A SPATIAL APPROACH TO THE PROBLEM OF RURAL-URBAN

IMBALANCE: A Case Study of Ruvuma Region

in Tanzania.

By

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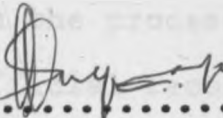
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Declaration

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

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ABSTRACT

This research has dealt with the problem of
rural development and specifically the ever rising
gap in socio-economic welfare between the urban
centres and rural settlements. It has been
empirically observed that in most developing countries
the urban centres enjoy a higher standard of living
and experience a faster rate of development than
settlements nestling within their hinterlands. Such
a disparity is much more pronounced in lagging
regions where rural settlements are scattered and
the internal transport and communications systems
are mediocre:

In addition to reasons advanced by other
disciplines, such as irrational past investment
decisions which favoured urban centres, adverse terms
of trade against the rural sector etc., this research
contends that the poverty of rural settlements is due
to lack of access to urban-based facilities e.g.
market, credit, medical, higher education etc. and
social services that would allow them to increase
their productivity through the use of local resources.
This access can only be realized in a situation
where the settlement system is functionally integrated

through a series of linkages, namely physical
(i.e. transportation network - connectivity), economic
(i.e. functional complementarity between lower and
higher order settlements), commerce, social and
administrative.

The study of the spatial organization of Ruvuma
region reveals that, despite the villagization
programme, rural villages are still geographically
scattered. A majority of these settlements have
limited access to the only urban centres of Songea,
Mbinga and Tunduru (mostly due to poor roads and
distance) where most of the services needed to
satisfy basic needs and support rural resource
development are located. Other rural settlements
are disadvantageously located with regard to economic
resource base e.g. areas of low soil fertility, low
rainfall, steep slopes etc.

Given the present low density of population,
financial and manpower resource scarcity and having
analysed the spatial pattern of the economic resource
base of the whole region, it is proposed in this
study that settlements should be located nearer to

the all-weather roads. This will form 'development
corridors' or development axes along the Njombe-
Songea, Songea - Mbamba Bay and Songea - Mtwara
routes. New all weather roads should be constructed
to open up specific resource areas such as the
Mbinga - Liparamba road. Such a settlement framework
ensures maximum interaction among settlements
and promotes the development of rural settlements
relative to urban centres for development forces
from urban latter can be easily channelled to the
former.

CHAPTER ONE

INTRODUCTION

1. PRELIMINARY REMARKS

For quite long, much research effort has been
made on issues related to planning of urban areas
and, consequently, significant contributions have so
far been made with regard to theories and models
of urban growth, location of various land-uses in
urban areas, urban transportation etc. But not as
much work has been done on the planning of human
settlements in the rural areas. This has resulted
in the development of dual economies whereby the
urban economies are superior to' the rural economies
in terms of productivity, technology, and proximity
to infrastructure and amenities. In Africa, these
urban centres were few and were intended to be the foci
of colonial communities, as such they were replicae
of European towns. In such a situation these urban
centres developed faster while the rural economies
continued to be underdeveloped.

The tempo of urbanisation experienced by
developing nations during the last three decades,
inevitably forced planners, government policy makers

and scientists[1] to review their traditional approaches in regional planning and policy.

It is now realised that the urban pressures and their related problems[2] are to a large extent a reflection of the undesirable situation in the countryside.

The standard of living in the rural areas is still far below that enjoyed by the urban dwellers. A majority of rural people live in abject poverty, low productivity, limited job opportunities, inaccessible to social services. Housing in these areas simply means 'shelter' regardless of the quality of the building materials used, structural safety, clean water supply, healthy sanitation, accessibility to school, place of worship, shopping centre and medical facilities. All the above mentioned facilities are basic in raising the welfare of rural inhabitants and to that effect it is the central objective of

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1. The most prominent are: Friedman J., REGIONAL DEVELOPMENT POLICY: A Case Study of Venezuela, 1970, and Moseley M.J., GROWTH CENTRES IN SPATIAL PLANNING, Pergamon Press, First Edition 1974.

2. These problems include: housing shortages, inadequate water supply, unemployment, crime traffic congestion, epidemic diseases etc.

many states to provide the rural people with the mentioned facilities.

In contrast to the rural situation, the urban centres in general, though to a limited extent[3] provide a much better human environment characterized by high productivity, a variety of job opportunities, high monetary incomes, decent and durable houses well served with tapped water, electricity, drainage and sewerage, good transportation system which enables easy access to a wide range of infrastructure and amenities such as shopping, education, health and entertainment (e.g. cinema, night clubs etc.). For the urban dweller, most of these facilities are located within walking distances.

However, within the same urban centres and especially the fast growing ones, the demand for the above metnioned facilities has disproportionately expanded beyond the capacity of the urban economies to accommodate the rapid increase in population.

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3. Excluding the unplanned areas where development is characterised by shanties and clusters of informal activities, petty jobs, no water supply, poor sanitation, no street lights etc.

Consequent to this phenomenon is the deterreoration
in the standards of living of the affected urban
centres and the impoverishment of the affected urban
dwellers.

The high rates of population increase in the
urban centres is, among other factors, due to high
rates of rural-to-urban migration. Migration to urban
centres in this context, is a natural response to the
existing disparity in living conditions found in the
rural areas compared to the 'bright lights' of the
city. Both the unfavourable living conditions in the
rural areas ('push effects') and the attractiveness
of urban life (the 'pull effects') compound the forces
for rural-to-urban migration especially by the
energetic young group of rural populations. The volume
of migration from rural to urban centres is one of
the measurable variables that indicates the degree
of rural-urban imbalance in the levels of social and
economic development.

Numerous reasons have been advanced in an
attempt to explain the factors responsible for the
said disparity. For example, economists contend that
the rural areas are less developed because the existing

exchange relationships with urban centres is poor
or in other words, they face adverse terms of trade.
This fact discourages investment in the rural areas.
Others argue that the present disparity between rural
and urban areas is due to deliberate past investment
decisions which favoured urban development and
neglected the rural settlements.

Unlike the economic, sociological and political
reasons given in many other studies, this study
applies the comprehensive planning approach with the
proposition that some rural settlements lag behind
because:-

(i)   They are not exposed to the development
        dynamics i.e. technology, trade,
        specialization etc.

(ii)   They are unfavourably located with
        regard to geographical and ecological
        factors e.g. areas with inadequate
        rainfall, very ragged areas, too remote
        from main transportation network, etc.

(iii)   Of the uneven distribution of the urban
        centres where most of the social
        infrastructure e.g. hospitals, schools

etc. and economic services tend to be
concentrated.

Hence, in order to achieve an equitable develop-
ment of settlements in a region, there must be a
macro spatial plan of all the settlement that
overcomes the above metnioned bottlenecks. The
spatial system must integrate the urbanized centres
and the rural hinterlands so as to enable the
'trickle down' effects of regional development to
take place at a much faster pace.

The above proposition is based on one basic
assumption that prior to the monetization of rural
economies, the spatial location of human settlements
were not determined on economic grounds but mostly
on historical, (e.g. defence), cultural (e.g.
attachment to tribe or clan) and physical considerations
(e.g. access to water supply, good agricultural land
etc.). Each community produced just for its
subsistance, thus, trade between settlements was
negligible. This ad hoc location of rural settlements,
accounts for the scattered nature of these settlements,
poorly connected to each other and to the urban centres.
Hence, to bring about equitable development to

all the settlements is a difficult task given the
nature of rural economies (poor communities) and
the financial resource constraints most developing
countries face.

2. OBJECTIVE OF THE STUDY

Beset with the above mentioned problems,
the author using Ruvuma region, in Tanzania, as a
case study, attempts to formulate (as a demonstration)
a spatial framework of human settlements that would
promote and accelerate equitable socio-economic
progress of rural settlements aimed at reducing the
rising rural-urban disparity.

The spatial framework is bound to vary from
region to region depending on the physical charact-
eristics, location of existing infrastructure, the
spatial distribution of economic resources and both
the political commitment and public participation.

In order to achieve this objective, the
spatial framework should be planned in such a way
that;

(i)   it facilitates the efficient utilization of local resources to meet local demand as well as produce surplus for export,

(ii)   it promotes easier interaction among the various settlements to facilitate trade and the flow of knowledge and technology from higher order settlements down to the villages,

(iii)   it provides easy'access to basic services (e.g. education, health etc.) to a majority of the inhabitants and that these services are provided at minimal costs,

(iv)   it discourages massive rural-to-urban migration through the gradual elimination of the 'push' factors in the rural settlements.

3. NATURE OF THE PROBLEM AND ITS SIGNIFICANCE IN DEVELOPING COUNTRIES

That the existing rural-urban difference in the rates and levels of development is an undesirable

phenomenon is an obvious case, but the problem with
which researchers and planners need to be preoccupied
·is how to redress this situation.

    In most developing countries of Africa, Asia
and Latin America particularly those regions whose
economies are based on agriculture, the problem
in this case has special significance than is the
case of the industrialized economies because:

    (a)   a high proportion of the population in
           developing economies reside in rural
           settlements,

    (b)   the rapidly growing urban centres have
           low capacities to effectively absorb
           the rapid population growth and thus
           problems of unemployment and inadequate
           provision of the basic facilities
           and services are not uncommon features
           in most of the towns,

    (c)   the high rate of rural-to-urban migration
           which reinforces the problems in
           (b) above causes a detereoration in the

living standards of some urban inhabitants.
In other words, this process involves the
transfer of poverty from the rural areas to
the urban centres.

Awakened by the above mentioned developments,
many governments and international organizations have
been forced to restate their development policies
in favour of the rural majority and to rectify the
skewed spatial development patterns. At the HABITAT
conference in Vancouver there was a poster with the
following inscriptions:-   ,

> "RURAL NEGLECT OF RECONSTRUCTION,
> As cities have grown, rural areas have
> been abandoned and neglected. Small
> planned communities in rural areas
> could do much to stem the tide of
> migration to metropolitan areas and
> lead to healthier economic and social
> growth".

According to recent policy statements, most
developing countries have stressed rural development
as their prime objective. However, the approaches
taken differ from country to country depending on
the ideological commitment, existing economic
structures, existing spatial distribution of
settlements, land tenure systems etc. For example,

Kenya has adopted a rural development strategy by
designating growth centres to be located closer
to the rural settlements which will stimulate economic
growth and will at the same time act as suitable
centres for the provision of basic facilities.[4]

Tanzania, with her socialistic commitment,
decided to move the people from their traditional
isolated homesteads in small clan villages to be
settled in economically larger villages or nucleated
settlements.[5] Each village must have a minimum of
250 families and should not exceed a maximum of 800
families. These villages are basically rural and
they form the lowest levels in the national settlements
hierarchy. Each village is supposed to be provided
with all the basic facilities e.g. a primary school,
a dispensary, shops, a clean water source, electricity,
and should be connected to all-weather roads.

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4. For detailed discussion refer, Physical Planning
   Department, Ministry of Lands and Settlement,
   HUMAN SETTLEMENTS IN KENYA. A Strategy for
   Urban and Rural Development; Nairobi, 1978
   edition.

5. This policy is well spelt out in the "Villages and
   Ujamaa Villages Act 1975." Government Printer,
   Dar-es-Salaam, 1975.

These two approaches, though they seem, prima facie, to be different, have one objective in common: that is the promotion of rural development simultaneous with the growth of urban centres.

4.   AREA OF STUDY

Any region in a developing country is suitable for this study, but the radical approach taken by Tanzania has influenced the choice of the study area. Tanzania has taken a radical structural transformation of rural settlements by resettling rural populations into bigger villages as an attempt to promote rural development. However, the geographical location of these villages in relation to the economic space[6] is very critical in bringing about the desired rate of development to all the people. Hence research related to the structure and pattern of settlements at any administrative level is important for the planners for policy adjustments at the local level.

6.   Space related to the concentration in the
      movement of economic activities as indicated
      by trade relations. Thus, the economic space
      of a town does not necessarily correspond
      to its hinterland (say 15 km. radius) if
      it does not effectively trade with that
      hinterland.

The research covered the whole of Ruvuma region (which is an Administrative Unit) comparising of three districts, namely, Songea District, Mbinga District and Tunduru District.

The major reasons for chosing Ruvuma region as a case study include:

(a) it is representative of most of the lagging regions for it has most of the characteristics of a backward region such as:

(i) being in remote Southern part of the country, poorly linked with other regions with mediocre internal transportation and communi-cation facilities,

(ii) having a high rate of emigration to the regional headquarter and to other regions with industrialized urban centres,

(iii) being sparsely populated,

(iv) experiencing a high rate of urban
population increase,

(b) the villagization programmes has been
successfully completed, where all the
rural populations are settled in 303
villages,

(c) of late, the region attracts techno-
economic studies[7] related to the development
of the region especially with regard to
resource potential'and possibilities of
resource use.

It is hoped that this study could be a
valuable input in the preparation of long-term regional
integrated development plans for the Ruvuma region
and offers an example of disagragating national
development policies to suit local situations.

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7.   The UNDP is studying the Ruvuma river basin,
     ILO is studying and intends to finance the
     improvement of the internal road network, the
     British government is financing the
     construction of the Makambako - Songea road:
     a major road that links Ruvuma with the other
     industrialized regions e.g. Morogoro, Dar-es-
     Salaam, Moshi, Tanga and the Capital City of
     Dodoma.

5. METHODS OF DATA COLLECTION

The following three methods were used for the collection of relevant data:

(a) Visual appraisal of the physical characteristics, economic activities and the quality of roads was done through field visits to selected parts and settlements and also the interpretation of regional maps which show the location of settlements, the road network, physical and geological characteristics, vegetation etc.

Visits were made to all district headquarters and in each district a random choice of ten settlements was made for actual physical observation and discussions. This made a total of 30 villages out of the total 303 villages in the region. This makes a random but spatially representative sample of ten percent.

(b) Discussions with a cross-section of people. This method was used to get the

views of the local people and administrators
with regard to problems they face in
their day to day life, rural poverty,
urban problems etc. Those interviewed
included heads of government departments,
politicians, businessmen (i.e. traders,
transporters etc.), religous leaders,
village leaders, urban migrants, peasants
and some school-going youth.

(c) Official government documents and other
studies[8] provided valuable material for
this study. Reading of these materials
enlighted the researcher to identify
development problem areas, past attempts
to solve the problems and the reasons why
they failed, future development plans etc.

Table 1 presents a list of variables used in the study.

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8. These studies include:
United Republic of Tanzania, RUVUMA REGION
INTEGRATED DEVELOPMENT REPORT, 1975 (unpublished);
Ministry of Lands, Housing and Urban Development,
"Songea Interim Land Use Plan 1977/78, the Draft
Tunduru and Mbinga Interim Land Use Plans 1978/79"
(unpublished).
BRALUP, "Agro-Economic Zones of Southern Tanzania"
Research Paper No. 49, University of Dar-es-Salaam,
December 1971.

Table 1

List of Variables (indicators) Used in the Study and Sources of Data.

Name of Variable or (Social-econ. Indicators)	Sources of Data	Use in thesis
1. Population size	Population Census 1967 and 1978	Description of demographic conditions.
2. Rate of Migration	"	Determination of the volume and direction of population movements.
3. Population Age-sex Structure	"	Determination of labour force characteristics.
4. Employment*	Interim Land Use Plans for Songea, Tund-uru and Mbinga	Comparison of employment conditions betwe-en rural and urban areas
5. Household Incomes	Household Budget Survey 1969.	Comparison of Cash earnings between rural and urban areas.
6. Access to Socio-economic services e.g. hospital	Ruvuma Regional Report	Comparison of Rural - Urban Welfare.

Table 1   Contd.

7. Settlements hierarchy	Official Records	Assess the spatial distribution of Services.

* Data on Employment in Rural areas are scanty and not
  officially collected as those of urban areas.

6.   LIMITATIONS

Apart from the normal research problems of
limited time and financial resource constraints,
there are some specific problems which the researcher
encountered in this study area.

First, the demographic data as published in
the 1967 and 1978 censuses are not easily comparable
because different enumeration areas were used. The
1978 census was based on administrative wards while
that of 1967 was based on larger enumeration units.
In addition, census data do not give population
figures by individual settlements except for the
three urban centres of Songea, Mbinga and Tunduru.

The second problem is the great distances
which must be covered in an area where transportation
is poor (both bad roads and a very limited number
of vehicles)[9]. This fact impeded the researcher
to move easily to all target settlements for
interviews and physical observations. Thus much
of the data had to be gathered from documents at
the regional and district headquaters and from a few
ward centres which could be easily reached.

Thirdly, at the time of the study, there was
hardly any map indicating the regional resource base
and development constrinat areas e.g. disease infected
areas, inferle soils, inadequate rainfall etc. in
the region. Thus, maps indicating these constraints
were adopted from those produced in the Ruvuma
Integrated Report of 1974.

Fourthly, data on population mobility especially
in relation to the labour market are scanty and very
unreliable because there has not been any recent
comprehensive study on migration trends in Ruvuma region.

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9. Public transportation was severely hit by shortage
   of fuel to the extent that the sale of petrol and
   diesel were centrally rationed by the Regional
   Planning Officer.

7. <u>THESIS PRESENTATION DESIGN:</u>

The first chapter introduces the study problem
and its significance in the context of Tanzania and
other developing states. Then, it introduces the
study area and discusses the methods used for data
collection, major sources of data and their limitations.

Chapter two, provides a theoretical base of
the study problem. It starts by defining the concept
of rural - urban imbalance, its determinants and
then discusses both short and long term effects such
an imbalance can bring to an economy.

The third chapter, reviews the physical,
climatic, social and economic characteristics of the
region with special emphasis to their spatial
dimensions. This analysis helps to identify areas that
can support settlements and those which cannot at the
present level of technology.

The fourth chapter chapter examines the
existing spatial location of the population, the
distribution of basic infrastructure and the
communication methods between the settlements. Two

selected variables(cash household incomes and access
to medical facilities) are used to partially
demonstrate the extent of rural-urban gap in welfare.
This chapter enables the identification of those
settlements that are favourably located and those
which are not with respect to economic resources and
access to physical and socio-economic infrastructure.

Using the findings from chapters two and three,
the author in chapter five proposes the spatial
framework of human settlements suitable for Ruvuma
region to promote an equitable regional development.

CHAPTER TWO

THE CONCEPTUAL FRAMEWORK

This chapter defines the concepts and reviews
the literature related to the study problem. It
highlights the implications of such a situation
and the need for rural development, as a strategy
to rectify the imbalance.

1. DEFINITION OF RURAL-URBAN IMBALANCE

In this study the term 'rural-urban imbalance'
is used to refer to the gap in per capita incomes
and in social welfare that exists between urban
and rural settlements. All settlements which are
not gazetted as urban centres are referred to as
rural settlements. The urban economies have
relatively higher per capita incomes and a better
standard of living than the rural sector. The gap,
in most cases, widens as one moves away from the
urban centre because,

> ".... almost all economic activities
> (apart from agriculture and extractive
> industry) are carried out in or near urban
> centres...."[1]

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1. Moseley, M.J., GROWTH CENTRES IN SPATIAL PLANNING,
   Pergamon Press, First edition 1974 p. 138.

This agglomeration of economic activities in selected geographical locations led scholars[2] to conclude that development does not appear everywhere and and all at once: it appears in points or development poles with variable intensities; it spreads along diverse channels and has varying terminal effects for the whole of the economy; they tend . to consider development as essentially polarized in the sense that forces inherent in the development process worked towards the clustering of economic activities and growth and towards an imbalance between the industrial-urban centres and the rural settlements.

During the same period, T.W. Shultz in his studies of the implications of urban-industrial development for agricultural development in the U.S.A. came up with three hypotheses:

> ...."(1) Economic development occurs in a
> specific locational matrix .... (2) These
> locational matrices are primarily industrial-
> urban in composition.... (3) The existing
> economic organisation works best at or near
> the centre of a particular matrix of
> economic development and it also works best
> in those parts of agriculture which are

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2. Nobably Boudeville (1961), Hierschman (1958) and
   Myrdal (1957) who gave Perroux's sectoral
   polarization a geographical demension.

situated favourably in relation to the centre."[3]

According to Vernon Ruttan[4] many studies have
been made to empirically test the validity of these
hypotheses. The effect of these studies has been
the development of a model of rural development in
which the rural community is linked to the urban-
industrial economy through a series of market
relationships:[5]

(a) The product market through which the
    commodities produced in the rural sector
    are transmitted to the urban sector and
    through which incomes are generated
    to rural areas;

(b) The markets for purchased inputs through
    which move the capital and operating
    inputs in which the new technologies are

3. T.W. Shultz, "A Framework for Land Economics ...
   The Long View", in Journal of Farm Economics,
   Vol. 33 (May 1951) pp. 204-215;
   T.W. Shultz, ECONOMIC ORGANIZATION OF AGRICULTURE,
   New York, McGraw-Hill, 1953, p. 147.

4. Von Ruttan, "Rural Development Programmes: A
   Skeptical Perspective", in NEW CONCEPTS AND TECHNO-
   LOGIES IN THIRD WORLD URBANIZATION ed. John
   Friedman, Los Angles, July 1974.

5. Vernon W. Ruttan, "Agricultural Policy in an
   Affluent Society", Journal of Farm Economics,
   Vol. 48 (December 1966), pp. 1110-1120.

embodied, that the rural economy obtains
from the industrial sector;

(c) The <u>labour market</u> through which labour
is allocated between the rural and the
urban sectors and among economic and
household activities in each sector;

(d) The <u>credit and land markets</u> through which
both land and non-land assets are
rellocated both between and within the
urban and rural sectors;

,

(e) The <u>market for consumer goods and services</u>
through which rural families achieve
access to or are excluded from the patterns
of consumption which characterize urban
families.

In developing countries the markets for
consumer goods represent an important source of
change in the transition from subsistence to market
agriculture.[6]

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6. Stephen Hymer and Stephen Reswick, "A Model of an
    Agrarian Economy with Non-Agricultural Activities",
    <u>American Econ. Review</u>, Vol. 59, September, 1969,
    pp. 493-506.

Thus, according to this model, the possibilities
of rural development depend on both the rate of
growth of the urban economy and the efficiency with
which the intersectoral product and factor markets
are operated. For example, rural development in
France was inhibited for a century by the stagnation
in demand associated with slow growth of both
population and per capita income. Neither the product
market nor the labour market functioned as dynamic
sources of rural development.[7]

Apart from the above mentioned theories which
explain the mechanisms underlying the formation and
growth of economic development centres there exists
another body of theories - the so-called central place
theories - which were originally developed by
Christaller (1933)[8] and extended by Lösch (1940)[9].

7. William W. Wade, "Institutional Determinants of
    Technical Change and Agricultural Productivity
    Growth: Denmark, France and Great Britain
    1970-1965", (Graduate School, University of
    Minnesota), 1975.

8. Christaller, W., CENTRAL PLACES IN SOUTHERN
    GERMANY, Englewood Clifts. Translated from
    the original German Version, Jena, 1933.

9. Lösch, A., THE ECONOMICS OF LOCATION, New Havon,
    1954 Coun. (First German ed. 1940).

These theories attempt to explain the structure of spatial organizations, that is:

(a) The pattern of clusters of human activity is characterized by relative locational positions and distribution in geographical space, size distribution and differentiation in functional composition;

(b) The network of movement facilities for people, commodities and information that connect the clusters and

(c) The distribution and density pattern of agricultural and other space exploiting activities.

Christaller, arrived at a model of spatial organization in which human activities are organized in geographical space so that <u>horizontally</u> they:[10]

(a) are located in regularly spaced clusters forming triangular lattices;

10. Tormod Hermansen, 'Development poles and development centres' in GROWTH POLES AND GROWTH CENTRES IN REGIONAL PLANNING, ed. A. Kuklinski, Geneva 1972. p.

(b)   are centrally located within hexagonally
        shaped trading areas;

(c)   have their higher order central places more
        widely spaced than the lower order ones;

(d)   have their lower order central places
        located at the gravity centres of triangles
        formed by places at the next higher order.
        Vertically, the spatial organization is
        characterized by having;

(e)   higher order centres which supply all the goods
        supplied by lower order centres but, in
        addition, a number of goods of a wider range
        distinguishing them from and setting them
        above the lower order;

(f)   higher order centres, larger with respect to
        number of activities, range of goods produced,
        volume of business and trading areas than lower
        order centres;

(g)   a definite hierarchy can be established in the
        system, in which a number of levels corresponding
        to the number of classes of goods can be
        identified.

Basing his analysis on a much more elaborate
economic base and while adhering to the assumptions
of Christaller, Lösch's findings can be summarized
as follows:

(a)   There is one superior centre where all
       the goods are produced;

(b)   There is real specialization, division
       of labour and trade between centres, i.e.
       smaller centre supply larger centres with
       their specialized products;

(c)   There is a concentration of centre in
       "city rich" sectors, separated by
       interstitial sectors which are less densely
       packed with centres;

(d)   Nothing can, without further assumptions
       be said about the relative sizes of
       centres, except that the superior one
       will be larger than all the others.
       Centres with the same number of functions
       do not necessarily prove the same kinds
       of functions.

(e) Assuming that the size of centres is
proportional to the number of plants,
it can be shown that within 'city rich'
sectors, the size of centres increases
within the distance from the central
place and that smaller centres tend to
be located about halfway between larger
ones.[10]

A relatively more recent theory on the
geographical development of growth centres has been
advanced by Pottier (1963)[11] who countends that
economic development normally tends to be propagated
along the main transportation routes linking the
most important industrial centres and is thereofore
manifested in linear geographical paths. This theory
is important in that it contributes to the integration
of theories on the effects of transportation network
with theories of urban hierarchies and geographical
development poles or centres. For, according to Pottier,

10. Gardner, B., 'Models of urban geography and
    settlement location' in R.J. Charley and
    P. Haggel, MODELS OF IN GEOGRAPHY, London, 1967.

11. Pottier P., 'Axes de Communication et. développe-
    ment economique', R. écon. 1, 1963. (Translated
    by Tormod Hermansen).

....."Several factors work together in a
process of circular commulative causation,
which explain the strong tendency for
economic development to be concentrated
along the original national transportation
channels during the intial stages of
industrial growth. When traffic increases
along a transportation route as a result of
interregional trade, scale economies leading
to lower unit transportation costs can be
obtained. Since low transportation costs
stimulate trade and generate increased traffic,
the transportation infrastructure and the
modes of transport could be steadily improved
by means of capital investment and the
introduction of new techniques. A cumulative
process would be started which would tend to
concentrate transportation demand and
facilities along the original axes. Then,
industry, commerce and population would be
attracted and would in turn create easily
accessible factors and product markets likely
to attract more industries. This commulative
process would be particularly strong at the
points where two routes cross and create
junction effects. Agriculture in close proximity
to such axes and functions would benefit by
easier access to larger markets and also by
more frequent contacts with agents dissemminating
information of technological and cultural
innovations. This in turn would give rise to
impulses for social change and make the areas
more coducive to development and growth."[12]

2. RURAL-TO-URBAN MIGRATION

The most striking effect of the differential

rates in development between rural settlements and

urban centres has been the continued flow of people

from the rural areas to urban areas. This process

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12. Tormod Hermansen, op. cit. pp. 44-45.

is called rural-to-urban migration and it is in fact
a demographic process of adjustment to differences
in living conditions that exist between the two
sectors.

This mobility of population affects the labour
markets of an economy, as Eliot[13] had earlier
observed that a distinctive characteristic of labour
markets in Africa has been the migration of people
from a home area to those areas where wage employment
was available. This has often resulted into urban
unemployment which is the concern of most politicians
and planners.

Associated with such a shift is the spatial
relocation of people from a rural area to an urban
centre, there can exist a variety of economic,
social and political costs and benefits. For example,
economic costs are incurred in the actual move itself
as well as in the provision of housing, sewer and
water facilities, schools and other amenities in the
urban centre for the incoming migrants. Furthermore,
an economy incurs a real cost if the migrants are
employed less productively after migration than prior

13. Eliot J. Berg, "The Economics of the migrant
    labour system", in URBANIZATION AND MIGRATION IN
    WEST AFRICA, ed. Hilder Kuper, Berkerley:
    University of California Press, 1965 p. 160.

to their migration.

There is an extensive literature with regard
to the determinants of rural-to-urban migration and
their findings, mostly in concensus, are well
summarized by Barber, in the following paragraph;

> "Migration studies in Africa, using different
> statistical techniques, confirm the results
> of the impact of income variables in the
> destination area on migration. Barber in
> his study in the area on migration. Barber
> in his study in the Federation of Rhodesia
> and Nyasaland, Chadwell in his study in
> Ghana, and Elkan in his study in Uganda
> record the importance of income and employment
> opportunities in an urban centre or some
> other destination area as a determinant of
> migration.[14]

In general, rural-urban migration is not
simply a function of economic motive, but rather
a complex set of economic and social factors which
either attract migrants to urban areas (pull forces)
or compel migrants to move from their rural setting
(push forces). Gun[16] differentiates these forces
as:

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14.   William J. Barber, THE ECONOMY OF BRITISH
       CENTRAL AFRICA: A Case Study of Economic
       Development in a Dualistic Society, Stanford:
       Standford University Press, 1969, Chapt. IV.

15.   Angus M. Gun, HABITAT: Human Settlements in
       an Urban Age, Pergamon Press, 1978 pp. 56-57.

a. Pull forces

   (i)   Economic - prospects of material welfare, improved standard of living, higher wages in urban occupations, lot of job opportunities, more profit in industrial sector than in agriculture.

   (ii)   Social - the educated and trained villagers seek intellectually satisfying occupations available in cities, availability of information media, newspapers, radio, TV etc., to join families already migrated to urban centres, recreational facilities, shopping centres, medical facilities are. available in cities etc.

b. Push forces

   (i)   Economic - growing pressure of population on land, increase in rural debt, unemployment or underemployment, small holdings of agricultural land due to divided inheritance, lack of alternative sources of income, joblessness after harvest.

(ii) <u>Social</u> - insufficient social amenities
like recreation and shopping centres,
poor state of medical facilities, lack
of educational institutions, ineffective
maintenance of law and order, rivalries
in villages, desire to live near the
centres of administration, lack of
proper housing, electricity, water supply
a sewerage, insufficient transportation
and communication facilities, information
media e.g. newspapers, radio and T.V.
are seldom found in villages.

In rural areas where these forces are rampant, the
rate of emigration is bound to be high. An
understanding of these theoretical explanations are
a useful input for any policy of rural development.

3. RURAL DEVELOPMENT

As a positive reaction to the adverse effects
of the development pole/centre strategy, that is
of neglecting the rural areas and the resulting
rural-urban imbalance, a strategy for rural development
has had global acceptance.

It is now widely[16] accepted by regional
planners and policy makers that an effective rural
development policy is one in which increases in
the opportunities for employment (i.e. increasing
rural productivity) by the introduction of, for
example, intensive agriculture, factories for
processing agricultural products and workshops for
repairing agricultural implements and at the same
time bring the benefit of health, education and
welfare services to rural settlements. This policy
has the objective of broadening the economic base
of rural areas so as to make rural settlements more
attractive places in which to live and work and thus
discourage rural-urban migration.

Rural settlements should be planned in such
a way that they help to smooth the transition
between rural and urban life and to narrow the gap
between the living standards of the two areas by
disseminating urban attitudes, providing job

16. Many international forums on regional develop-
     ments or Human Settlement Development have
     advocated rural development as a prerequisite
     for the achievement of equitable regional
     development and vital to reducing rural-urban
     migration; e.g. HABITAT, Vanconver 1976;
     the Stockholm Conference on Human Environment,
     1974.

opportunities, education, health, welfare facilities
and public utilities.

With regard to the planning of human settlements,
the Stockholm Conference on Human Environment[17]
recommended that:

(i)   a regional development plan should
        entail the identification and
        promotion of suitable growth centres
        within the region where the provision
        of socio-economic facilities can be
        economical and also attract investment
        in other sectors;

(ii)   the established rural centres should
      · be provide diversified job opportunities
        either on permanent basis or seasonal,
        especially in areas where the
        agricultural cycle leaves farmers idle
        for part of the year. The growth of
        these centres can be stimulated by the
        establishment of agro-based industries.

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17. UN., HUMAN SETTLEMENTS, "The Environmental
     Challenge" - presented at the Stockholm
     Conference on Human Environment, 1972.

These centres act as 'stoppers' to rural-urban
migrants because it is usually cheaper to meet
basic needs and easier to adjust to urban
lifestyles in places closer to their original
homes.

Essentially, these recommendations advocate that
in planning human settlements, it is necessary to
designate some centres above the village level that
will serve a group of villages and be capable of
attracting, by their enhanced job opportunities,
migrants who might otherwise move to already congested
urban centres.

The foregone review on the theories of
development poles and growth centres, central place
theories, migration theories and the rural development
strategies provide an insight for an understanding
of the socio-economic dynamics and the pattern of
settlement that take place in Ruvuma region. These
theories provide explanations for the existing
situation and can be used to forecast likely
future trends in the economic and settlement develop-
ment of the region.

CHAPTER THREE

PHYSIOGRAPHY AND THE REGIONAL ECONOMIC BASE

This chapter briefly examines the physical, social and economic factors that influence the settlement pattern in the Ruvuma region. These factors are:

    (a) physical characteristics i.e. topography, soils, drainage etc.

    (b) climate i.e. temperature and rainfall

    (c) population characteristics

    (d) economic resource base - indicating the spatial location of the major economic activities e.g. agriculture, forestry, mining, industries etc.

The analysis then enables the identification of: (i) those areas which are suitable and capable of supporting the growth of settlements and simultaneously raising the welfare of the inhabitants; (ii) those areas that are capable of supporting dynamic settlements but require some initial expenditures to improve the conditions for development

e.g. provide an irrigation system where rainfall is
inadequate or unreliable, open up a new road etc.
and (iii) constraint areas which are not suitable for
human settlements unless substantial financial
investments are incurred to overcome the constraints.

This exercise exposes those settlements which
are unfavourably located with regard to development
e.g. remote areas, infertile areas etc.

THE NATIONAL SETTING

Ruvuma Region is located in the remote South-
Western corner of Tanzania approximately 600 km. from
the national industrial city of Dar-es-Salaam and
400 km. from the new capital of Dodoma.

Geographically the region lies between latitudes
$9^{o}42'$ and $11^{o}48'$ in the South and longitudes $34^{o}30'$
and 38° in the east. As shown in map no. 1 it is on
the border between Tanzania and Mozambique in the South
and with Malawi in the West. The river Ruvuma forms
the natural border in the former case while Lake Nyasa
forms the boundary with the latter case.

At the national level, the Region is flanked
by Iringa Region in the North-West portion along river

UGANDA

KENYA

L. Victoria

ZIWA MAGHARIBI

MARA

MWANZA

KILIMANJARO

SHINYANGA

ARUSHA

KIGOMA

TABORA

SINGIDA

TANGA

DODOMA

L. Tanganyika

ZAIRE

RUKWA

MOROGORO

IRINGA

PWANI

ZAMBIA

MBEYA

MALAWI

LINDI

RUVUMA

L. Nyasa

MTWARA

MOZAMBIQUE

Indian Ocean

| RUVUMA REGION: | N ▲ | SCALE 1:50000 |
| NATIONAL CONTEXT | THESIS MAP NO. 1 | NYUMAYO A. S. C. M.A PLANNING UNIVERSITY OF NAIROBI 1980 |

Ruhuhu, Morogoro Region in the North and Mtwara and
Lindi Regions in the Eastern part. The Region covers
an area of 64,233 sq. km. which consitutes 6.9%
percent of the total area of Tanzania. Out of the
total area of 64,233 sq. km. about 2,978 sq. km. is
a water mass of Lake Nyasa and an area of 6,010 sq. km.
is covered by forests.

According to the 1978 census, the Region recorded
a total population of 564,330 people which is 4.38
percent of the national total population. The
population is sparsely distributed registering an
average population density of 9 persons per square
kilometre. Despite the low population density, the
region loses quite a high proportion of its labour
force who migrate to seek wage employment in the
industrially·developed regions of Dar-es-Salaam, Tanga,
Arusha etc.

Ruvuma Region's economic importance to the
nation essentially lies in its now recognized
potential to produce agricultural crops and in
particular maize which is the national staple food.
Table 1 shows the range of crops that can be cultivated
in the region and their production trends between

1972/74 and 1977/78. Apart from its agricultural development potential, recent discoveries of the Liganga-coal and Mchuchuma-iron deposits complex[1] located in the north-western border of the region with Njombe district, when exploited, will put the region in a position to supply iron products to the nation. The development of this industry if well planned is likely to put the region into high gear of development because of their inherent backward and forward linkages.

Although the region is presently considered an underdeveloped region, it has a high potential for growth and development. Using growth (a) performance indices[2] and (b) Natural Resources indices[3], D.G.R. Belshaw[4] in his dynamic analysis of Regional Growth Performance in Tanzania places Ruruva Region in

---

1. Technical and economic studies for the Liganga iron were completed in 1973. Technical reports confirm the possibility of smelting 500,000 tons of iron per years.

2. Performance indices include per capital incomes, are calculated from regional income statistics, Bureau of Statistics, Dar-es-Salaam.

3. Natural Resource Indices include land carrying capacity per family: calculated from "World Bank" (1974), Tanzania: Agricultural and Rural Development Sector Study.

4. Belshaw, D.G.R.; "Decentralized Planning and Poverty-Focused Rural Development: Intra-Regional Planning in Tanzania" in PAPERS ON THE POLITICAL ECONOMY OF TANZANIA (ed.) by Kwan S. Kim (et. al.), Hienememann Educational Books Ltd. Nairobi 1979, p. 49.

Table 2

Major Crops Production Trend in Ruvuma Region 1973-1978

Crop	Area	1973-74	1974-75	1975-76	1976-77	1977-78
Maize	R	103,800	144,951	164,759	130,000	150,000
	N	783,854	1,332,301	1,512,986	1,648,066	1,465,008
	% of N	13.2	10.9	10.9	7.9	10.2
Tobacco*	R	n.a	2,980	2,259	4,522	2,614
	N	1,855	2,985	2,259	4,549	2,653
	% of N	-	99.8	100.0	99.5	98.5
Wheat	R	3,240	4,170	6,072	6,500	928
	N	88,776	83,330	67,314	61,578	54,690
	% of N	3.6	5.0	9.0	10.6	1.7
Coffee	R	3,046	3,121	3,250	2,297	3,398
	N	42,355	52,082	55,359	48,681	50,687
	% of N	7.2	6.0	5.9	4.7	8.2
Cassava	R	118,603	288,306	604,140	215,000	3,398
	N	1,044,819	1,370,009	1,277,828	1,277,828	2,493,918
	% of N	11.4	21.0	34.3	16.8	0.13

Note: R = Regional Production
      N = National Production

      Fire-cured Tobacco

Source: Extracted from Bulletin of Crop Production Statistics, Ministry of Agriculture.

category A2: which he calls development potential
regions. In terms of the income per capita index the
region has the lowest and has shown a moderate increase
in per capita income of 47.5 per cent between 1966/67
and 1973/74. On the other hand the natural resource
indices e.g. land with adequate rainfall per standard
family (1974), Ruvuma region has the highest in the
country i.e. 42.6 hactares. All these facts show that
the region's resources are yet to be exploited in order
to raise the standard of living of the people in
Ruvuma region. The underdeveloped state of the region
is due to both historical and economic factors.

(a)   Historical - The region was one of the deliberately
       neglected areas by the colonial development
       policy aimed at creating pools of unskilled labour
       for their plantations in the northern part of
       Tanzania. This is evidenced by the high rate
       of male migrants to Tanga, Dar-es-Salaam and
       Morogoro as shown by the 1967 census analysis.

(b)   Economic - First, the region is poorly linked
       with the rest of the country especially during
       the wet season when the Songea - Makambako and
       Songea - Mtwara roads are almost impassable by
       heavy vehicles. The same applies for the internal
       transportation network where all the roads are

either gravel or earth roads. The internal
roads conditions are summarized in table 3.

Table 3

Length of road by road types

Road type	Km. in Region	% of Regional total
Bitumen	2	0.1
Gravel	42	2.9
Earth	1,405	97.9
Total	1,499	100.0

Source: Government of Tanzania, Ministry of
Transport and Communications, 1979.

Secondly, the region has a high rate of
emigration. The migrants mostly move to Tanga, Morogoro,
Dar-es-Salaam and Lindi for wage employment. This
implies that the region looses its active labour
force. The 1967 census recorded that 8.7 percent of
the regional population migrated to other regions.

ADMINISTRATIVE DIVISIONS

Ruvuma region is divided into three districts Mginga, Songea and Tunduru. Each district has an urban centre bearing the name of the district and Songea town is both the district headquarter for Songea district and the regional headquarter.

Each district is again divided into divisions as shown in map no. 2. The divisions are then subdivided into wards which consist of a number of villages which are the lowest units in the regional administrative hierarchy.

PHYSIOGRAPHY AND CLIMATE

Much of the information in this section is derived from the National Atlas and the Ruvuma Integrated Development Report of 1974.

Relief

Ruvuma region lies between 470 meters above sea level in the lower Tunduru and the Ruvuma river plains and 1,800 meters above sea level in the Matengo Highlands, a part of the Rivingstone Mountains which flank the shores of Lake Nyasa. There is a gradual rise in altitude as one moves from east to west and the north western portion of the region is also hilly.
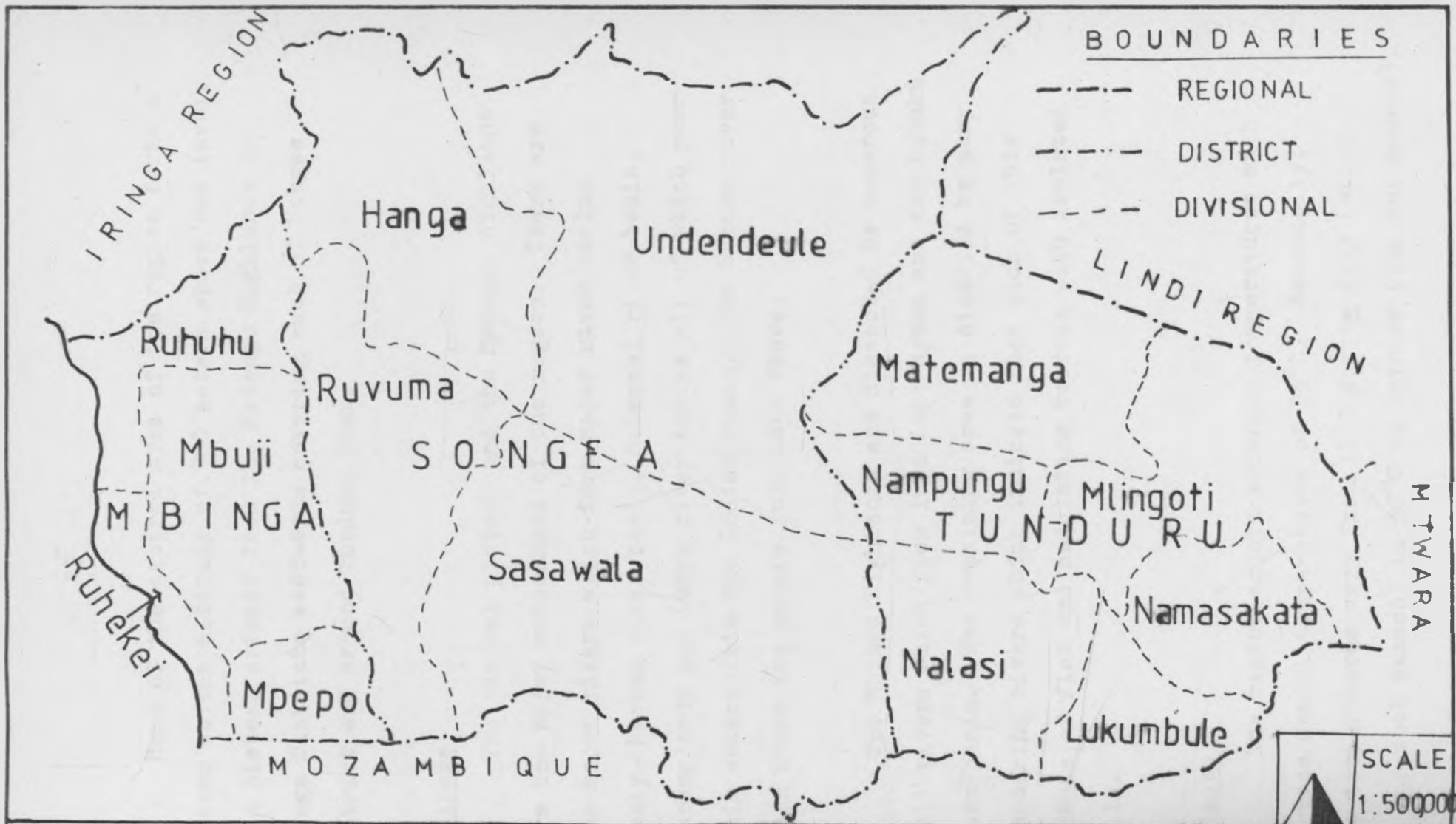
RUVUMA REGION: ADMINISTRATIVE DIVISIONS

BOUNDARIES

— · · — REGIONAL
— · · · — DISTRICT
— — — DIVISIONAL

IRINGA REGION

Hanga

Undendeule

LINDI REGION

Ruhuhu

Ruvuma

Matemanga

Mbuji

SONGEA

Nampungu

Mlingoti

MBINGA

TUNDURU

Ruhekei

Sasawala

Namasakata

Nalasi

Mpepo

Lukumbule

MOZAMBIQUE

MTWARA

THESIS MAP NO. 2

NYUMAYO A.S.C
M.A. PLANNING
UNIVERSITY OF
NAIROBI 1980

SCALE
1:500000

Much of the central area of the region forms a plateau at the altitude of 900 meters above sea level. This plateau extends from the Matengo Highlands in Mbinga Districts eastwards covering much of Songea District and around Tunduru town.

Drainage

The central plateau and the Matengo Highlands form the major watersheds of the region. There are four major rivers which form major river basins namely, Ruvuma river basin, Muheresi river basin, Mbarang'andu and Lwegu river basins all of which pour their waters into the Indian Ocean. The Ruhuhu river basin pours its waters into Lake Nyasa.

The Mbinga Highlands are dissected by numerous small rivers which flow into Lake Nyasa and the Ruhuhu river basin. The remaining area is dicected by many meandering rivers which indicate that much of this area is of flat and undulating terrain with isolated hills.

Climate

The region enjoys moderate temperatures with average annual temperatures of 23°C. Seasonally, the temperatures vary from 13°C during July (which is the cool season) to 30°C in October (the hot season).

The highlands have much lower temperatures and the range is relatively smaller.

Most of the region receives adequate and reliable rainfall except for some isolated pockets which receive rainfall less than 1,000 mm. per annum. These areas, as shown in Map no. 3 include; the northern most part of Ruhuhu Division in Mbinga District, the central zone of Hanga Division and the northern half of Undendeule Division in Songea District, the north-eastern half of Matermanga and Mlingoti Divisions in Tunduru District. In these areas irrigation is a prerequisite for undertaking any viable agricultural cultivation. However, much of the Matengo highlands get annual rainfall of over 1,200 mm.

Despite the reliability in rainfall enjoyed in this region and its almost even distribution, the rainfall is periodic and as such divides the year into two distinct seasons namely, the dry season (June-October) and the wet season (November-May). The dry season is so hot that it fastly evaporates the moisture from the soils rendering the latter very dry except the Matengo highlands where, due to altitude has lower temperatures and hence less

evaporation. Here, double cultivation is possible
through simple irrigation methods e.g. small canals.

This seasonal characteristic of the rainfall
has significant planning implication in achieving
full employment and optimum use of the land. What
do these people do during the dry season? Are there
any alternative sources of employment in their rural
setting? These questions will be dealt with at a
latter stage in this chapter and in chapter three where
an analysis of the existing settlement pattern in
the region is made.

Soils

The study of soils is essential for the evaluation
of the region's agricultural potential. For it is
the type of soil and the intensity of rainfall that
determine the plant cover i.e. the species of trees
and grass including the type-of agricultural cops.

According to the national Atlas of Tanzania,
the soils in Ruvuma region can be simply categorized
into three types based on the criteria of their
agricultural potential or fertility. Thus they are
classified as:

SOIL F

MI

LC

A

N
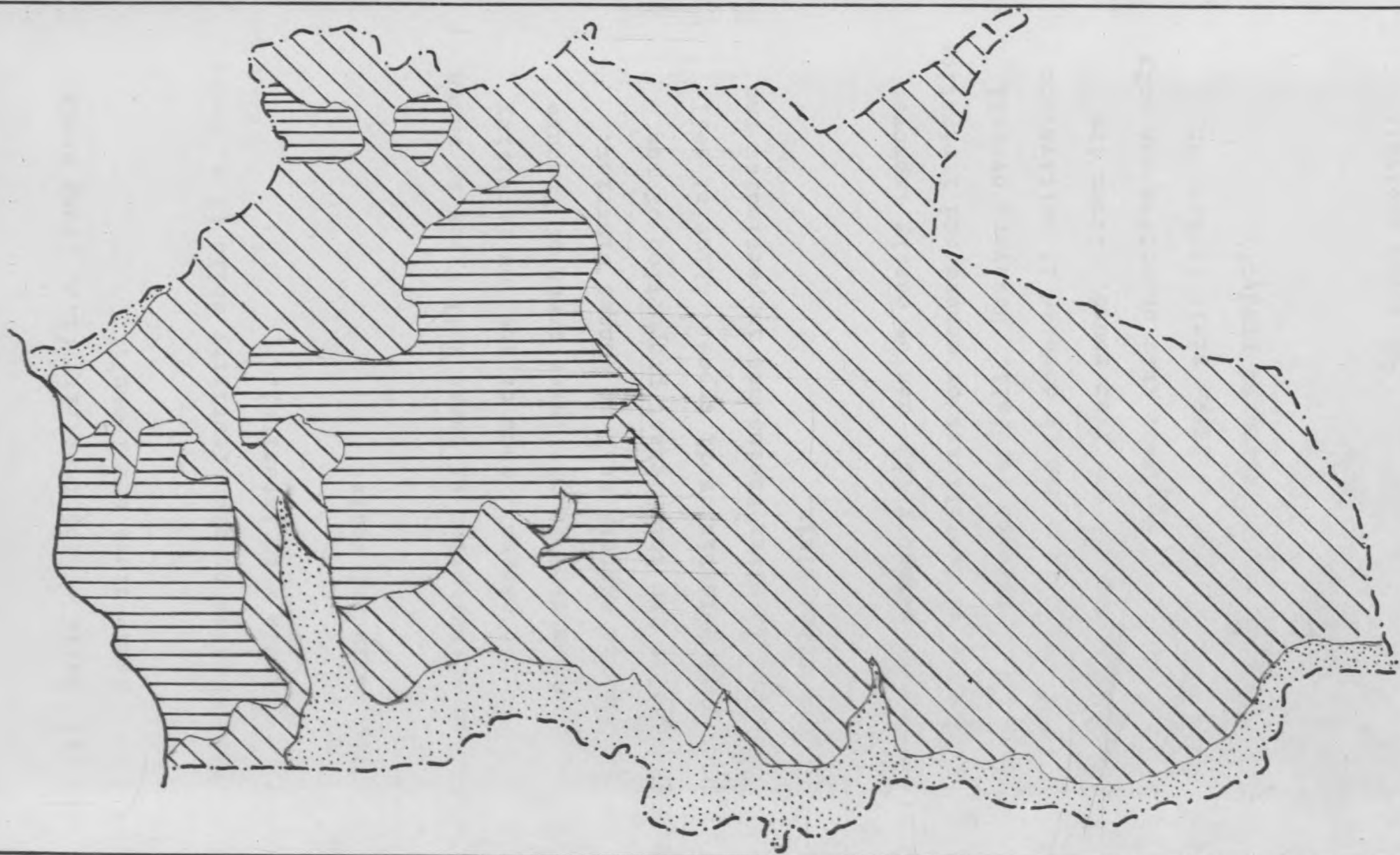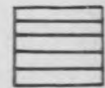
R U V U M A   R E G I O N :   SOIL POTENTIALITY

(i)   Soils of low fertility (i.e. loamy sands,
       sandy clays and loams).

(ii) Medium to high fertility soils (i.e. loamy
       sands with laterite).

(iii) Alluvial soils.

The spatial distribution of these soil types is shown
on Map n. 4. In general, much of the low fertility
soils are predominant in the lower areas of Tunduru
district and the eastern half of Songea District.
Mbinga District has the highest proportion of the
medium to high potential soil types. Alluvial soils
are restricted to river basins and in particular the
Ruvuma river flood plain.

     Soils ·of category (i) can be easily improved
through the use of fertilizers or manure and irrigation
in areas with inadequate rainfall. However, overall
agricultural production can be doubled if cultivation
could be undertaken all the year round. Given the
seasonality effect of rainfall this objective can only
be achieved with extensive large scale irrigation
schemes which is a very expensive project.

Development Constraint Areas
     It can be concluded from the above analysis of
the physical and climatic conditions of the region that

LEGEND

 STEEP SLOPES
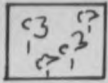
 FORESTS

 AREAS WITH MEDIUM & HIGH SOIL FERTILITY

l.f. LOW RAINFALL

remote

l.f.

l.f.

l.f.

l.f.

To Mtuara

TUNDURU

l.f.s.
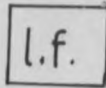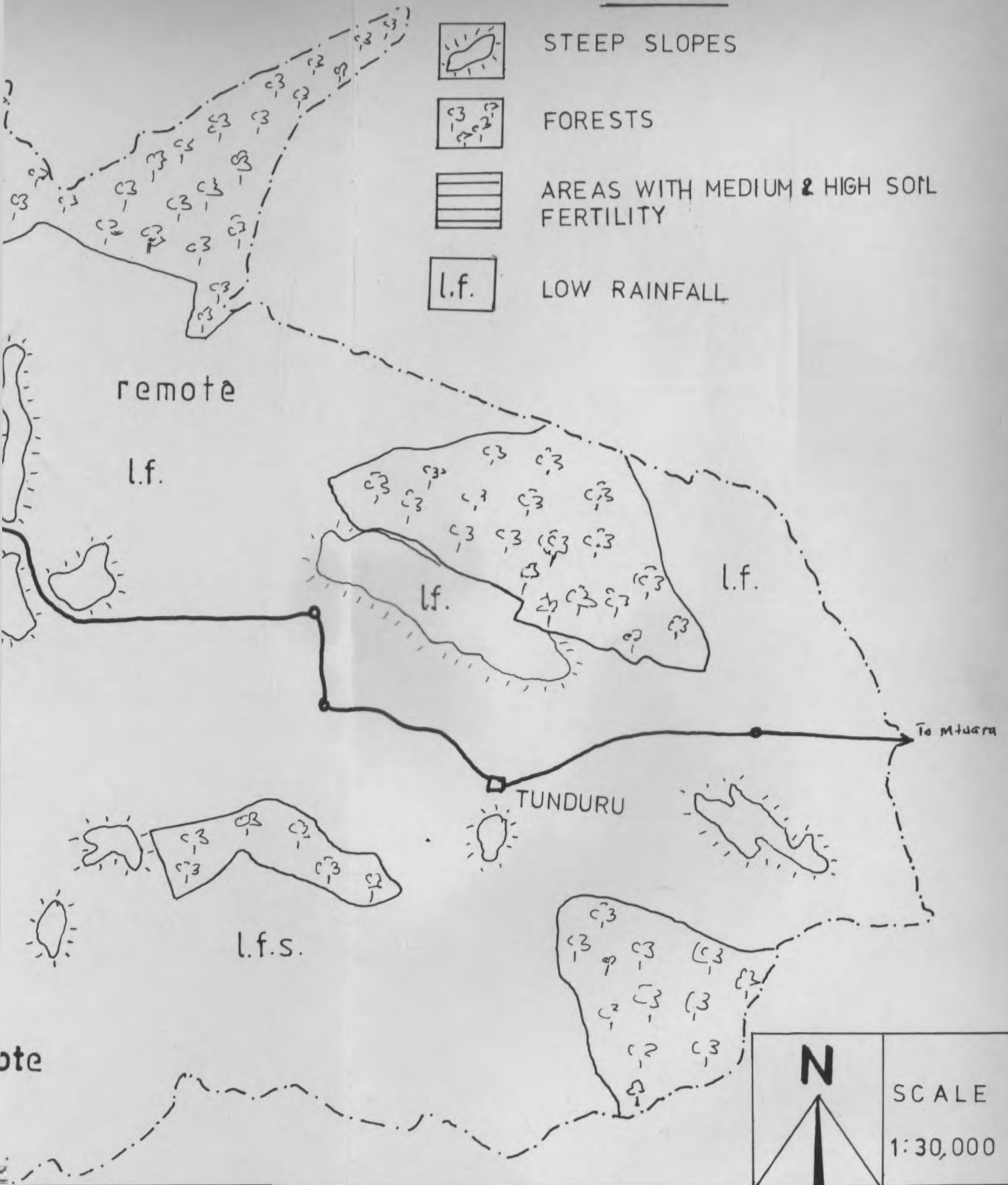
ote

...AINT AREAS

THESIS MAP	NYUMAYO A.S.C. M.A. PLANNING UNIVERSITY OF NAIROBI 1980
NO. 34	

N

SCALE 1:30,000

To Makambako

remote

l.f.s.

SONGEA

MBINGA

remote

l.f.

remote

l.f.

remote

l.f.

l.f.

To Mtwara

TUNDURU

l.f.s.

remote

N
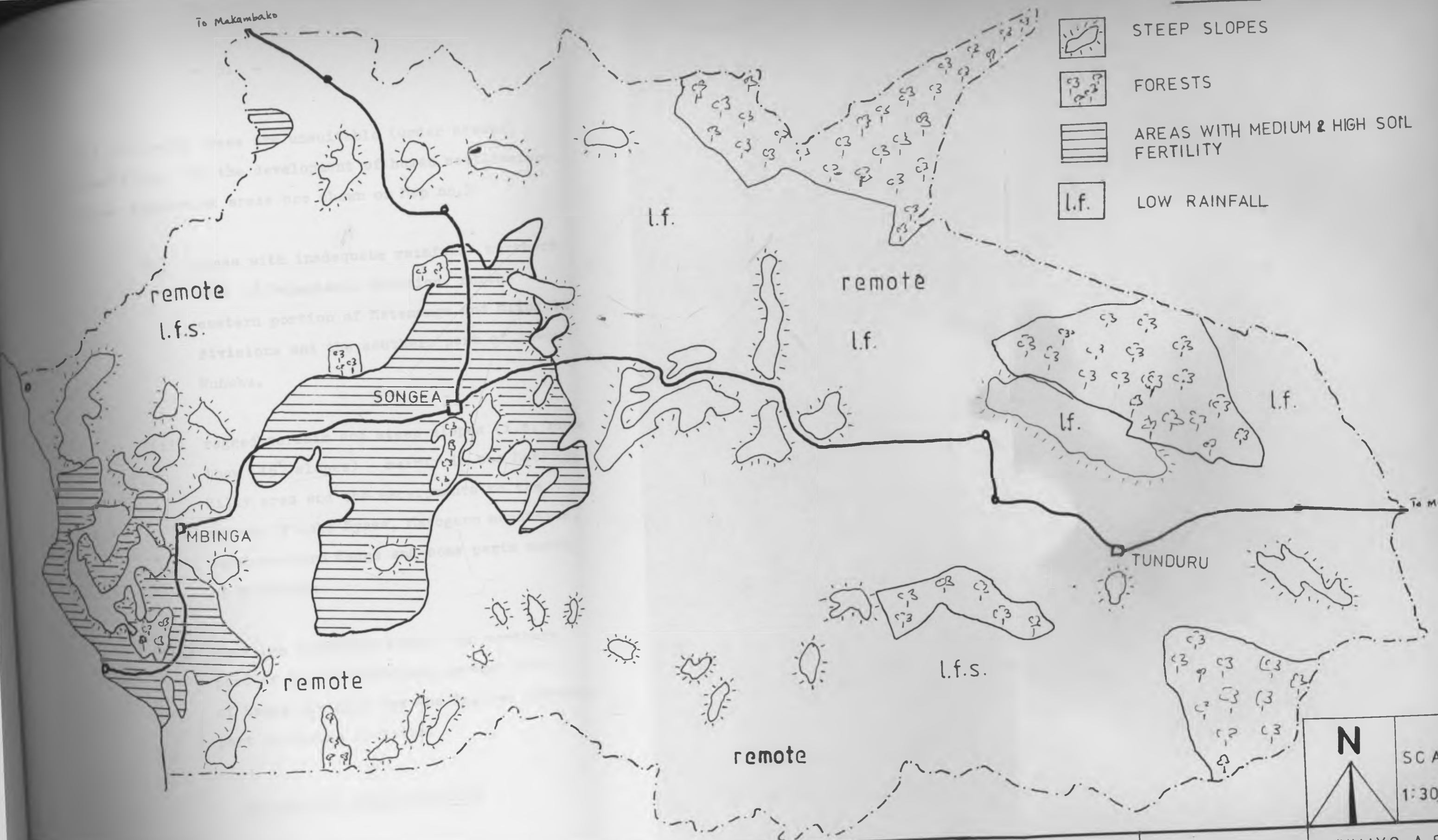
UVUMA REGION :   PHYSICAL CONSTRAINT AREAS

the following areas are unsuitable (under natural
conditions) for the development of human settlements.
These constraint areas are shown on Map no.3.

(i)   areas with inadequate rainfall: northern
        half of Undendeule division, north-
        eastern portion of Matemanga and Mlingoti
        divisions and the southern part of lower
        Ruhuhu.

(ii)   ragged terrain and steep slopes (i.e. more
        thaw 15° slopes) - mainly in the Matengo
        Hilly area and the, escarpments to the
        shores of Lake Nyasa, Matogoro mountains,
        north-western Hanga and some parts north
        of Matemanga.

(iii)   very low fertility soils - in northern
        part of Ruhuhu division, central zone
        of Hanga division and the farther northern
        part of Ruvuma division.

DEMOGRAPHIC CHARACTERISTICS

Population

In 1978 Ruvuma region had a population of
564,330 people compared to a total population of

393,000 people in 1967. This represents an absolute
increase of 171,330 inhabitants or 43.5% during the
intercensus period 1967-78. During this period the
population of the region increased at an annual rate
of 3.9 percent.

The average population density in the region
is approximately 9 persons per square kilometer.
Mbinga district has the highest density in the region
and especially Ruhekei and Mbuji divisions which
recorded densities of 51.2 persons per sq. km. and
30.8 persons per sq. km. respectively. It seems there
is a close relationship between soil fertility and
population density as Bertil Egero observed in his
analysis of migration movements and remarked that,

> "Besides acting as a quantitative expression
> of distribution, population density also
> gives a crude measure of the relationship
> between a population and its land resources"[5]

He observed that highest rates of population increases
occured in those districts which have a high
agricultural potential due to fertile soils, well
established cash crops or to proximity to a major

5. Bertil Egero (ed.), THE POPULATION OF TANZANIA,
   An analysis of the 1967 population census,
   census volume 6, Dar-es-Salaam, jointly published
   by BRALUP and Bureau of Statistics, 1973, p. 51.

urban market. Population density by divisions is
shown on Map 5. The table below shows the changes
in population densities by division indicating
divisions which are losing people and recepient ones.

Table 4

Population Density by Divion 1967-1978

District	Division	Area Km^2	Population per Sq.Km.		% Change 1967-1978
			1967	1978	
Songea	Hanga	4,600	4.4	11.0	+150.0
	Ruvuma	7,420	9.0	14.2	+ 58.
	Undendeule	12,523	2.9	2.3	- 26.
	Sasawala	9,518	2.5	3.8	+ 52
Tunduru	Matemanga	5,120	2.4	3.8	+ 58
	Mlingoti	4,530	5.5	3.7	+ 48
	Lukumbule	2,383	4.9	6.7	+ 37
	Malasi	2,530	7.9	11.0	+ 39
	Namasakata	2,313	6.6	10.0	+ 52
	Nampungu	1,901	7.1	7.5	+ 50
Mbinga	Mbuji	4,000	18.0	30.8	+ 71
	Mpepo	1,508	8.9	7.3	- 22
	Ruhekei	681	45.8	51.2	+ 12
	Ruhuhu	2,229	12.6	12.3	- 3

Source: Population Censuses 1967 and 1978.

RUVUMA REGION

POPULATION DENSITY BY DIVISIONS 1978
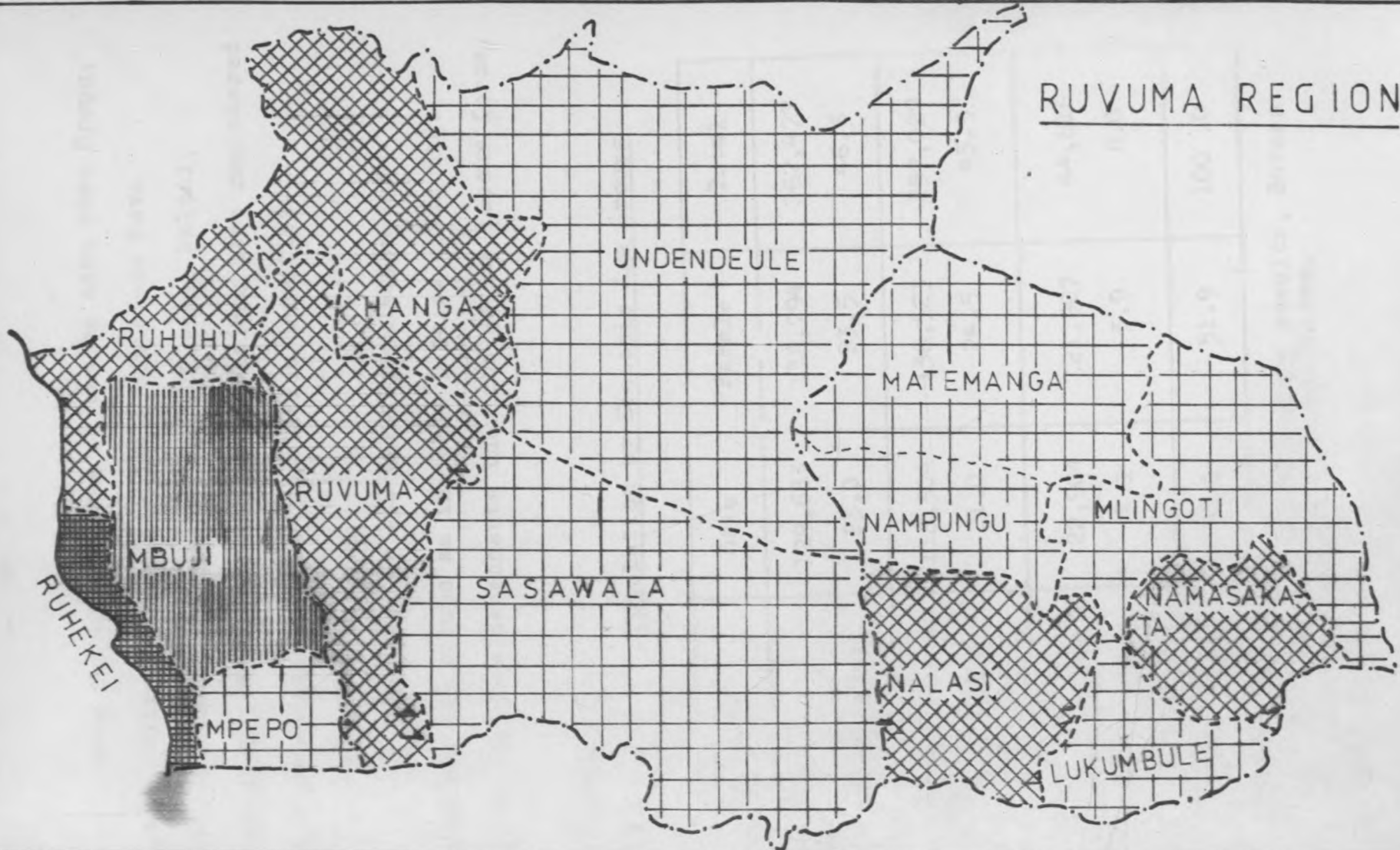
THESIS MAP NO. 5

PERSONS PI
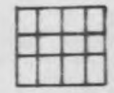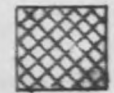
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Divisions labelled on map: RUHUHU, HANGA, UNDENDEULE, MATEMANGA, RUVUMA, MBUJI, RUHEKEI, MPEPO, SASAWALA, NAMPUNGU, MLINGOTI, NALASI, NAMASAKATA, LUKUMBULE

From the above table it can be seen that Mpepo, Ruhuhu, Mlingoti and Undendeule divisions have declining densities while Hanga, Ruvuma, Nalasi, Namasakata, Mbuji and Ruhekei divisions have registered high increases in their population densities.

A breakdown of the total population into economic age groups as in Table 5 below shows that there are more dependants than the active labour force.

Table 5

Population by Economic Age Groups

Age group	Male	'Female	Total
0-14	129,683	132,794	262,477
% of total	23.0	23.5	46.5
12-54	118,504	138,523	257,027
% of total	21.0	24.5	45.5
55 +	22,904	21,907	44,816
% of total	4.1	3.9	8.0
Total	48.1	51.9	100 .0

Source: Census 1978 preliminary results, Bureau of Statistics, Dar-es-Salaam.

Urban Population

About 7.7 percent of the regional population
resides in the three urban centres of Songea (the
Regional Headquarter), Tunduru and Mbinga. The
population breakdown per town is an follows: Songea
17,954, Tunduru 18,160, and Mbinga 7,308.

Rural Population

In this context, rural population has been
regarded as the residual population after subtracting
the urban population from the total region population.
Thus, a total of 510,908 people 'or 92.3 percent of
the regional inhabitants reside in rural areas. In
accordance with the national villagization programme,
these rural people are concentrated in 303 villages
is as shown in table 6.

Table 6

Number of villages and the rural-urban population by District

District	Division	No. of wards	No. of villages	Population	
				Rural	Urban
Songea (rural)	4	21	104	183,601	17,954
" (urban)	1	2	7	31,060	17,954
Mbinga	4	20	108	188,882	7,308
Tunduru	6	17	84	177,365	18,160
Total	15	60	303	410,908	43,433

Source: Ruvuma Regional Annual Plan 1979-80.

Ethnic Heterogeneity

Cultural differences among different ethnic groups pose as a big problem in planning for it hinders easy social interaction and mobility between the various groups. It creates difficulties in initiating and articulating local community efforts because of the inherent differences in values and language. The same applies to religous differences.

People with different religous backgrounds cannot
easily mix.

Ruvuma region is composed of a population with
five major ethnic groups:

(a) the Yao predominantly in Tunduru district

(b) the Ndendeule in eastern Songea district

(c) the Ngoni in northern and western Songea

(d) the Matengo in most of Highland areas of
Mbinga district (the mountain people)

(e) the Wanyasa who accupy the Lake Shores.

Although Kiswahili is commonly spoken in the urban centres,
the rural populations normaly converse in their
vernacular hence hindering rural-rural migration and
the diffusion of innovation and skills from one tribe
to another.

Islam and Christianity are the two predominant
religous faiths that divide the regional population into
almost two halves. Almost all of the eastern half
follow the Islamic region and the densily populated
western half is predominantly christian. This division
has significant implications with regard to the
distribution of some social services especially health
and education.

Rural Employment

A majority of the rural population are engaged
in agricultural activities which is their major source
of subsistance and cash earnings. However, the
existence of a long dry season renders most of the
peasants being not engaged in productive activities due
to very limited non-farm employment opportunities in
the rural areas.

For example, when asked as to what they (the
interviewed peasants) do during the dry season, the following
were some of their reactions:

"It is time for resting and visiting relatives
who stay far away from us".

"What else can we do except to wait for the rains"

"Seek employment in the semi-urban and urban
centres to supplement my meagre cash earnings
from cultivation".

"I am employed in a carpentry workshop owned by
missioneries".

"We cultivate vegetables along the wet river
valleys. But the output is small due to
limited cultivatable land."

Although published data on employment in the rural areas
are not available, it was learned from officials that
only a small proportion of the active rural labour
force were either full time or part time engaged in
the following non-farm activities:

(i)   civil service functions e.g. teachers,
      medical staff, extension staff etc.

(ii) trade and transportation.

(iii) small scale craft-works e.g. carpentry,
      tinsmithery, masonry, brick making,
      timber sawing, fishing etc.

(iv) religous functions e.g. priests, nuns,
      monks etc.

In addition to incomes earned from these activities,
some of the people in this category are also
effectively engaged in agriculture during the rain
season. So, in terms of purchasing power, these few
individuals are better off than the peasants who depend
on agriculture alone and compare well with the urban
dweller's incomes.

Urban Employment

The urban centres in the region like any urban
centres in the country have, compared to rural
settlements, a wide range of employment opportunities.
This diversity of job opportunities is a result of the
various functions urban centres play in the system of
settlements.

On the other hand, the sectoral distribution of
the urban labour force reveal a unique phenomenon, that
is a large proportion of the labour force is engaged
in agriculture as shown in Table 7 below.

In Tunduru and Minga towns about half of the
urban population derive their incomes from agriculture.
There are no industrial establishments in Mbinga and
Tunduru. This shows that urban centres in the region
are still rural and cannot offer gainful non-farm
employment opportunities compared to other urban centres
in the country where industry employs more than 20%
of the urban population. Thus the variety of job
opportunities in the three urban centres is still very
limited. Public service and private commercial and in
informal enterprises are the major sectors that offer
employment to the majority of non-farm workers. This
paucity of jobs in the urban centres in the region
forces those who cannot get jobs to migrate to
industrially developed urban centres in other regions
e.g. Dar-es-Salaam, Arusha, Morogoro.

Migrations

In the absence of up to date data on migrations
in the country, the analysis of 1967 census was used
for understanding population movements in Ruvuma region.

Table 7

Employment by Sector in Urban Centres (percentages)

Urban Centre	Year	Agr.	Commercial private	Public service	Industry mfg	Industry Construction	Total
Songea	1967	8.4%	54.5%	33.8%	0.6%	27.1%	27.7%
	1978	20.0%	24.0%	51.0%	4.0%	1.0%	5.0%
Tunduru*	1967	n.a	n.a	n.a	n.a	n.a	n.a
	1978	50.0%	31.6%	19.4%	-	-	4.0%
Mbinga*	1967	n.a	n.a	n.a	n.a	n.a	n.a
	1978	46.0%	40.0%	12.5%	-	-	1.5%
Tanzania Mainland (urban)	1967	14.0%	21.0%	.46.0%	14.0%	5.0%	19.0%

Sources: Draft Interim Land Use plans for Songea Tunduru and Mbinga, 1978 (not published).

* Data for 1967 are not available (n.a) because these urban centres were not gazetted as townships when the 1967 census was carried out.

About 8.7 percent of the regional population had
migrated to other regions in search for wage employment.
About 55.4% of the outmigrants moved to Dar-es-Salaam,
7.0% moved to Mtwara and Rindi regions, 6.6% moved to
Tanga and the remaining moved to other regions their
numbers declining with increasing distances.

From Table 8, below the following conclusions
can be made;

(i)   while emigration to other regions is high,
       very few people are attracted from other
       regions.

(ii)   about 39 percent of the regional population
       had moved from their places of birth.
       This implies intraregional mobility which
       includes rural-urban migration. Songea
       district has attracted more people from other
       districts mostly due to the attraction of
       Songea town which is the regional headquarter.

Table 8

Regional Population by Birth place 1967 (percent)

Place of birth	Census place	Same Region	Other regions	Other country
Ruvuma Region	50	39	4	7
Tunduru District	(52)	(34)	(6)	(8)
Songea District	(48)	(43)	(4)	(5)
Mbinga District	(51)	(38)	(3)	(8)

Source: The Population of Tanzania 1967 volume 6.

Although data for rural-urban migration are not available, the rapid growth of urban population relative to average growth of regional population indicates significant flows of the rural population to

urban centres.[6]   For example, the population of
Songea town has dramatically increased at an average
annual rate of 14.0 percent between 1957 and 1967
and at 11.5 percent between 1967 and 1978. On the
other hand average regional population growth between
1967 and 1978 is 3.3 percent per annum. Assuming
this to be the natural increase, then the increase
in population due to migration can be assumed to be
8.3 percent.

DEVELOPMENT RESOURCE BASE

An examination of the resource endowment in
the region and their potentiality for exploitation
is crucial to the understanding of man's economic
activities in the various settlements. Settlements
cannot survive or develop without the support of the
economic and other related subsystems e.g.
infrastructure.

In this study the analysis of the agricultural
potential of the region is given special emphasis
because more than 95 percent of the population rely

6.   This argument is also put forward by Interment
     B.R. in his paper submitted in Islabul at the
     Final Conference on 'Rural-Urban Migrants and
     Metropolitan Development' November 24 - December 1).

on agriculture for their livelihood. Based on
Agricultural potential, the region has been divided
into three zones that is high, medium and low
potential for development and support of healthy
human settlements.[7] The **criteria** used for
categorizing the various zones include: (a) soil
fertility (b) rainfall amounts and reliability (c)
access to infrastructure as well as social services.

AGRICULTURE

Cultivation in the region is undertaken by individual
households mostly for subsistance and very little
surplus is produced for marketing. That is why inter
alia, only a small proportion of the arable land is
used effectively for the production of both cash and
food crops. In most areas cultivation is done only
once a year during the wet season. Livestock develop-
ment is at its initial stages.

Cultivated land constitutes only 1.96 percent of
total area of the region.[8] There is still scope
for expanding the area under crop cultivation by
clearing virgin land.

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7. Settlements whose inhabitants can exploit the local
   resources to afford a higher level of life and can
   afford the required services of water supply,
   education, health facilities, better houses etc.

8. Government of Tanzania, REGIONAL INTEGRATED REPORT,
   op. cit. p. 352.

Another significant characteristic of agricultural
development in the region is that there is no
predominant cash crop that is cultivated extensively
to raise the incomes of the majority of the rural
people. Given the diversity of climatic and soil
conditions various cash crops are grown in different
parts of region. This brings complications in
demarcating the exact areas in which each crop is
predominant.

In order to assess the agricultural potentiality
of the region each district is divided into several
homogeneous units which have been called agro-economic
zones [9] as shown on Map 6. The distribution of crops
both cash and food crops by zone is shown in appendix
No. (i). These zones differ very much in terms of their
level of farm techniques and intensity of production
which is a reflection of the various constraints e.g.
steep slopes, low rainfall, low soil fertility,
inaccessibility to market centres etc. Hence a
brief description of each zone is essential in
understanding the agricultural and the capacity of
each zone to support human settlements at desired
levels.

9. University of Dar-es-Salaam, BRALUP, Research
   Report No. 49 Agro-economic zones of Southern
   Tanzania, December, 1971.
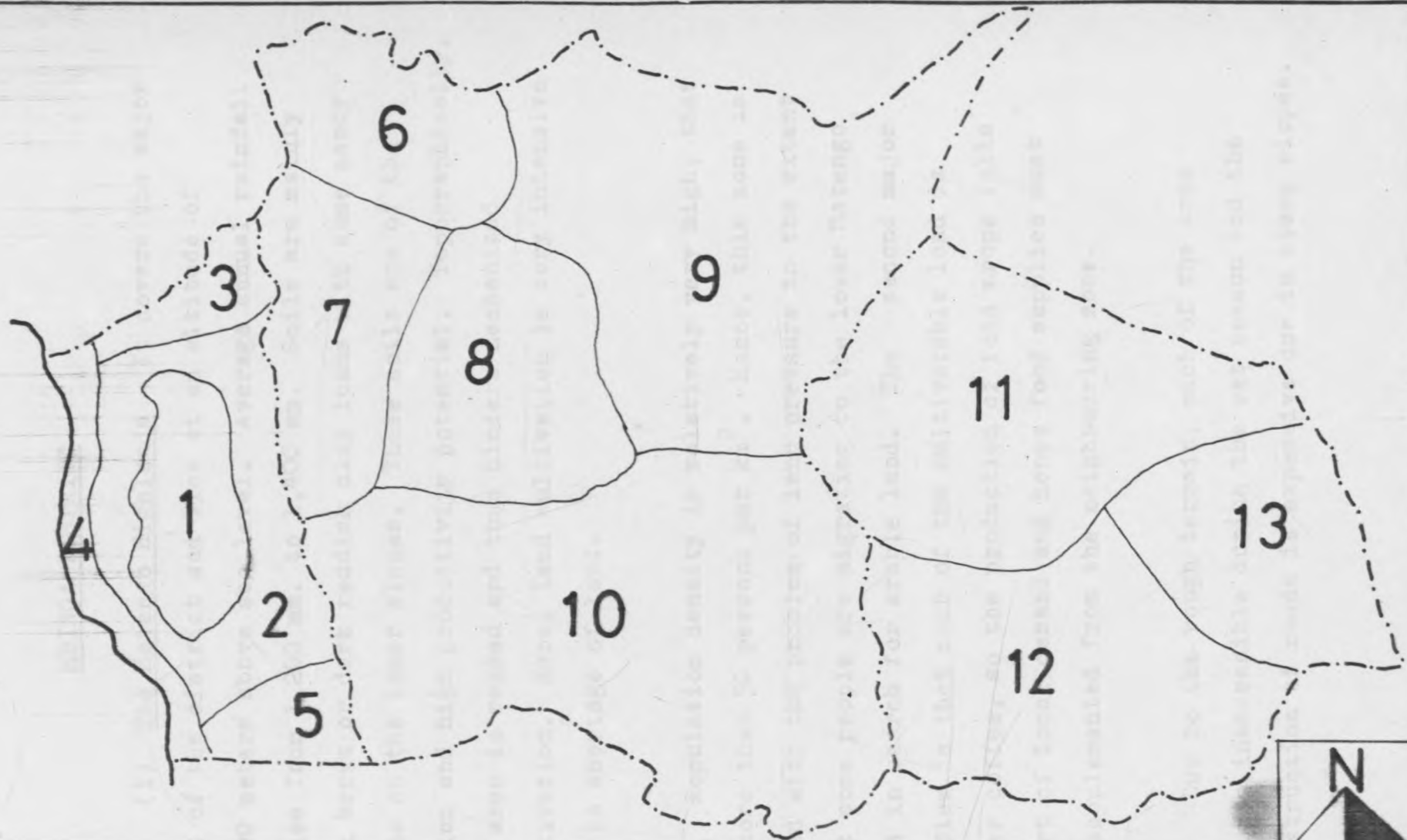
RUVUMA REGION: AGRO-ECON. ZONES

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THESIS
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MBINGA DISTRICT

(i) <u>The Matengo Highlands</u> - It covers the major part of the district and lies at an altitude of 2,000 meters above sea level. Average annual rainfall varies from 1,200 mm. to 1,400 mm. Soils are mainly dark brown or dark reddish clay loams with some sandy loams on the lower slopes. These soils are of the medium and high productivity potential. Topographically, the area is ragged and thus hinders mechanized cultivation. Here, land cultivation is very intensive due to shortage of land.

'

Population density is relatively very high, that is more than 50 persons per km^2. Hence, this zone is faced with the problem of land pressure to the extent that some people are migrating to the lower Matengo area in search for arable land. The second major problem is that much of the cultivatable land is under coffee, so the production of food crops falls short of local demand and hence food supplies must be supplemented from the neighbouring zone.

Due to the rough terrain, much of the area becomes inaccessible during the wet season and the construction of roads is expensive due to steep slopes.

(ii) <u>Lower Matengo Zone</u> - This includes the hilly areas whose altitude varies from 800 meters to 1,500 meters above sea level. It receives adequate rainfall which ranges from 1,110 mm. to 1,300 mm. per annum. The soils are mainly deep, dark reddish brown similar to those in zone (i).

Population density is below 15 persons per km^2 and many new settlements spring up due to the overspill in the Matengo Highlands zone. The intensity of land use is less than in zone (i). Majority of the annual crops except tobacco are interplanted and the valleys are cultivated during the dry season. In areas of steep slopes contour ridges and ngoro ridges are need to prevent soil erosion. No irrigation is practiced here. This zone produces considerate food surplus which is mainly sold to zone (i). So, the two zones are highly interdependent.

(iii) <u>Ruhuhu Valley Zone</u> - This zone covers the lower Ruhuhu valley and the hilly areas around it. Soils are of low fertility. They consists of greyish loamy sands and loams in the northern part while the southern half is predominated by reddish brown clay loams. The average annual rainfall is between 900 mm. and 1,100 mm. Majority of crops are interplanted and

there is no double cropping. A greater part of the
northern area is not suitable for cultivation and is
very much isolated. Population is very low i.e.
less than 15 persons per km^2. Some inhabitants
migrate from this zone in search for better land. .
Population density declined from 12.6 persons per
km^2 in 1967 to 12.3 persons per km^2 in 1978.

(iv) Lake Shore - This covers a stretch of
land that is between the Matengo mountains and the
lake. It therefore includes the flood plains of
river Ruhuhu at Lituhi. The soils are of high
productivity potential and they include the very dark
grey silts and clay on the flood plains and dark
brown sands and loams on the slightly elevated areas.
Rainfall is adequate and it varies from 1,000 mm. in
the north to above 1,400 mm. in the south. Fishing
is the major occupation for the males while females
are engaged in subsistence agriculture. Intercropping
is widely practiced and there is no double cropping.
Population density is medium, ranging between 30
and 50 persons per km^2. Much of the population is
concentrated around Lituhi and Mbamba Bay where the
problem of land shortage is felt. This zone is
poorly linked with the rest of the region.

(v) <u>Mitomoni Zone</u> - It is a small zone and lies in the extreme south-eastern part of Mbinga district. It includes part of the low lying tracts of the river Ruvuma valley. The soils are highly productive and they range from the dark greyish brown to reddish brown loamy sands. The average annual rainfall varies from 1,100 mm. to 1,300 mm. Population density is very low, about 7.3 persons per square kilometer. Road connection to this area with the main regional road is very poor. Hence, this zone suffers from isolation despite its high potential for the growth of cash crops such as coffee and tea. The area is inaccessible to the market centres for its produce.

SONGEA DISTRICT

(vi) <u>Ubera Highlands</u> - Like the lower Matengo zone, it is a hilly area and it lies at altitude of around 1,500 meters above sea level. It is well located on the trunk road to Makambako which will be tarmacked by the end of 1985.[10] The soils here are well drained and they include the agriculturally potential dark reddish brown loams. Average annual rainfall is between 1,100 mm. and 1,400 mm. There

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10. Work on this project started in March 1980 being financed by a British grant to Tanzania Government to tarmac the road from Makambako to Songea.

exist some large areas of land which are not suitable
for cultivation due to steep slopes but where land
is suitable for cultivation land pressure exists.
Intensive cultivation and interplanting of crops is
quite developed in this zone while double cropping
is limited only to the river valleys. Average
population density is low about 7.3 persons per square
kilometer.

(vii)   Western Songea - This is a hilly area but
lower and somewhat drier than the Ubena highlands.
The percentage of cultivated land is higher than in
zone (iv). The soils are dark reddish brown and red
sandy clay loams. Average annual rainfall ranges
between 1,000 mm. and 1,200 mm. Population density
varies from 30 to 40 persons per square kilometer
in the north to below 15 persons per km^2 in the south.
Majority of the crops except tobacco and paddy are
interplanted. Double cropping is being practiced along
river valleys.

(viii) Central Songea - This zone is very
similar to zone (vii) but is less hilly. It is
sparsely populated except for the area immediately
around Songea town. Population density varies from
15 - 29 persons per km^2 in central part to less than
15 persons per km^2 in the north and south.   In

contrast to western Songea where tobacco is the major
cash crop, paddy takes predominance in this zone.

(ix) <u>Undendeule</u> - This area is hilly and
a considerable part of it is unsuitable for cultivation
especially the eastern part where rainfall is
inadequate (less than 1,000 mm.) and the soils are of
poor quality for agriculture. The western part is
slightly suitable for cultivation where tobacco and
maize are major crops. Average annual rainfall ranges
from 900 mm. to 1,100 mm. Population density is very
low that is below 15 persons per km^2 and thus not
all land suitable for cultivation is effectively
utilized.

(x) <u>Southern Songea</u> - This zone covers the southern
part of the district. The land is rolling except
for the western and north-eastern parts which are
hilly. The soils are the dark greyish brown and the
reddish brown loamy sands. Alluvial soils are found
on the flood plains of river Ruvuma. The average
annual rainfall ranges from 1,100 mm. to 1,300 mm.
Large areas of land suitable for cultivation remain
fallow because of low population density. The area
is also isolated from the market centres.

TUNDURU DISTRICT

(xi) <u>Matemanga</u> - It covers the north-western part of Tunduru district. Land is very hilly, intercepted by narrow strips of river valleys. The main soils are the dark greyish brown and reddish brown loamy soils (i.e. fertile soils) but the area has inadequate rainfall for the development of agriculture. The density of population is very low and much of the land is not suitable for cultivation due to low rainfall, steep slopes and forest reserves.

(xii) <u>Southern Tunduru</u> - This zone covers the southern part of the district. 'Its topography is hilly or rolling land masses. Population density is low except in the area surrounding Tunduru town. The soils are mainly deep, dark brown and dark reddish brown loamy sands. Rainfall is moderate and it ranges from 1,000 mm. to 1,100 mm. per annum.

(xiii) <u>Nakampanya</u> - This is a small zone situated in the eastern part of the district with undulating surfaces from which rocks crop out, thus reducing the land suitable for cultivation. The soils are of medium agricultural potential. The average annual rainfall ranges between 900 mm. and 1,100 mm. The density of population is very low. Considerable areas of land are not cultivated.

LIVESTOCK DEVELOPMENT

Animal husbandry had been neglected in the
region as a whole and in particular Tunduru district
despite its vast areas of land not used for
agriculture. This low level of livestock development
has a historical explanation. It is understood that
the region had a lot of cattle and goats before 1945[11]
but in the 1950's the colonial government decided
to destock in order to create a buffer zone against
tse-tse flies which were said to be advancing north-
wards from Mozambique. Since then, cattle rearing is
done at a very small scale especially in the Matengo
highlands, Ubena highlands and 'along the shore of
Lake Nyasa.

Animal hasbundry is closely related to the
intensity of crop production, for as a rule, the areas
having higher intensity of crop production usually
have more livestock. Hence the volume of livestock
declines as one moves from west to east as shown
in Table 8 below.

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11. Annual Development Plan for Ruvuma Regions,
    1979-80 p. 5.

Table 9

Existing Livestock in Ruvuma Region by District (1979)

District	Cattle	Goats	Sheep	Pigs
Mbinga	26,703	38,448	5,009	11,500
Songea	13,000	15,000	4,000	3,000
Tunduru	1,338	2,143	4,328	-

Source: Annual Development Plan for Ruvuma Region
1979-80 p. 3.

According to the current Five Year Development
Plan for the Region, much emphasis has been laid on
the development of livestock both for meat and dairy
in order to meet the high demand for this product
within the region and the neighbouring Mtwara and
Lindi regions where meat is scarce.

In the effort to promote livestock development
the government has initiated the following programmes:

(a) cattle ranches in the following villages:
Cheleweli, Lijombo and Makoteni all in

Tunduru district which will be financed by
bank credit from the Tanzania Rural
Development Bank.

(b) increase the stock of cattle in the Mhukuru
ranch from 217 to 705 cattle.

(c) construct more cattle dips in areas earmarked
for cattle development.

(d) expand the dairy cattle farm at lower
Ruhimba for the production of both cattle
to be sold to neighbouring villages and
milk also for the villages and Songea town.

Summary on Agriculture

The ranking of agricultural potential of the
region according to natural conditions on the basis
of the agro-economic zones is as follows:

(i)   High potential zones   - Matengo Highlands,
                                    lower Matengo, Lake
                                    shore zones,
                                    Mitomoni, Southern
                                    Tunduru.

(ii)   Medium Potential zone - Western Songea, Ubena
                                Highlands, Central
                                Songea, Makampanya.

(iii) Low Potential zones   - Undendeule, Southern
                               Songea, Matemanga,
                               Ruhuhu Valley (Upper area).

2.   Except for the Matengo highlands and some
      portions of Ubena highlands much of the arable
      land lies idle. This means that there is much
      scope for increasing agricultural output by
      just expanding the areas'under crop.

3.   Inaccessibility hampers the development of many
      cash crops in remote but agriculturally potential
      areas e.g. Mpepo and Southern Songea zones.
      People settling in these areas are forced to
      produce just for subsistence because the
      surpluses cannot find their way to market centres
      especially cash crops.

4.   Population density is directly related to the
      potentiality of the land for agricultural
      production except in Mitomoni and Southern Songea
      zones where problems of transportation are more
      crucial than land fertility.

RUVUMA REGION : ECONOMIC RESOURCE BASE

THESIS MAP

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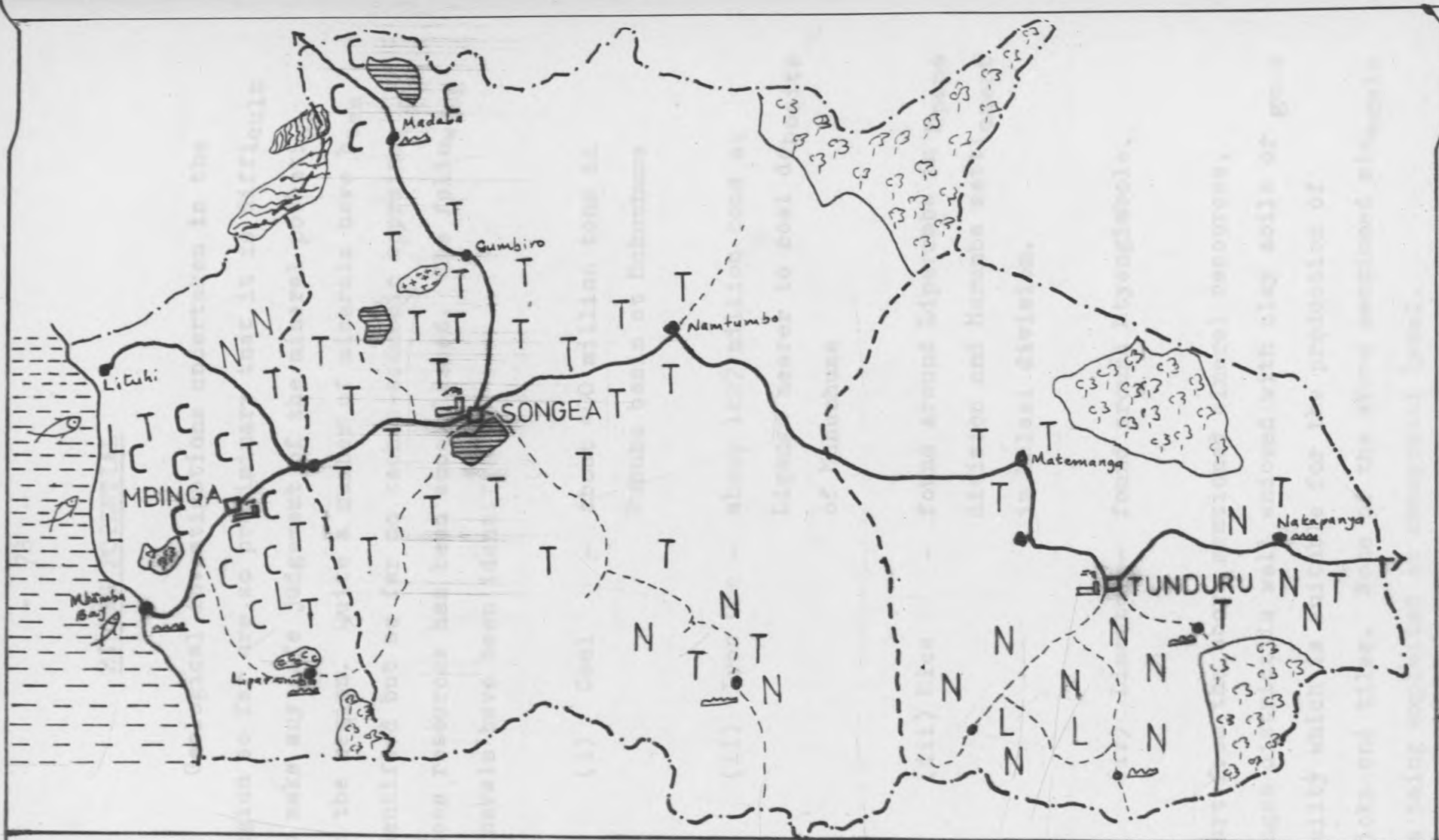
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MINING POTENTIAL

Geological investigations undertaken in the region so far are so preliminary that it is difficult to make any safe judgement of the mineral potential in the region. Quite a number of minerals have been identified but so far no techno-economic appraisal of these resources has been accomplished. The following minerals have been identified:

(i)   Coal   - about 400 million tons in Ruhuhu basin at Mchuchuma

(ii) Iron Ore - about 1227 million tons at Liganga nearer to coal deposits of Mchuchuma

(iii) Mica   - found around Liparamba in Mpepo division and Marumba settlement in Nalasi division.

(iv) Limestone- found around Mtyangimbole.

Apart from the above mentioned mineral resources, Songea district is well endowed with clay soils of good quality which is suitable for the production of bricks and tiles. None of the above mentioned minerals are being exploited at commercial level.

FISHERY

There is a high potential for the development
of the fish industry along the shores of Lake Nyasa.
The shore, shallow and with clear water, stretches a
distance of 140 kilometers. At present fishing
is undertaken by individual fishermen who use simple
methods of catching fish. There is need to improve
fishing techniques in the Lake but this requires
more detailed investigations on the water masses
and the kinds of fish living in the lake. Such a
study would provide the basis for the evaluation of
the quantities and of the most favourable locations of
fishing points.

Present fish output from the lake is very low
as shown in Table 10 below.

Table 10

Annual Fish Catch in Lake Nyasa 1970-1976

Year	Annual Catch (tons)
1970	18,892.7
1971	17,921.7
1972	17,598.6
1973	11,254.2
1974	13,853.0
1976	43,597.9
Total	158,489.7

Source: Regional Fisheries Office, Songea.

Fishing is also practiced along the major rivers of Ruhuhu, Ruvuma and Muhwesi but to a limited extent because, it is uneconomic and most of the rivers are located in inaccessible areas where settlements are very sparse.

FORESTRY AND WILDLIFE

Except for the areas cleared for agriculture and settlements, much of the land is covered by woods mixed with savanah grass. The forests have mixed tree types and are of the hard type which cannot be economically exploited as raw materials in the timber industry. These trees are mainly used for the construction of traditional houses and as a major source of energy for domestic consumption in the form of charcoal and firewood.

According to the 1979/80 Annual Plan, plans are underway to change the forest cover by clearing the existing trees and replacing them with more valuable trees such as soft woods and the noble hardwoods (e.g. mahogany, ebony etc.) which can form a viable base for the timber industry in future. This has been successfully done at the Matogoro

afforestation project near Songea town. Under the
afforestation programme the region has established
17 seed gardens for the growing of seedlings for
both soft and hard woods which are distributed to
villages, school farms, state farms and to individuals.

Apart from the Matogoro project, a total of 555
acres have been afforested in Songea district. They
include the Wino project which has 467 acres of soft
wood and the Maposeni project which has 88 acres of
hard wood.

For conservation of widelife and natural
forests, the region has three forest-cum-game reserves.
These include Muhuwezi and Mwambezi reserves in
Tunduru district and the north East Undendeule area
in Songea district as shown on Map 8. However,
these reserves are not serviced by roads and do not
have game warden camps. Thus they are open to
plunder by animal poachers which might lead to the
anihilation of the valuable species of wildlife.

INDUSTRIAL POTENTIAL

Ruvuma region is very backward in the development
of industries despite its resource potential. There
is only one formal industry, that is the tobacco

processing factory which employes 100 permanent
workers but has the capacity to employ 1,300 temporary
labourers during the peak period.

On the other hand, the informal industry lacks
data to evaluate their levels of activities and
their future development. However, there are a number
of small scale enterprises being undertaken by
mission stations, ujamaa villages, co-operatives and
individuals. Most of these organisations are engaged
in the following informal activities: carpentry,
tinsmithery, felling and processing of timber, flour
milling, small garages and repair shops, soap making,
shoe making and repair and even small scale mining
of coal, mica and limestone. The spatial distribution
of the informal small scale industries in the region is
shown in appendix (ii). Although this list might not be
exhaustive, it serves the purpose of showing the
nature of the small scale industries in the rural
setting.

Given the present low level of economic and
social development of the region, the development
of these informal industries is handicapped by the
following factors:

(a) lack of local entrepreneurial skills

(b) lack of capital resources

(c) low population density

(d) undeveloped market structure for their products

(e) poor connection between settlements i.e. no good commercial links between suppliers and consumers.

The promotion of the non-farm activities in rural settlements (say at village level) is crucial for increasing the productivity of rural population and also for strengthening commercial as well industrial linkages with higher order settlements such as service centres and growth centres and hence facilitate the diffusion of innovation and technology from urban centres to rural settlements. This will in effect dynamize the economy of rural settlements into self propelling economic growth and social development.

However, in an effort to promote industrial development in the Region, the small scale Industrial Development Organisation (SIDO) which is a national organ charged with the responsibility of promoting and developing small industries both in the urban and

rural areas, has established one industrial estate
in Songea town which accomodates and assists a
variety of small scale enterprises. SIDO has also
established saw milling enterprises in the following
villages: Liparamba, Mpepai and Mitomoni in Mbinga
District, and the mining of limestone at Mtyangimbole.

In the light of the above brief discussion on
industrial development in the region it can be
concluded that, given its broad resource base the
region has a high potential for industrial development
in the following areas: (i)   agro-based industries
i.e. the processing of agricultural produce
(ii) timber processing (iii) mineral extracting and
processing (iv) handcrafts e.g. pottery, tinsmiths
etc.

MAJOR FINDINGS

From the foregone analysis, the following
conclusions can be drawn:

(i)   The development of human settlements under
       natural conditions is unsuitable in the
       following constraint areas:

(a) Areas with low rainfall - northern half of
    Undendeule division, northern-eastern part
    of Matemanga and Mingoti divisions and
    the southern part of lower Ruhuhu.

(b) Areas of ragged terrain and steep slopes -
    mainly the Matengo Hilly area and the
    escarpments to the shores of Lake Nyasa,
    the Matogoro Mountains, Ubena highlands
    and some parts north of Matemanga.

(ii) Population is concentrated in Mbuji, Ruhekei,
     Nalasi and Ruvuma divisions and the remaining
     divisions have sparsely populated tracts of
     land. Population concentration is closely
     related to soil fertility and actual levels of
     development.

(iii) There is a high rate of urban population growth
      which is accounted for by the high rates of
      rural-urban drift.

(iv) Productivity in rural settlements is low due to
     the fact that agriculture is seasonal and that
     non-farm employment (during the dry period)
     is limited.

(v)   Ruvuma region as a whole, except for constraint
        areas identified in (i) above, has a high
        potential for the development of commercial
        agriculture and animal husbandry.

(vi)   Except for the Matengo highlands and some
        portions of Ubena highlands much of the arable
        and fertile land lies idle. This means that
        there is much scope for increasing agricultural
        output by just expanding the areas under crop.
        Much of the unpopulated areas are remote
        from both the major roads and urban centres.

(vii)   Despite the broad resource base, the development
        of industry in the region is at its initial
        stages. Small scale industries are undertaken
        at very limited lower levels by various
        villages, missionary stations, and individuals
        both in the rural and-urban areas.

CHAPTER FOUR

HUMAN SETTLEMENTS PATTERN

The objective of this chapter is to examine
the evolution and the spatial distribution of
human settlements in relation to (a) the economic
resources of the region and (b) the existing
transportation network. It then ranks the settlements
according to their central place functions i.e. the
variety and the quality of socio-economic services
they offer to their surrounding hinterlands. The
spatial distribution of settlements according to their
centrality (the degree to which a settlement serves
its surrounding area which is often measured in terms
of the quantity and quality of the goods and services
offered) indicates the areas that were favoured by
past investment decisions and those areas that need
immediate attention to bring about regional equality
in the provision of services.

1. THE CONCEPT OF HUMAN SETTLEMENTS

Literature on human settlements give various
definitions of the concept.

Doxiadis, a famous writer on Ekistics, defines
human settlements as;

> ..... "Settlements inhabited by man and consist
> of the content (e.g. man alone or in
> societies) and the container (i.e. the
> physical settlement) which consist of both
> natural and man-made or artificial elements.
> In this respect the word 'human' defines
> the kind of settlements (human and not animal)
> and at the same time conveys a goal i.e.
> human settlements should satisfy man"[1]

He goes on to argue that a human settlement
needs both elements (i.e. container and content)
in order to come into existence. Man alone or in
group, if not settled anywhere cannot be said to
form a settlement or a part of one. Once he does
settle somewhere, even temporarily we have a temporary,
elementary settlement, in which a pattern of
relationships between man and his container come into
existence for a certain period of time (say one day,
many days, years etc.) regardless of whether the
container is a natural one (a cave), or man-made
(a tent or a building). On the other hand, Nature
alone, without man cannot be said to form a settlement
since it has no human content. An abandoned man-made
settlement cannot be considered a human settlement.

---

1. Constantinos A. Doxiadis, EKISTICS, An Introduction
   to the Science on Human Settlements; Hutchison & Co.
   (Publishers) Ltd., London, 1968.

Human settlements vary in size, and <u>according</u>
to <u>Kulaba</u>,[2] they embrace all forms of rural and
urban settlements. They include a single house,
scattered homesteads, villages, trading or market
centres, towns, cities and metropolitan areas.

The ultimate goal of any human settlement is
to satisfy the needs of its inhabitants, and of the
others it serves.

> "The satisfaction of the inhabitants cannot
> be ensured unless all their needs - economic,
> social, political, technological and cultural -
> are largely satisfied."[3]

This implies that, whereas a settlement can be
created for a specific function e.g. a marketing
centre, other supporting services must also develop
to facilitate the proper functioning of the
settlement e.g. roads, water supply, electricity,
industry, administration, cultural institutions
etc.

Human settlements, apart from **interacting**
amongst themselves, they form a hierarchy of functional
inter-dependence, that is, large settlements serve

2. S.M. Kulaba, "Development and Human Settlements
   Development in Tanzania, A paper presented at a
   Symposium on the Planning of Human Settlements and
   Development, Dar-es-Salaam, Tanzania from 16th -
   19th May, 1979.

3. Constantios A. Doxiadis, opp. cit. p. 289.

smaller ones and the former are served by even
larger settlements. The bigger the settlement
the wider is the range of goods and services it
offers and attracts the more specialized functions
e.g. consultancy services, university, etc. Such
settlements serve a much bigger area than the smaller
ones. This means that larger centres are functionally
more complex and contain higher order services than
smaller centres.

2. REGIONAL ASPECTS OF SETTLEMENT PLANNING

A macro-perspective

Prior to 1975, planning for the development of
settlements was limited only to the three urban
centres of Songea, Tunduru and Mbinga. Rural
settlements were left to grow on their own subject
to socio-economic forces. This approach to settlement
planning has resulted in a settlement pattern that
reveals a considerable gap in the development levels
between the urban settlements and the rural
settlements. Some rural settlements grew up in areas
not suitable for development due to physical
constraints, low productivity and poor access to the
urban centres which were favoured in the location
of services. These settlements tend to be stagnant
and have very low level services as examplified by

Liparamba, Lusewa, Kitanda, etc.

It was only until 1975, when the Villages and
Ujamaa Villages Act, was passed that planning for the
development of Ujamaa Villages began. Under this
Act, each village is expected to have development
plan for production and provision of services.
However, due to lack of spatial analysis, the
implementers of the programme simply gathered people
from their scattered homesteads to a central point
without much consideration of its development
potential and its spatial relationship with higher
order settlements. There is need for an **integrated**
spatial plan of settlements that links the various
settlements to enhance social and economic interaction
which are crucial for technical, social and economic
progress. According to Berry[4], the growth of
settlements cannot be separated from the diffusion
of innovation for growth requires the filtration of
innovation to rural areas from higher order centres
and the spread in the usage of the innovation by
those people who reside in rural settlements. The
spread and use of innovations depend on accessibility
to already developed higher order settlements.

4. Berry B.J.L., "Hierarchical Diffusion, The Basis
    of Development filtering and spread in a System
    of Growth Centres" in MAN, SPACE AND ENVIRONMENT,
    ed. English P.W., London; Oxford University, 1972,
    p. 340-359.

The evolution of settlements is greatly
influenced by a variety of forces e.g. development
programmes, technology, improvements in means of
communication etc. For example, the construction
of the Dar-es-Salaam - Zambia railway (TAZARA)
and the highway has very much affected the functions
and significance of settlements spreading on
either side of the routes. It has dramatically
changed the size of Morogoro, Iringa and Mbeya and
Makambako towns. It is therefore expected that the
proposed construction of Mtwara - Songea - Makambaku
and Songea - Mbamba Bay roads will considerably
affect the future size of Songea, Mbinga, Tunduru
and Mbamba Bay settlements. Hence, planning for
the growth of lower order settlements must take into
account for the effects of the roads in the development
process in the region.

With the expected increase in economic
development and modernization of agriculture, commerce
and industry, settlements are bound to grow both in
number and their size. It is, therefore, imperative
to plan the growth of these settlements under a
clearly defined national settlement policy which
should have the following as its major

objectives:[5]

    (a) Evolving a spatial pattern of economic
           development and location of a
           hierarchy of human settlements consistent
           with the exploitation of the natural
           and human resources of the region and
           ensuring functional linkages <u>inter se</u>:

    (b) Securing the distribution of economic
           activities in small and medium size towns
           and in new centres in order to achieve
           maximum economic growth for the future.

    (c) Controlling the growth of large cities by
           dispersal of economic activities,
           legislative measures and establishment
           of new counter magnets in the region.

    (d) Providing maximum level of services for
           improving the quality of life in rural
           and urban areas and <u>reducing gradually</u>
           the differences between rural and urban
           living.

5. S.M. Kulaba, 'Assessment of the Vancouver Recommend-
ations for National Action: The Case of Tanzania.'
Paper prepared for a seminar on Land-Use Policies
organized by the United Nations Economic Commission
for Europe, <u>Committee on Housing, Building and
Planning</u>, Stockholm, Sweeden, 12th-17th June, 1978.

3. EVOLUTION AND FUNCTIONS OF SETTLEMENTS

(a) Urban Settlements

There are only three urban centres in the whole region which originated as small village-type of settlements. The three towns, Songea, Tunduru and Mbinga owe much of their significance to their administrative status as district headquarters and their location along the major transportation axis. Songea town, which is the regional head-quarter, commands a higher position in the hierarchy of settlements in the region. It has a high potential for growth because of locational advantages - i.e. it is located in an area of high potential for agricultural development and also at a junction of the major regional roads and local roads joining various settlements.

These urban centres perform a range of high order functions to serve the rural hinterland which cannot be found in the lower level settlements. These functions include district and regional administration, higher education, commercial concentrations both whole sale and retail, and higher medical functions.

Songea town provides the following services
which are of regional importance: hospital
facilities, two secondary schools and one teachers
college, regional administrative offices, bus
service, airport, workshops, trade (vegetable market,
livestock market, general shops and specialized shops),
hotels, cimena, festival grounds and a stadium.

It was until recently when Mbinga became a
district headquarter and consequently an urban
centre. The designated urban area is now undergoing
rapid development. Apart from the administrative
function, Mbinga township has a Teachers Training
College, a Rural Health Centre, Post Office and a
National Bank of Commerce Branch. Mbinga is also
an important traffic centre with developed workshop-
repair services. However, the future role of
Mbinga is linked with its ability to provide the
hinterland with the required agricultural inputs and
the processing of agricultural produce (basis for
the development of agro-industries) from the fertile
hinterland which is the whole district.

Tunduru is another district headquarter which
offers administrative as well as the following

functions for the entire district: Government
hospital, educational centre, commercial facilities
of district order e.g. market, retail shops etc.,
traffic centre - i.e. connecting the district to
the regional headquarter and connecting the region
with Mtwara region.

(b)   Rural Settlements

        The location and evolution of rural settlements
in Ruvuma region can be categorized into three
phases: pre-colonial period, the colonial period and
the present. During each phase rural settlement
structure assumed different forms and functions.

        Prior to colonial and missionary intervention,
settlements in the region were organized according
to clans for purposes of defense and cultural
intergrity. Normally, these were extensive villages
consisting of dispersed clusters of family homesteads.
According to the discussions held with elderly
people in the various villages, the clan-head's
compound was the nucleus of the settlement where
political, religous,administrative, cultural and
entertainment functions were performed. Higher
level functions were performed at the Chief's
place e.g. defence.

While the colonialist, being interested in
maintaining peace and order, established administrative
centres which are now the urban centre, the
missionaries on the other hand established a network
of mission stations in the rural areas. These
mission stations provided a church for prayers, a
dispensary, a workshop, a primary school and at times
a retail shop. However, bigger mission station such
as Peramiho, the headquarter of the Diocese, had
more specialized functions such as a hospital, higher
education institutions e.g. Teachers Training
College, nurse's training school, workshops, filling
stations, post office etc. These mission stations
formed the nucleus of most settlements in the rural
areas.

According to the annual plan for Ruvuma region
1978/80, all rural settlements are nucleated into
villages and Ujamaa villages as the first stage of
the socialist transformation of the rural society.
All the rural population live in 303 villages. The
main objective of this strategy is to create optimal
conditions for production and fostering
technical, social and economic progress. The
concentration of settlements facilitiates and
economizes the provision of basic infrastructure
per head.

4. SETTLEMENTS INTERACTION

Due to the hilly topography in the Mbinga
highlands, the settlements are characteristically
scattered and a considerable distance between them.
Settlements in the lower areas of Songea and
Tunduru are easily connected to each other by
earth-roads and most of them form corridors along
the road network but they are separated by vast
tracts of unsettled land as shown in Table 10
below.

Table 10   ,

Average Distances between Settlement by District

District	Average Distance in Km.
Mbinga	10.0 km.
Songea	19.0 "
Tunduru	17.0 "
Region	16.0 km.

Source: Ruvuma Regional Report, 1974.

Due to poor transportation network, commercial links between settlements are very weak particularily between lower level settlements and higher level settlements.

5. EXISTING HIERARCHY OF SETTLEMENTS

In order to rank the settlements in the region according to their levels of services which they offer to the surrounding community, quantitative values for centrality have been calculated for all the settlements from the ward centres to the urban centres at the regional level. The service indicators were weighted according to their quality and significance for development as shown in appendix (ii). The spatial distribution of settlements according to the hierarchy is shown in Map 9.

The weights assigned to the various services were adopted from those used in the preparation of the UHURU CORRIDOR REGIONAL PHYSICAL PLAN[6] and the outcome is shown in Table 11 and for detailed work see appendix (ii).

6. This physical plan has been jointly prepared by Finish experts (under technical assistance) and the local planners of the Ministry of Lands, Housing and Urban Development. The plan covers all the four administrative regions through which the TAZARA passes, thus the name UHURU CORRIDOR. Ruvuma region borders two of the four regions, for comparison purposes it was suitable to use similar weights which have been accepted by the National Planning Authorities.

Table 11

Settlements hierarchy by Districts

Settlement	Score of service centrality	Administrative status
SONGEA DISTRICT		
Songea town	29	A,B
Peramiho	19	D
Madaba	7	D
Mputa	6	D
Lusewa	5	C
Namabengo	5	D
Namtumbo	5	C
Tanga	5	D
Gumbiro	5	C
Wino	4	D
Mchomoro	4	D
Kitanda	3	D
Mhukuru	3	D
Maposeni	2	C
MBINGA DISTRICT		
Mbinga town	17	B,C,
Mbamba Bay	8	C
Liuli	8	D

Table 11 cont.

Settlement	Score of service centrality	Administrative status
Kigonsera	7	D
Lisuhi	6	C
Litermbo	6	D
Kitai	6	D
Liparamba	5	C
Mango	3	D
Ng'mbo	2	D
Maguu	2	D
Ruanda	2	D
Tingai	2	D
TUNDURU DISTRICT		
Tunduru town	18	B
Nalasi	5	C
Likumbule	5	C
Matemanga	5	C
Nakampanya	5	C
Musamara	4	D
Nandembo	4	D
Mbesa	3	D
Marumba	3	O

Table 11 cont.

Settlement	Score of service centrality	Administrative status
Mchoteka	3	D
Mtina	3	D
Namasakata	3	C
Kahala	2	D
Ligoma	2	D

Source: Field Survey, Sept. 1979.

Key to Administrative Status

A	=	Regional headquarter
B	=	District headquarter
C	=	Divisional headquarter
D	=	Ward Centre
O	=	Other centre without any administrative status.

From the above table the following conclusions can
be drawn with regard to settlement development in
the region:

(i)   There are only four higher level
service centres in the region, that
is those with scores above 17 points.

(ii)   There are also very few settlements
that offer medium level services (i.e.
of divisional service level whose scores
are between 7 and 17 points). These
settlements include: Madaba, Mbamba
Bay, Liuli and Kogonsera. Tunduru
District has no potential medium
level settlements.

(iii)   A majority of the settlements are of
the lower service category.

(iv)   Some divisional headquarters have
very low scores of service centrality
(e.g. Maposeni, Liparamba, Gumbiro,
Namasakata etc.) compared to other
settlements which don't have admini-
strative functions.

(v)   Almost all the medium and higher level
      service centres are located along the
      major regional trunk roads of Songea-
      Njombe, Songea-Mbamba-Bay and Songea-
      Tunduru.

(vi) Despite the villagization programme,
      the villages are still sparsely located.

THE RURAL-URBAN GAP

There are many explanations for the rural-
urban imbalance but the situation in Ruvuma region
is exacerbated by the following three factors:

(a)   productivity in rural areas is low
      compared to urban areas because of
      inter alia, problems in marketing the
      surplus produce to the few urban centres.

(b)   accessibility to the urban centres is
      seasonal. Most of the earth-roads
      connecting the various rural settlements
      to the district and regional headquarters
      are impassable during the rain season.

(c) All the higher level services e.g.
hospitals, post office etc. are
concentrated in the few urban centres
which in most cases serve the urban
inhabitants only at the expense of the
rural inhabitants who cannot afford to
travel long distances for the services.

The gap between rural welfare and urban
welfare is demonstrated in this section through the
use of two indicators i.e. income differences and
access to hospital facilities. In the latter case
accessibility is calculated in terms of distances to
be covered in order to obtain the required service.

According to the 1969 Household Budget Survey[7]
figure 1 was prepared which compares the levels of
cash incomes earned by the rural households and
urban households.

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7. Government of Tanzania, HOUSEHOLD BUDGET
   SURVEY, published by Bureau of Statistics,
   Government Printer, Dar-es-Salaam,
   1972.

Figure 1

RURAL-URBAN CASH INCOMES BY
INCOME GROUP
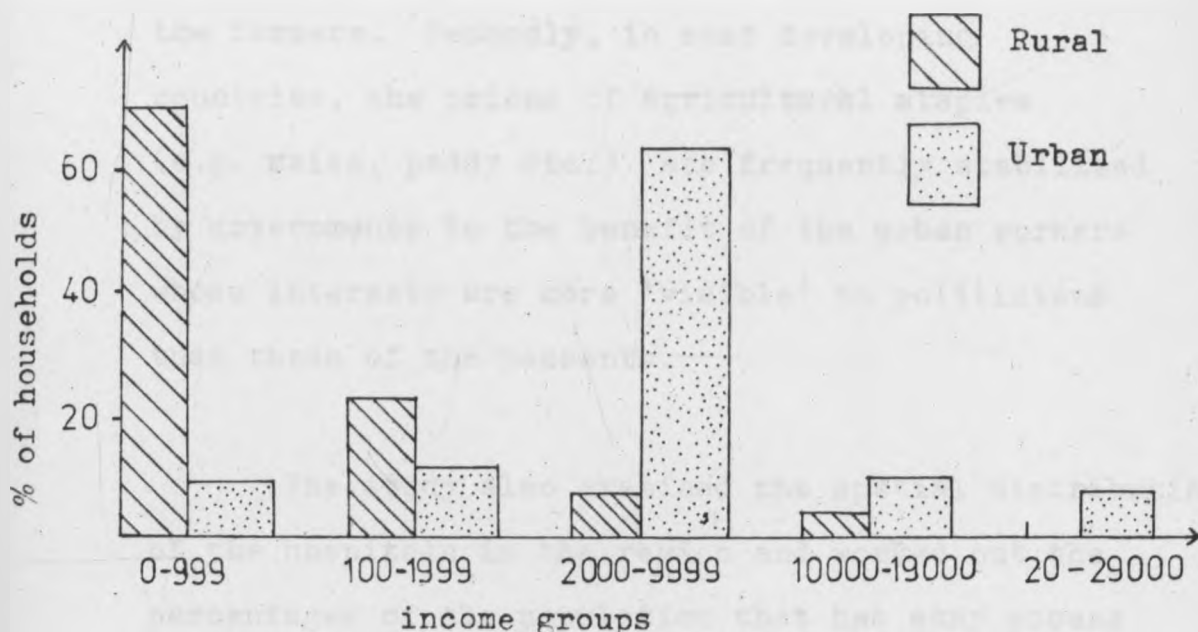
Figure 1 below, shows that (a) 92 percent
of rural households earn less than shs. 2,000/=
per annum while about 83 percent of the urban
households earn above shs. 2,000/= per annum. It
is this differences in incomes that call the
attention of planners to find ways of rectifying
the situation. One of the reasons for low incomes
in rural areas is that farmers face adverse terms
of trade when trading with the urban centres

because products manufactured in urban centres are
subject to inflationary pressures which is transfered
to rural areas through the high prices they charge
the farmers. Secondly, in most developing
countries, the prices of agricultural staples
(e.g. maize, paddy etc.) are frequently stabilized
by governments to the benefit of the urban workers
whose interests are more 'visible' to politicians
than those of the peasants.

The study also examined the spatial distribution
of the hospitals in the region and worked out the
percentages of the population that has easy access
to hospital services and those who don't have easy
access. In this exercise the following assumptions
were made:

(a) all hospitals offer equal services,

(b) choice of hospital is determined by
distance alone,

(c) no problems of transport to the
hospitals,

The outcome of the analysis is summarized in
Table 13 below, which indicates that:

(i)   only 22.5 percent of the total regional
        population is within 10 km. of
        hospital services.

(ii)   there has been very little improvement
        in the situation compared to that
        of 1967.

Table 13

Distribution of Hospitals and their Accessibility by Districts

| District | 1967 | | District Pop. % | | 1978 | District Pop. % | |
	Hospital location	Population	Within 10 km.	Not within 10 km.	Population (absolute)	Within 10 km.	Not within 10 km.
Mbinga	Liuli Lituhi Litembo	144,098	20.1	79.9	196,167	23.4	76.7
Songea	Songea Peramiho	151,390	18.0	82.0	232,615	26.1	73.9
Tunduru	Tunduru Mbesa	97,555	15.6	84.4	135,548	15.0	85.0
Region	7	393,043	18.2	81.8	564,330	22.5	77.5

Source: 1. Ruvuma Region Integrated Report, 1974 and Field Survey, September 1979.
         2. Population Census 1967 and 1978.

SUMMARY AND CONCLUSION

This chapter has examined the evolution and
the functional hierarchy of human settlements in
Ruvuma region. It has also examined the spatial
distribution of both urban and rural settlements
and assessed their relative differences. In this
exercise the following conclusions can be made:

1. There exists a considerable gap in the
    levels of development between urban and
    rural areas.   ,

2. Some settlements are unfavourably located
    in areas of low development potential e.g.
    remote and low fertility areas as
    discussed in chapter two. These settlements
    have low centrality score i.e. low
    development potentiality. In some cases,
    some villages have been located in areas
    with physical constraints - giving no
    room for future expansion of the village.

3. There are very few higher level service
    centres and in some cases some settlements
    which have been assigned high level

administrative status lack the required
level of services they are expected to
offer to their effective hinterland e.g.
Maposeni, Liparamba and Gumbiro.

4. There isn't smooth hierarchical transition
of settlements from the regional centres
down to the villages because there are very
few market and service centres above the
village level(see Map 8).

5. There is limited intergration between urban
centres and rural settlements basically
due to poor quality roads and undeveloped
commercial links among settlements of same
or different levels of development.

6. There is lack of spatial coordination in
the investments of social services between
government and other agencies. Settlements
around missionary stations have more social
services than others e.g. Peramiho,
Kigonsera, Lituhi etc.

7. The villages are still sparsely located
especially in Songea and Tunduru districts.

The above findings demonstrate the lack
of a spatial framework of human settlements
that would guide the equitable development of
settlements in the region.

CHAPTER FIVE

PROPOSED STATIAL FRAMEWORK OF HUMAN SETTLEMENTS
IN RUVUMA REGION

This chapter synthesizes the major findings
of the study and proposes a spatial framework of
settlements in the region that would ameliorate the
disparity between urban and rural development. The
proposals take into account local socio-economic,
physical and political-administrative characteristics
and the goals and objectives of an integrated regional
and national economy.

1. SYNTHESIS OF MAJOR FINDINGS

From the information in chapters three and four,
the following major conclusions can be drawn about
Ruvuma region.

(a) Development Constraint areas

    (i) Shortage of arable land is experienced in the
        Matengo Highlands due to population
        pressure and ragged terrain. This is acute
        in agro-economic zone 1.

6

9

low rainfall

l.f.s

3

7

8

11

low rainfall

4

10

2

low population
density

isolated

13

5   isolated

12
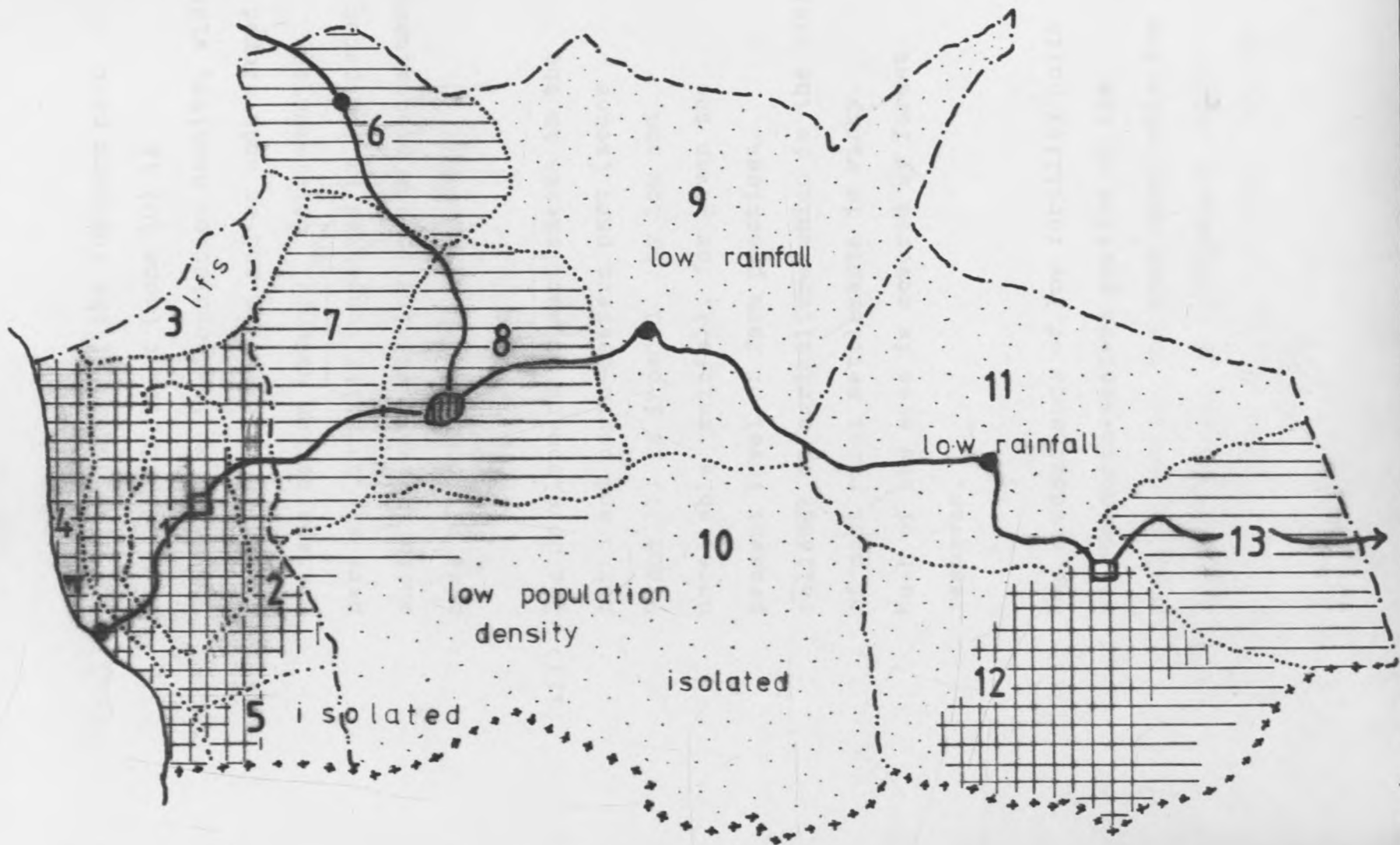
HIGH

MED

LOW

AGRO
(re

MAJ

N

RUVUMA REGION: SYNTHESIS MAP

(ii)   The development of the southern part
       of Songea District (zone 10) is
       inhibited by low population density, widely
       scattered settlements and an undeveloped
       transportation network. Settlements
       here are normally connected by footpaths
       which indicate walking is the predominant
       mode of transport.

(iii) The development of settlements in the
       north and north-eastern part (zones
       9 and 11) is inpeded   by low and
       unreliable rainfall, for given the
       present level of farm practices,
       reliance on agriculture which is the basis
       of most rural settlements is risky.
       Much of the area is covered by forest
       reserves.

(iv)   The predominance of low fertility soils
       in the north-western portion of the
       region, renders the area unsuitable for
       the development of settlements whose
       growth depends on agriculture. Except

for problem area (i) of land pressure,
the agricultural potential of the other areas
can be improved with the application of
modern technology and modern agricultural
practices and the upgrading of physical
infrastructure.

(b) Agricultural Potentiality:

Map no. 9 shows the delineation of the region
according to its agricultural potential.

Areas of high agricultural potential, that
is the Matengo highlands and southern Tunduru have
relatively well developed settlement structures e.g.
permanent and urban-like houses, better roads, many
schools etc. Here, the settlements are not widely
separated from one another (see table 10).

The areas of medium agricultural potential have
relatively dispersed settlements with much of the
potential agricultural land left idle. Unlike the high
potential areas where land shortage is an imminent
problem, the medium potential areas have surplus land
for agricultural development. This implies that they

have a capacity to absorb more people without causing much land problems.

Given the present level of technology and financial resource constraints, areas of low agricultural potential are unsuitable to support settlements.

(c) Industrial development and the concentration of non-agricultural activities

There is hardly any heavy industrial establishment in the whole region. Agro-processing (milling) and service industries (e.g. garages) and small scale industries are located in the urban centres of Songea, Mbinga and Tunduru. Other smaller centres which attract small scale industrial investments include: Peramiho, Kitai, Mbamba Bay, Liparamba, Lituhi, Madaba, Lusewa, Likumbule, Nalasi and Nakapanya.

While the regional and district headquarters of Songea, Mbinga and Tunduru respectively, tend to have the highest concentration of central functions, the above mentioned smaller centres come next in the functional hierarchy except for Peramiho whose

central functions can be equated to those of district
headquarters (see map no. 2).

These centres can be regarded as growth centres
where propulsive forces of development can either
be easily adapted or developed and hence be spread
to surrounding smaller settlements (most ward centres
and villages) within their effective impact area.

As can be seen on synthesis map no. 9   most of
these centres are clustered along the major trans-
portation axis and they are few to effectively serve
the majority of the scattered smaller rural settlements
in the whole region.

(d)   Settlements Interaction:

Efficient interaction among human settlements
is brought about when physical, economic, social
and administrative linkages are effective.

(i)   Physical linkages
       This is brought about by an effecient network
       of the transportation system of both goods
       and people and a good communication system e.g.

telephones, postal services etc., between
rural and urban centres and among either
urban centres or rural settlements.
In Ruvuma region most of the roads are of
poor quality and need upgrading. Almost all
roads are either murram or earth roads.
Farm-to-market roads are few and of poor
construction.   Public transport is inadequate
and unreliable, thus a majority of trips are
made on foot. As a result of poor physical
linkages, most of the rural population lives
in settlements not easily accessible by road.
Transport is thus difficult and expensive.

(ii)   Economic and market linkages

In Ruvuma region these linkages are weak
because of limited physical linkages and poor
organisation of product marketing institutions.
Markets in the region have insignificant
external trade linkages and the periodic markets
are generally isolated, highly localized and
virtually unintegrated. Most of these collection
and exchange points, are barely accessible to
rural people beyond say 10-15 km. from the centre
in which the market is located.

2. ALTERNATIVE SPATIAL FRAMEWORKS OF HUMAN SETTLEMENTS

There is a variety of settlement patterns which have either been results of long term evolution due to socio-economic and physical influences (e.g. Western Europe and U.S.A.) or deliberate national or regional attempts to restructure traditional settlement patterns which are often thought to be rational and can foster higher rates of economic development with spatial equity. Different forms of the latter have taken place in the eastern block e.g. China, U.S.S.R., India, Thailand etc. and in some developing countries like Tanzania. Their variety is a function of the local diversity in physical conditions, economic structures, transportation and communication networks, cultural and political ideologies.

However, inspite of their diversity, they are either extensions or local adaptations of three basic models:

(a) Administrative hierarchy of settlements

(b) Growth pole or growth centre model

(c) Linear development along major transportation axis.

In the subsequent part of this chapter, each of
these models will be discussed and its suitability
in Ruvuma region will be evaluated against the
following objectives:

(a)   to build up a functional hierarchy of
      settlements - forming a regional network of
      linked urban and rural central places;

(b)   to ensure that development is rural-based
      and that the rural-urban gap is minimized
      by raising the quality and level in the
      provision of socio'-economic services and
      facilities and infrastructure to rural
      settlements to boost the development of
      agriculture, agro-industries, agri-businesses,
      forest industry and mining, small scale
      industries etc.;

(c)   to stamp down massive rural-urban
      migration so as to achieve a balanced
      growth and spatial distribution of the
      regional population;

(d)   create more rural-growth centres where
      new job-opportunities can be made
      available to rural people.

The following assumptions were made in choosing and
developing the proposed settlement model in the region:

   (a) The present policy of villagization will
        be pursued and that the long-term national
        policies on rural and urban development as
        stipulated in the Third Five Years
        Development Plan (June 1976 - June 1981)
        remain unchanged,

   (b) rural development will continue to get
        highest priority in future and consequently
        development activities such as the
        utilization of resources, economic development
        programmes and social facilities will be
        channelled to,

   (c) the proposed spatial framework for future
        development can act as a guideline in the
        preparation of comprehensive development
        plans and direct public and private
        investment decisions,

   (d) the existing administrative headquarters
        i.e. ward and divisional administrative
        centres will grow into urban centres,

(e)   the villagization programme will promote

and enhance the traditional 'community

feeling' of rural people both at the

village and ward level,

Settlement Model I:

Hierarchy of Settlements according to Administrative
Status.[1]

This model aims at adopting and enhancing the

existing administrative hierarchy of settlements through

which priority in the provision of socio-economic

infrastructure will be channelled.

At the regional level, this involves the

establsihment of the regional headquarter (Songea)

---

1.   It is concluded from the works of many scholars who
     have studied settlement patterns e.g. the works
     of Christaller W. in Southern Germany, Lösch,
     and Doxiadis Constintanos (the famour writer on
     human settlements) that any settlement pattern
     forms a hierarchy of the settlements. The
     criteriae for the hierarchy may be administrative,
     nodality, population threshold, centrality
     of services etc. This model ranks the settlements
     according to their administrative importance in
     the context of the administrative divisions in
     Ruvuma region.

as the highest grade settlement (forming the apex
of the settlement pyramid), followed by district
headquarters (Mbinga and Tunduru town) and then
divisional headquarters. Below the divisional
headquarters follow the numerous ward headquarters
which comprise of 5 - 8 villages.

In this model the settlements are graded into
five distinct strata with the regional headquarter as
the apex and the villages as the base.

Regional Head-
Headquarter

District
Headquarter

Divisional
Headquarter

Ward
Centre

Villa-
ges
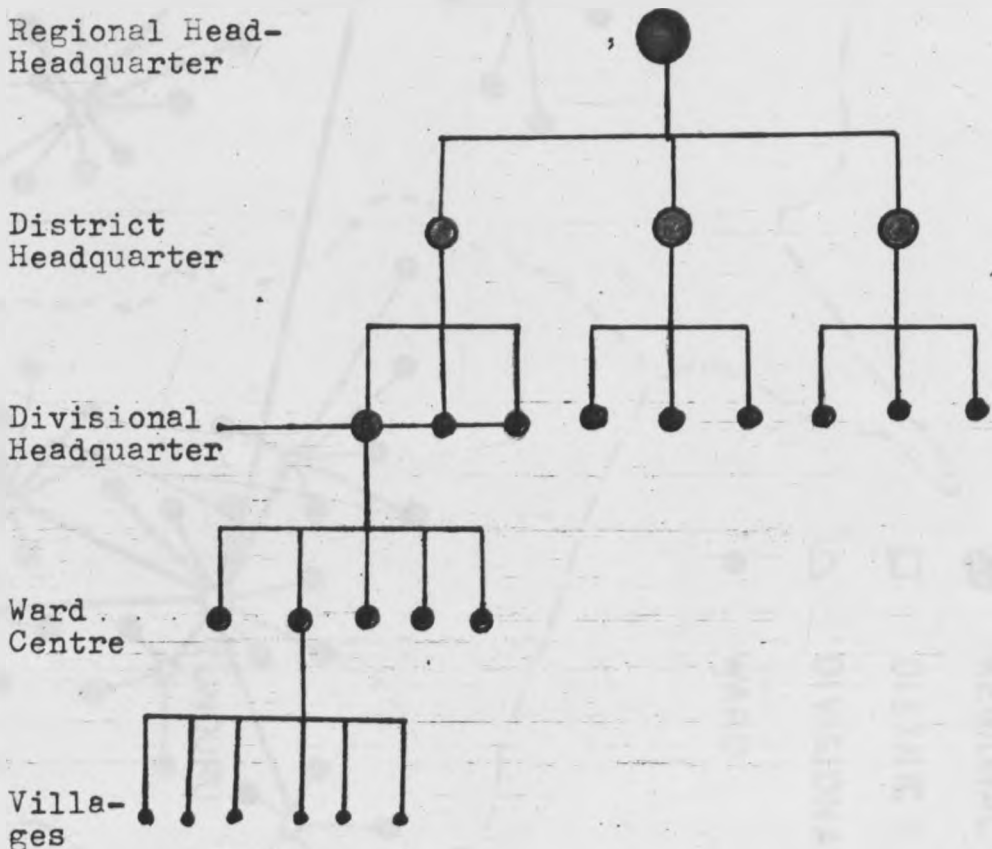
Legend:
- REGIONAL CENTRE
- DISTRICT "
- DIVISIONAL "
- WARD "

SONGEA

MBINGA

TUNDURU
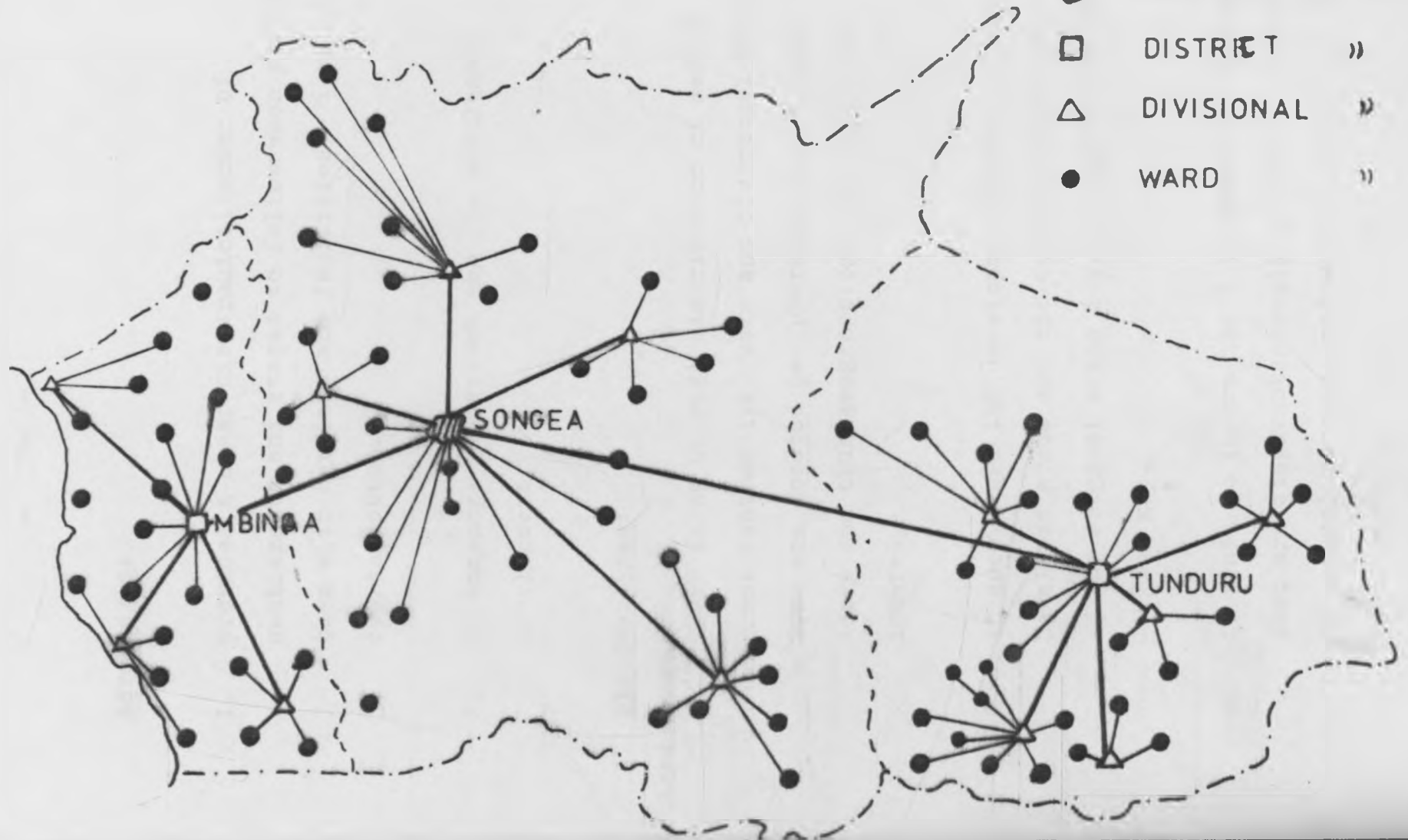
SETTLEMENTS HIERARCHY ACCORDING TO ADMINISTRATIVE STATUS — Fig 2

Advantages:

1. provides a clear hierarchical order of
    settlements and stages to follow when providing
    them with services and facilities - i.e. from
    top to bottom.

2. it enhances the status quo in settlement
    development

Disadvantages:

1. There is an unequal distribution of medium
    grade centres i.e. ward and divisional headquarters.
    Some are located peripherally to the areas they
    serve and thus geographical centrality is
    ignored.

2. it encourages the development of the already
    developed areas and the continued underdevelopment
    of the marginal areas i.e. it aggravates the rural
    - urban gap.

3. it tends to ignore the development of settlements
    that are disadvantageously located with regard
    to natural resource endowments and access to
    basic services.

4. Given the scattered nature of settlements and poorly developed both physical and socio-economic linkages between the settlements, the rural-urban gap is bound to widen.

5. it gives priority for investments to settlements according to their administrative status and not according to needs or development potentiality. At the regional level, this is a misallocation of scarce resources.

Settlement Model II:
Growth pole or growth centre model:

This model bears its origins from the economic development theories of unbalanced induced economic growth which is the basis of the growth pole policy as an instrument for bringing about regional development. The policy is based on the creation of the growth centres. The idea was originally introduced and defined by F. Perroux[2] and at the same time similar

2. Perroux, F., 'Les industries motrices et la croissance d'une économie nationale', Econ. appl. 16(a), pp. 151-196; as translated by Morgan D. Thomas, 'The regional problem, structural change and growth pole theory in Kuklinski A., ed. GROWTH POLES AND GROWTH CENTRES IN REGIONAL PLANNING, Mouton & Co., Netherlands, 1972.

SETTLEMENTS MODEL II

DESIGNATED GROWTH POLES

DIVISIONAL CENTRE

WARD))
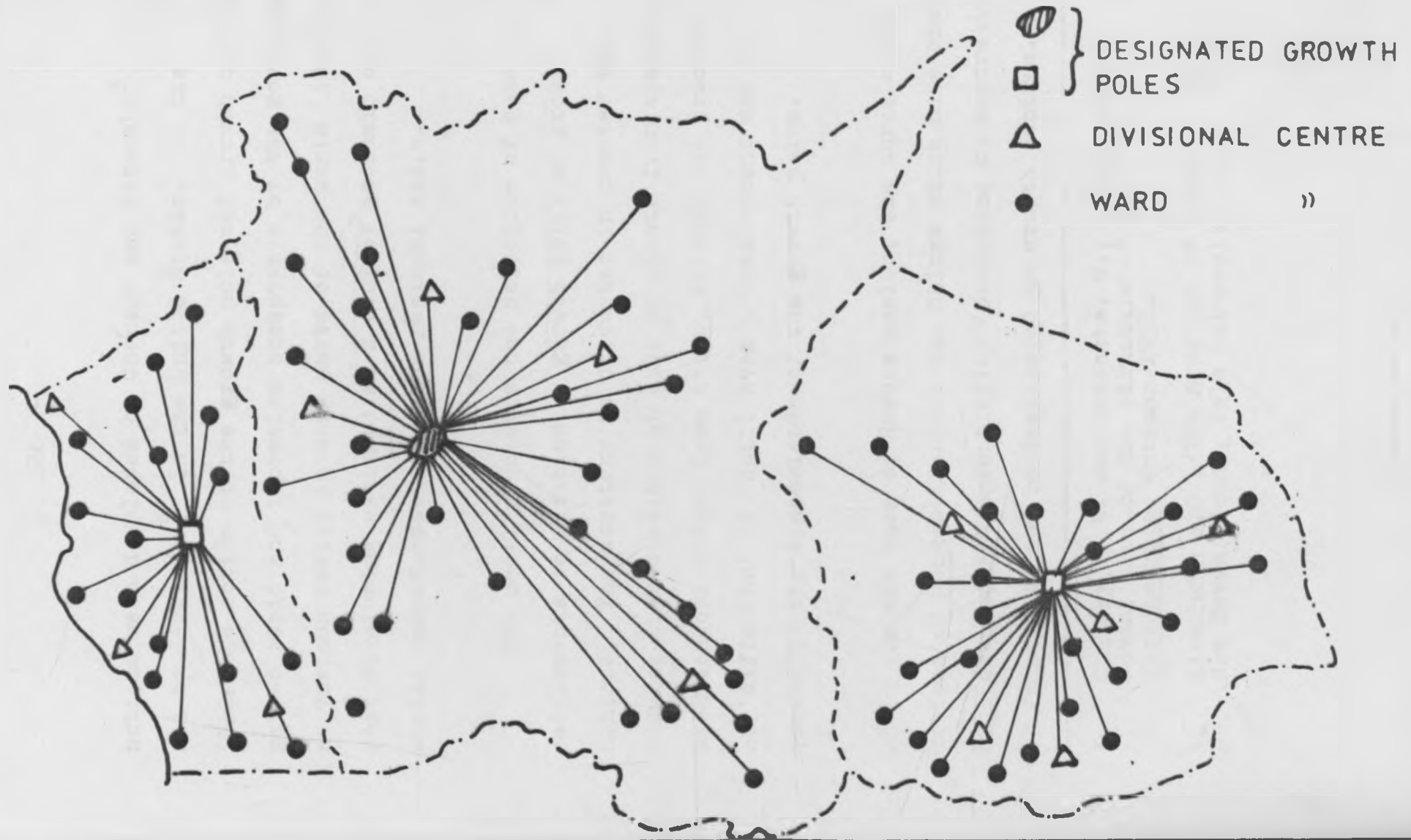
GROWTH POLES

Fig 3

notions were developed by Chenery and Watanabe[3] and by Hirsthman[4] in the United States. In the 1960s the notion of the growth pole and growth centre gained rapid and impresive acceptance by the governments at various levels in many parts of the world (including most developing nations) as a tool of economic and social transformation at the regional scale.

The model advocates the selection of some settlements to function as growth poles or growth centres. The strategy as discussed in chapter two, assumes that development must originate from specific geographical points from which, through the process of 'diffusion' or 'spill over', development can be spread to the hinterlands of the growth poles.

In the case of Ruvuma region, the three urban centres of Songea, Tunduru and Mbinga which have shown high development potentiality (according to centrality of functions) can be designated as growth centres.

3. Chenery, H.B. and Watanabe, T., 'International Comparisons of the structure of production', Econometrica, October 1958.

4. Hirschman A.O., THE STRATEGY OF ECONOMIC DEVELOPMENT, New Haven, Conn., Yale University Press, 1958.

These centres are given priority in all types
of investments both public and private. The
investments include improvement in infrastructure and
public utilities, development of public and private
industries and support services. All the other
settlements within the effective impact area of the
growth centre are dependent on it for the above
mentioned functions. (see figure 4).

Despite its inherent merits such as economies
of concentration and cheapness in the provision of
services, this model is not appropriate to bring about
equitable development in lagging regions like Ruvuma
region. In the context of Ruvuma region, the model
severely suffers from the following shortcomings.

1.   due to poor physical linkages between the growth
      centres and the settlements in their hinterlands,
      access to the polarized services will be
      difficult to a majority of the rural population
      and hence exacerbate the rural-urban gap.

2.   it delibrately discourages efforts to exploit
      natural resources e.g. forest products, minerals
      and agricultural potential areas which are the
      bases of economic, social and physical development
      of the region.

3.   it is likely to encourage rural-to-urban
       migration in search for better economic
       opportunities in the growth centres.

4.   it favours unbalanced development by concentrating
       both public and private investment in the
       designated growth centres while ignoring rural
       settlements.

Settlement Model III:

Planned linear development along major transport axis.[5]

       In areas where the transportation network is
very undeveloped, it is more economical and convinient
to have settlements developing along or near the
existing all-wather roads. This will create development
axes on either side of the major roads which join the
major urban centres in the region. Within shorter
distances (say of 20-30 km) feeder roads can be
easily and cheaply constructed to connect the rural
centres with the major roads (see figure 4).

       This settlement pattern, with well planned
physical linkages among the various levels of

---

5. This model is developed from Pottier's theory of
    axes of development. (see chapter two).

SETTLEMENTS MODEL III

Legend:
- ——— MAJOR ROADS
- – – – PROPOSED MAJOR RD.
- - - - FEEDER ROADS
- REGIONAL CENTRE
- DISTRICT "
- RURAL MARKET "
- LOCAL SERVICE "
- VILLAGES
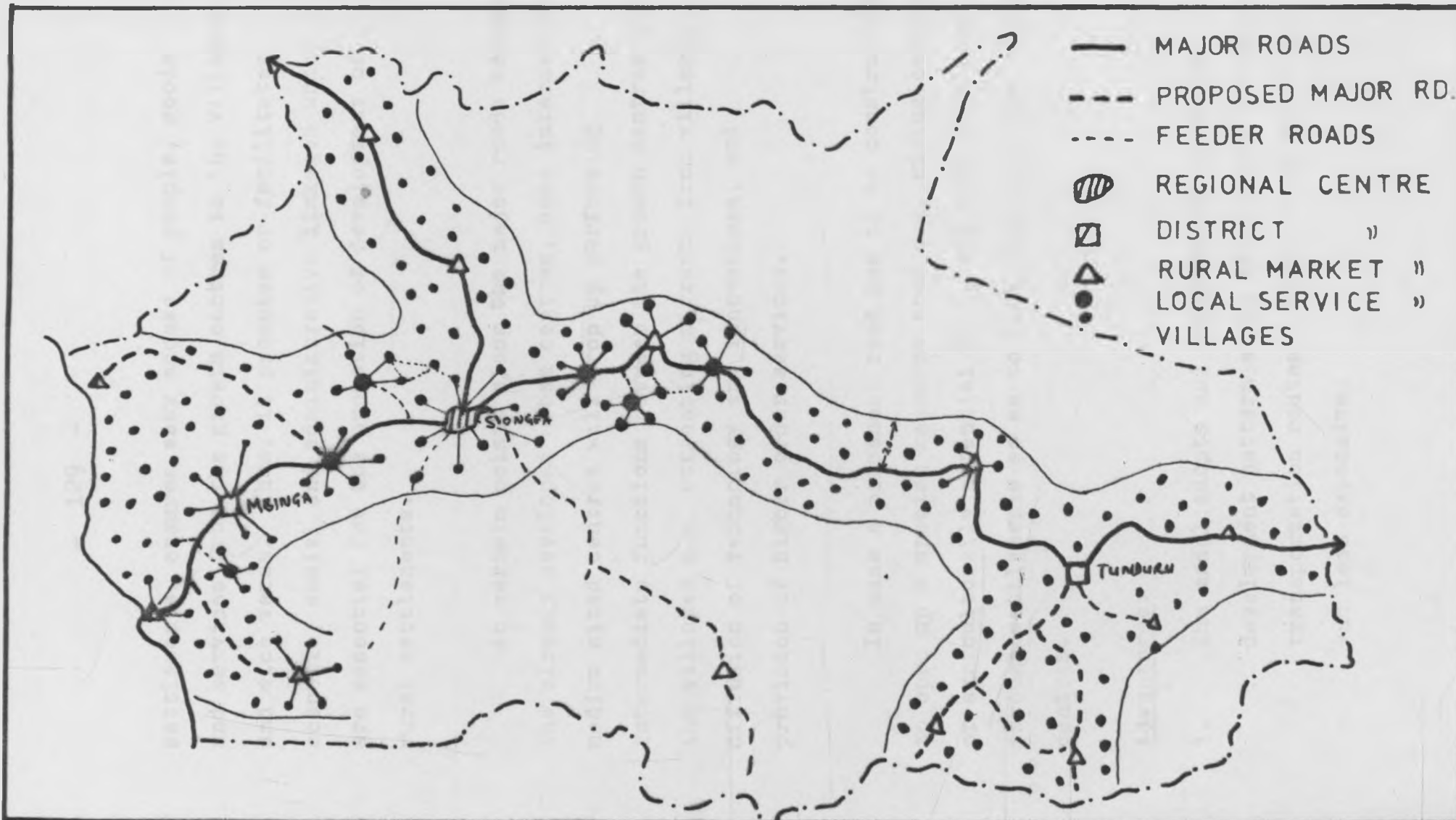
PLANNED LINEAR DEVELOPMENT ALONG MAJOR TRANSPORT AXES   Fig 4

settlements, ensures easy access of people, goods
and services from the growth centres to the villages
and vice versa. Thus, it promotes or facilitates
economic, social and administrative linkages which
are essential for the promotion of development of
rural settlements.

At certain points along the major roads between
the already developed urban centres, some intermediate
medium sized centres will crop up performing
intermediate functions between the growth centres and
the villages e.g. attracting migrants from villages,
diffusion of technology and innovations, and
provision of higher order services.

In case a permanent road has to be constructed
to open up a special resource area e.g. mining centre
or agriculturally potential area, the road must pass
through settlements so as to link them with the urban
centres.

Advantages:

1.   The model adopts and enhances the existing
      development pattern along the already established
      transportation routes - hence it is realistic
      and less expensive.

2.   it favours the development of both urban and rural
      settlements with greater emphasis edged towards
      rural development and discourages the development
      of settlements in remote areas.

3.   it gives equal priority of development to all
      areas of identified economic potential i.e.
      it aims at opening up remote villages with
      rural resources which can be exploited to the
      benefit of the rural population.

4.   it provides a definite spatial framework
      within which settlements can grow and benefit
      equitably from regional investments.

Disadvantages:

1.   High construction and improvement costs for the
      total road network length inhibits the
      extension of the existing road network to
      other resource areas.

2.   the model relies too heavily on the automobile
      which is liable to escalating market prices
      both in technology and fuel.

Considering the physical and economic characteristics, the existing spatial distribution of settlements and thier linkages and the objectives of the required spatial framework that would bring about equitable development among settlements in Ruvuma region, it is settlement model III that is suitable for Ruvuma region. First it discourages the development of settlements in areas of low development potential. Secondly, by concentrating settlements closer to the major roads with well developed feeder roads ensures maximum interaction (both social and economic) among settlements within their hierarchy and hence facilitate the 'spread effects' of development from the urban centres to rural settlements. This, in the long run will lead to the development of some intermediate urban-oriented centres in the rural areas where some higher grade services can be located to ensure easy access to the services by a majority of the rural people.

In order to effectively achieve equitable development of settlements, the location of the settlements within the 'development Corridor' must follow a definite functional hierarchy as shown in figure 5.

Fig. 5

Hierarchical Structure of Settlements
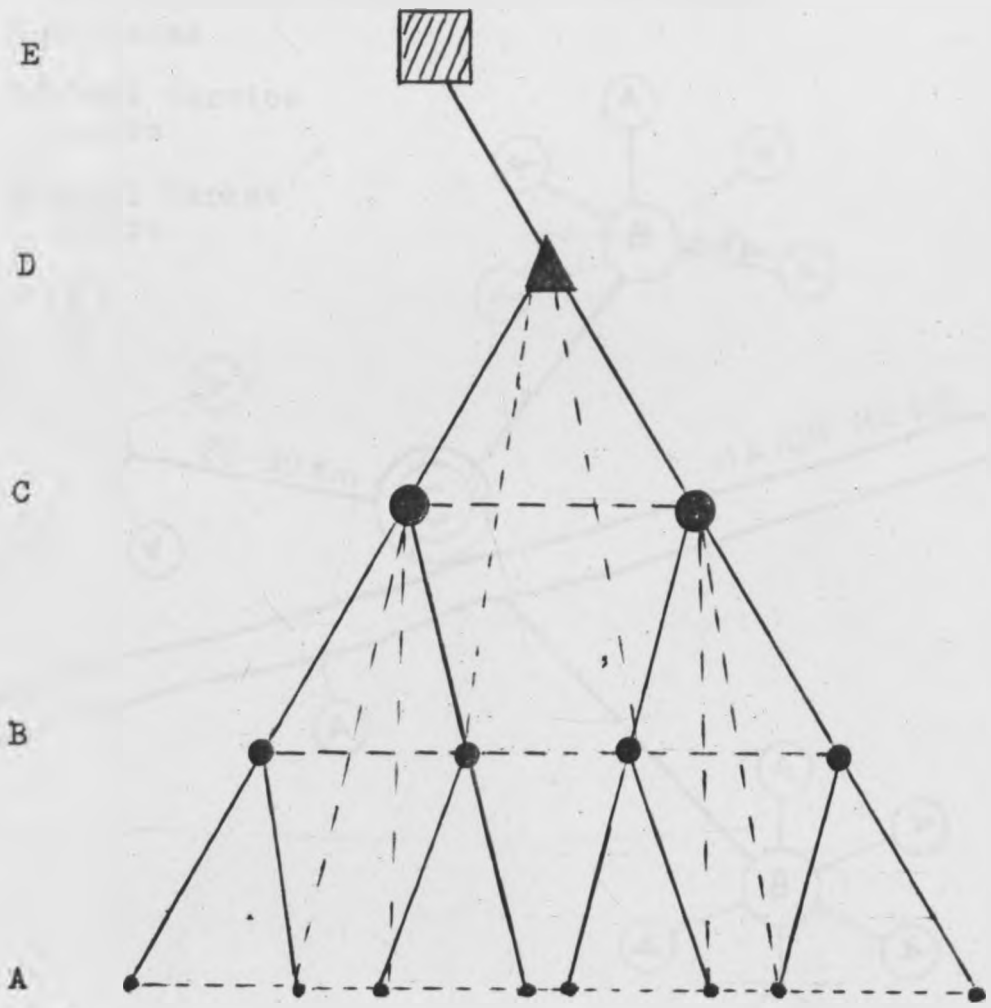
Note: The continious lines represent the
hierarchical structure, the dotted ones
represent other possible connections.

Geographical organisation of the functional hierarchy

A-Villages

B-**Local** Service
   Centre

C-Rural Market
   Centre
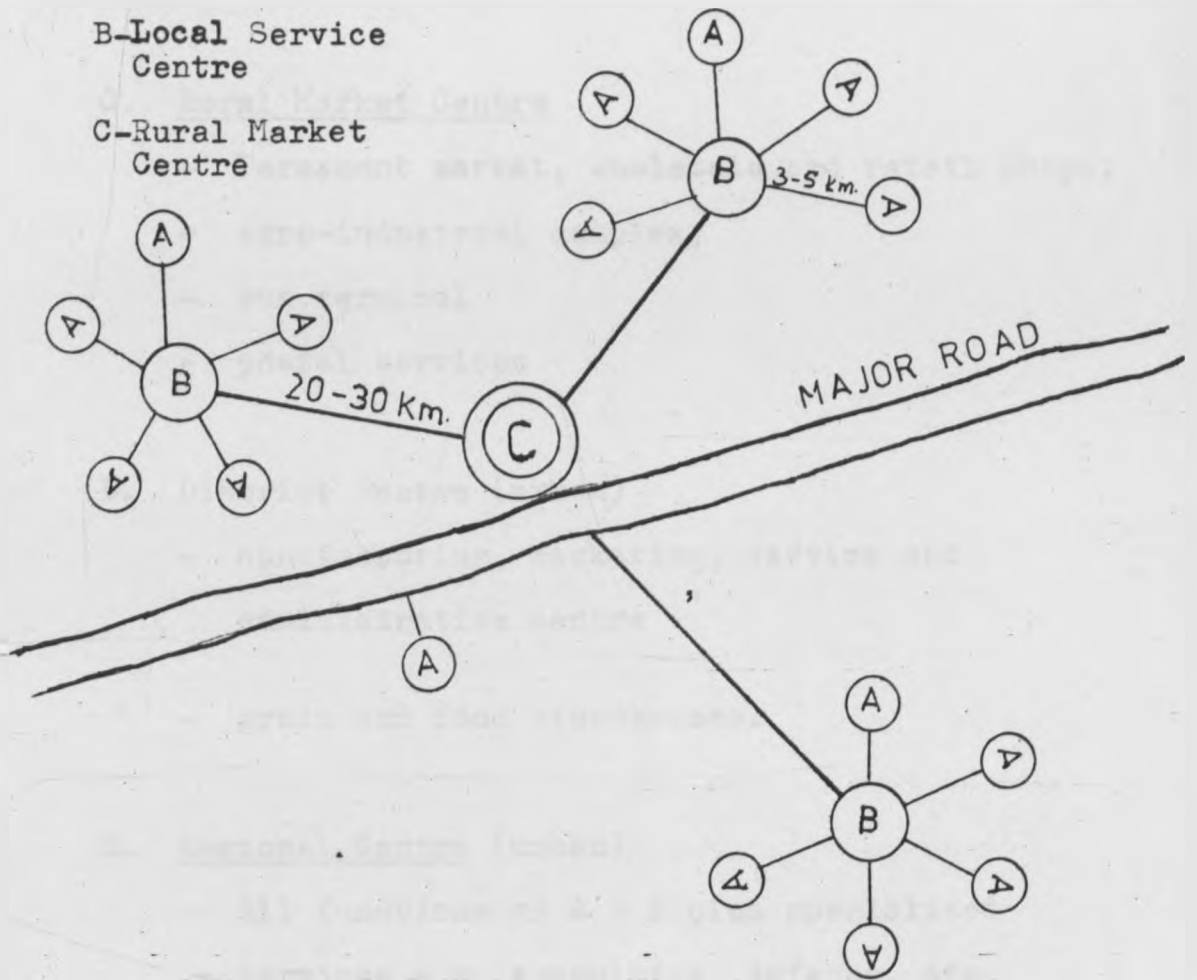
Note: This diagram is a modification of the works
       of Z. Pióro and T. Kachniarz, of the
       Institute of Town Planning and Architecture,
       Warsaw.

Functional Hierarchy:

A. Villages

-   agricultural activities, convinience shops,

B. <u>Rural Service Centre</u>

Dispensary, Primary School, Police Post,

Water Supply point, Cottage industries, Shops,

C. <u>Rural Market Centre</u>

- Permanent market, wholesale and retail shops,

- agro-industrial complex,

- bus terminal

- postal services

D. District Centre (urban)

- Manufacturing, marketing, service and
  administrative centre '

- grain and food storehouses.

E. <u>Regional Centre</u> (urban)

- All functions of A - D plus specialized
  services e.g. consulting, defence, etc.

3.   <u>RECOMMENDATIONS:</u>

(a)   In order to ensure an efficient transport network
      in the region, the following roads should be
      tarmacked: Songea - Makambako, Songea Mbamba Bay,
      Songea - Masasi and the Songea - Lituhi.

A permanent, all weather road should be
constructed to link Mbinga town and the Liparamba
settlement which has a rich agricultural
hinterland. All farm-to-market rural roads
should be improved to facilitate the flow
of farm implements and farm inputs to the
villages and the marketing of agricultural
produce to urban centres.

(b)   Depending on the local conditions, all
settlements should be located within 20 - 30 km.
of the major roads forming the regional
development axes in which all development
efforts should be directed. Hence, settlements
located outside the development axes should
be discouraged or even forced to resettle
nearer to the major roads.

(c)   The overspill population from the densily
populated Matengo highlands should be encouraged
to resettle within the Mbinga-Liparamba
development corridor.

(d)   Non-agricultural investments in thr rural areas
should be directed to the following settlements:

Mbamba Bay, Liuli, Lithuhi, Liparamba, Litembo,
Kitai, Kigonsera, Madaba, Mputa, Namtumbo,
Tanga, Matemanga, Nalasi, Lukumbule and
Nakapanya. These settlements, due to their
functional centrality and being located along
the major roads have a high potential of
growth into intermediate centres between the
already developed urban centres of Songea,
Mbinga and Tunduru and the other rural
settlements.

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Appendix no. (i)

Spatial Distribution of both cash and food crops

	Agro-economic zone	Cash Crops	Food Crops
1.	Matengo Highlands	Coffee Tabacco	Maize, beans, sunflower, wheat, frish potatoes, finger millet, cassava, pulses, onions
2.	Lower Matenga	Tobacco Coffee	maize, cassava, beans, sunflower, sesame, finger-millet, ground-nuts, onions
3.	Ruhuhu Valley	Tobacco Casher nuts	Cassava, beans, peas, maize, finger millet, groundnuts, sesame, paddy
4.	Lake Shore	Paddy, Coconuts Groundnuts	Cassava, groundnuts, peas, millet, sorghum, bananas
5.	Mitomoni	Casher-nuts Sesame, Tobbacco Groundnuts	Maize, cassava, beans, rice, finger millet, groundnuts
6.	Ubena Highlands	Coffee	Maize, beans, Irish potatoes, pigeon peas, sunflower, bananas

7.	Western Songea	Fire-cured tobacco coffee, Sesame maize	Maize, beans, rice, finger millet, cassava, sweet potatoes, groundnuts, onions, vegetables,
8.	Central	Fire cured tobacco sesame, maize	Maize, beans, rice, cassava, groundnuts, finger millet, sweet potatoes, suger cane.
9.	Undendeule	Tobacco sesame, rice	Mize, cassava, beans rice, finger millet, sunflower, sorghum
10.	Southern Songea	Cashewnuts, sesame tobacco	Maize, cassava, beans, rice, finger millet, groundnuts.
11.	Matemanga	Fire-cured tobacco, sesame	Maize, beans, sorghum paddy, cassava
12.	Southern	Cashewnuts, sesame, ground-nuts	Maize, cassava, sorghum, paddy, beans
13.	Nakapanya	Cahewnuts, sesame tebacco, groundnuts	Maize, cassava, beans, paddy, sorghum

Source: Extracted from the Ruvuma Regional Report, 1975.

Appendix No. (ii)

Spatial distribution of small scale activities in in Ruvuma region

TUNDURU DISTRICT

1. Legenzambwende   -   blacksmith shop and cleaceous plant/made of wood/

2. Naikula   -   carpenter's shop/makonde/

3. Kodawele   -   artist woodworket's shop/ makonde/

4. Tunduru   -   brick plant, carpenter's shop, bakery

5. Nandembo   -   carpenter's shop/in the mission/

6. Nakapanya   -   carpenter's shop and brick plant/probably temporarily/

7. Mtina   -   carpenter's shop

MBINGA DISTRICT

1. Kongonsera   -   woodworker's shop/carpenter's shop/ and blick plant

2. Mbinga   -   woodworker's shop/in mission/, brick plant, tinsmith's shop and mills

3. Mbamba bay   -   woodworker's shop and brick plant

4. Liuli   -   woodworker's shop and brick plant

5. Litembo   -   woodworker's shop and brick plant

6. Mbangando   -   blackamith shop

7. Kitai   -   brick plant and carpenter's shop / prison/

SONGEA DISTRICT

1. Songea   -   carpenter's shop, brick plant, tinsmit shop, mills, and bakeries

2. Muhukuru   -   woodworker's shop

3. Mtakanini   -   woodworker's shop

4. Peramiko   -   carpenter's shop, ready-made clothing, footwear shop, woodworker's shop, brick plant, tileries/ in the mission/

5. Litowa   -   woodworker's shop, weaver's shop

6. Matetereka   -   woodworker's shop, weaver's
                       shop and carpenter's shop

7. Mtiputipu   -   carpenter's shop

8. Namtumbo   -   mica mine

9. Udjireni mwema -   soap maker's shop

10. Mandepwende   -   soap maker's shop

11. Chengena   -   woodworker's shop tinsmith
                       shop

This list is probably uncomplete but it gives
a general aspect of the real state.

Appendix (iii)

Key to weighted point system

In order to rank the settlements in Ruvuma region according to their centrality of functions, a survey of the location of existing infrastructural developments was undertaken in all the districts. The survey examined four categories of services, namely Public Services (e.g. education and health), Commerce and related facilities (e.g. main market, bank, retail concentrations etc.), Industrial Concentrations, and Communications and Public Utilities.

The four major categories of services were broken down into 24 specific sub-categories each of which was assigned points according to its relative importance within the major category, whereby a high level of service (e.g. a hospital) scored 2 points while lower level services (e.g. health centre and dispensary) scored 1 point. (see key to points).

Where two or more levels of the same type of service or two or more individual services of the same level were available at the same place (e.g. a centre with two banks) the points were not accumulated but only the points of the highest level of service were included.

For each centre the point value was derived
by adding the scores of all the different services
and the centres were ranked accordingly.

Facilities	Weight of Centrality
(a) Public Services	
1. Secondary school	2
2. Teachers training college	1
3. Medical training establishment	1
4. Dispensary	1
5. Health centre	1
6. Hospital	2
(b) Commerce and Related Facilities	
7. Retail concentrations	
– small	1
– medium	2
– large	3
8. Main market	1
9. National Bank of Commerce (NBC)	2
10. Petrol station	2
11. Bus route	1

Contd.

Facilities	Weight of centrality
12. Fire station	1
13. Cinema	1
14. Public library	1
15. Accomodation and (hotels)	1

(c) Industrial Concentrations

16. Industry

- small scale	1
- large scale	2

(d) Communication and Public Utilities

17. Post Office ,	2
18. Telephone	1
19. Organized water supply	1

20. Eletric supply

- small scale	1
- industrial scale .	2

21. Road Junction

- all weather road gravel	1
- " " " tarmac	2

22. All weather road (within 5 km.)

- gravel	1
- tarmac	2

23. Air field

- class C	1
- class A-B	2

24. Marine Port	2

Main infrastructure of Settlements 1979/80

Settlements			facilities (see key attached)															Total Score
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
NGEA DISTRICT																			
Songea	A		2	1	1	1	1	2	3	1	2	2	1	1	1	1	1	2	
Peramiho			2	1	1	1		2	1	1		2	1			1	1		
Gumbiro	D		–			1			1				1						
Maposeni	D		–										1						
Tanga			–			1			1				1						
Nhukuru			–			1	1		1										
Mputa						1	1		1				1				1		
Madaba						1			1				1			1	1		
Liino						1			1				1						
Namabengo						1			1				1						
Namtumbo	D					1			1				1						
Kitanda						1			1								1		
Mchomoro						1			1				1						
Lisesa	D					1	1		1								1		
UNDURU DISTRICT																			
Tunduru	B			1		1			2	1	2	2	1			●	1	1	
Nalasi	D					1			1				1				1		
Nbesa									1				1						
Marumba									1								1		
Mchoteka						1			1										
Lukumbule	D					1			1				1				1		
Kahala									1										
Mtina							1												
Nilenanga	D					1			1				1						
Muhuwara						1			1										
Mandembo						1			1				1						
Nakapanya									1				1				1		
Namasakata	D					1			1										
Ligoma									1										
									●										
RBINGA DISTRICT																			
Mbinga	A			1		1	1		2	1	2	2	1			1	1		
Mkumbi Bay	D					1			1				1			1	1		
Liuli						1	●	2	1				1						
Mango						1			1										
Ngombo						1			1										
Mbambamu						1			1										
Litembo						1	●	2	1				1					1	
Kigonsera			2			1			1				1						
Magu						1			1										
Kitai						1			1				1				1		
Matiri						1			1										
Lituhi	D			1		1		2	1				1				1		
Kwanda						1			1										
Lipanaba	D					1	1		1								1		
Tingi						1			1										

Continued

	GRAND TOTAL	24	23	22	21	20	19	18	17
	29		1	1	1	2	1	1	2
	19			1	1		1		2
	5			1	1		1		
	2				1		1		
	5			1	1		1		
	3						1		
	6			1			1		
	7			1			1		
	4			1			1		
	5			1			1		
	6			1			1		
	3						1		
	4						1		
	5			1			1		
	18		1	1		1	1		2
	6						1		
	3						1		
	3						1		
	3						1		
	6						1		
	2			1			1		
	3			1			1		
	6			1			1		
	4						1		
	4						1		
	5						1		
	3						1		2
	2								
	17		1	1		1	1		
	8			1			1		
	8		1				1		
	3						1		
	2								
	6						1		
	7						1		
	2			1	1				
	6						1		
	6			1					
	6			1	1				
	5	1					1		
	2								