. L. — The Nature of Cities pp 237-47 in Paul K. Hatt and Albert Reiss.

10. Gibberd F.: Town Design. The Architectural Press London, Sixth Edition, 195[illegible].

11 Ericksen E. G. — Urban Behaviour. New York, Macmillan Co., 1954.

12. Meir, R.L.: A Communications Theory of Urban Growth. Cambridge The M.I.T. Press, 1962.

13. Lynch and Rodwin L. — A Theory of Urban Form. Journal of the American Institute of Planners, Nov., 1958.

14. Doxiadis C. A. — Ekistics: The Science of Human Settlements, Hutchinson and Co., London, 196[illegible].

15. Keeble Lewis: Principles and Practice of Town and Country Planning, The Estates Gazette Ltd., London, 196[illegible].

16. Sutton J.E.G. The East African Coast: An Historical and Archaeological Review. Historical Association of Tanzania, Paper No.1, East African Publishing House, 1966.

17. Sutton J.E.G. The Settlement of East Africa, in Zamani, A survey of East African History, edited by B.A. Ogot, [illegible] Longman Kenya, 1968 and 1973.

18. Chittick N. The Coast Before the Arrival of the Portuguese, in Zamani as in 15.

19. Berg F.J. The Coast from the Portuguese Invasion to the rise of the Zanzibar Sultanate, in Zamani as in 15.

20. Ogot B.A.: Kenya Under the British, 1895-1963 in Zamani

21. [illegible]: <u>The [illegible] East Africa.</u> East African Literature Bureau, 19[illegible].

22. [illegible]: The Coastal Tribes of the N.E. Bantu, London, International African Institute, 1952.

23. The Kenyan Coastal Strip: Report of the Commissioner (Robertson Report) Sessional Paper No.9 of 19[illegible]1, Nairobi Govt. Printer, 19[illegible]1.

24. <u>East African Royal [illegible] Report 19[illegible].</u> Her Majesty's Stationery Office, reprinted 1966.

25. McLoughlin J.B.: <u>Urban and Regional Planning: A Systems Approach.</u> Faber and Faber, 19[illegible]9.

26. Friedman, John: <u>The Spatial Structure of Economic Development in Tennessee Valley:</u> A Study in Regional Planning University of Chicago Press, Chicago, March 19[illegible].

27. <u>Regional Development Policy: A Case Study of Venezuela:</u> The M.I.T. Press Cambridge, Massachusetts, 1966.

28. Ferns [illegible] : *Geography's Role in the Planning and Dependency of Local Development in Tropical Africa: as applied to the Rabai [illegible] of Kenya's Kilifi District, Coast Province.* M.A. Thesis, Carleton University, Ottawa, Ontario, 1972.

29. Taylor D. R. F. : *Development of Central Places in The Coast Province Kenya*, Dept. of Geography, Carleton University Ottawa, Canada, 1972.

30. Physical Planning Dept: P *Coast Province Regional Physical Development Plan*, Republic of Kenya, May 1971.

31. Ministry of Works *Roads Map*, 1972

32. Republic of Kenya: *National Development Plan 1974-78*, Govt. Printer Nairobi, 1974.

33. ILO *Employment, Incomes and Equality: a strategy for increasing productive employment in Kenya*, 1972

34. [illegible] Report on the [illegible], Report of the [illegible] Working Party, April, 1971.

35. Physical Planning Department: [illegible] Development Plan for Kilifi, 1964

36. Govt. of Kenya: Kilifi town files

37. Commissioner of Lands Records

38. Central Bureau of Statistics: Statistical Abstracts 1971, 1972, 1973

39. Central Bureau of Statistics: Employment and earnings in the [illegible] Sector 1963-1967, 1968-1970 and 1971

40. Central Bureau of Statistics: Kenya Population Census 1969 Volume 1 and [illegible]

41. East African Standard, January 10, 197[illegible] - [illegible] History

42. Daily Nation April 7, 1972: [illegible] Complex for Lead and Silver

43. [illegible] November, 8, 1973: [illegible]

44. Town Planning Department, [illegible] College Ibadan, final year Project: Structure of a [illegible] Town: outline development proposals for [illegible], 1969-19[illegible]; Ministry of Lands and Housing, [illegible], [illegible] STATE OF NIGERIA, 1969.

45. [illegible] T.S.[illegible]: The location of a district headquarters in [illegible] [illegible], Diploma Project,

46. [illegible]: The Development of Ocean and Water front Policies and Programmes; Diploma Project, September, 1973.

47. Physical Planning Department: A Study of the possible distribution of urban growth in Accra as a framework for Physical Planning; September, 1969.