Projected Changes in Urban and Rural Population in Kenya and the Implications for Development Policy

by

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'No estimates of future population or depopulation
formed upon any existing rate of increase or
decrease, can be depended upon'. -- T.R. MALTHUS,
in _Essay_ (II, 13).

INTRODUCTION

The population of Kenya is growing very rapidly. While
it is notoriously hazardous to engage in prediction, it is,
nevertheless important to examine the general order of magnitude
of the population problem facing Kenya. Some writers are
beginning to assess the implications but few people appear to
appreciate that most of the increase in population will have to
be absorbed in the agricultural sector. The present proportion
of the population in agriculture, and the co-efficient of
differential growth [1], preclude their absorption by the non-
agricultural sector unless major discoveries of new resources,
acting as a prime mover, are forthcoming.

The purpose of this paper is, in the first instance, to
indicate briefly the significance of different rates of growth
of urban and total population, and then to make Regional
projections up to 1990 for the _rural African population_ (2) for
all _Regions_, except the North East. This latter Region is of
little significance in terms of population and is unique in its
problems and way of life. The second aim is to examine the
extent of the land resources and hence the implications to
agriculture of the very large increases in numbers of people
that will have to be supported in the rural areas, within the
next two or three decades, if the population increases are as
large as the calculations below suggest.

It is a common feature of low income countries that large
proportions of their populations are engaged in agricultural pursuits.
The relatively low elasticities of demand for foodstuffs and other
agricultural products and the greatly increased average output per
man available from specialization and mecanization in non-agricultural
pursuits are often used to suggest that the development of
secondary and tertiary sectors of the economy are necessary
conditions for economic progress. Assuming this to be true, the
proportion of the population in each sector is of considerable
interest. The rate at which the urban and rural sectors of the
economy can change in relative importance depends on the present
proportions and the differential rates of growth of the urban and
total populations. The expansion of the urban population does not
necessarily mean, as is sometimes implied, that there will be any
reduction in the rural population, either relatively or absolutely.
An absolute decline in Kenya's agricultural population is only a
distant theoretical possibility. The relative decline in the
numbers engaged in agriculture is more certain but, as will be seen,
is alos of rather academic interest in Kenya's circumstances.

(1) F. Dovring. _The Share of Agriculture in a Growing Population_
FAO Monthly Bulletin of Agric.Econ. & Statistics
Vol 8 No.8/9 1959.

(2) Throughout this paper, unless explicitly stated to the
contrary all the references to population refer to _only_
the African population

The Rate of Population Growth

The population censuses which have taken place in East Africa over the last five years have indicated rapid, and possibly increasing, rates of population growth. The 1962 census in Kenya has been particularly alarming, suggesting, as it does, a rate of growth of 3% per annum. This is the estimate of the Statistics Division of the Directorate of Planning, (1) but it must be realised that this is based on census data only since, for the African population, the statistics on vital registration and migration are inadequate. This estimate of Kenya's rate of population growth is formed mainly upon a comparision of the 1948 and 1962 census data. Because of the difficulties raised by boundary changes and possibly varying degrees of coverage in the different censuses, it was inappropriate to take the total increase in the intercensal period (which gives a 3.3% rate of growth). The distribution of districts by percentage increase was fairly heavily skewed hence it was considered that the median or mode would possibly act as a better measure. The median rate was 2.94 and the model rate 2.64 per cent per annum. These conclusions have been supported by the data on fertility and mortality obtained from the ten per cent post-enumeration survey which followed the 1962 Census, they have indicated crude birth and death rates of 50 and 20 per thousand respectively. The official population projections assume that the crude birth rate will remain constant but that the rate of population growth will increase because of a decline in the death rate due to an increase in life expectancy at birth of half a year per annum.

Table 1 shows comparative population growth figures for Kenya and selected countries.

In the past there has often been considerable debate when growth rates in the order of 2.0 per cent per annum were suggested for East Africa. (3) It is significant, however, that the Kenya Government has accepted the 3% per annum rate of population growth when drawing up its six year Development Plan (1964-1970). This is a realistic approach since it would require a startling decline in the birth rate (or a series of natural catastrophes) to materially alter the trend. Current knowledge leads one to discount these possibilities and it is therefore more sensible to plan one's economy on the assumption that the present high rate will continue for a considerable time. It would be foolhardy for any government to underestimate the effects that a rapidly growing population may have and, as Indian planners have come to realise, it may be equally foolhardy to consider the rate of growth of thepopulation a s being an exogenous factor in planning. (4)

(1) The author is particularly indebted to the generous help of Dr. J.G.C. Blacker, the Kenya Government Demographer, in providing him with access to census data and some of his, as yet, unpublished analysis.

(2) Kenya Statistical Digest Vol. I No.1 Sept. 1963 pp 3-4.

(3) East African Royal Commission 1953-1955 Report. Cmnd 9475 HMSO 1955. P.31

(4) This point is adequately discussed by Aaron Segal in an article entitled "Unemployment, Population and the Plan in the Kenya Weekly News No.2017 Oct. 9th 1964 P.27

However, this paper, inusing the official projections of
population which are based on an increasing rate of growth from
about 3.1% in the 1960s to about 3.5% in the 1980s, does make the
assumption that population growth is not capable of being
manipulated. The fantastic decline in birth rates in Japan as
a result of the legislation legalising induced abortions since
1949 merely shows the hazards of any predictions.

Regional Rates of Population Growth

The census data in Kenya show beyond doubt that the
Regional rates of population growth differ markedly. The
projection of Regional pop.s is, however, rather hazardous since
both the former censuses took place in the days of the "Provinces"
and the Regions have few common boundaries with the provinces.
Whereas there were six provinces, there are now seven Regions.
The census bureau has, however, reanalysed its data on a Regional
basis and has made annual projections up to 1970.

The Regional populations were reconstructed for 1948 and
1962, making allowance for boundary changes and under-enumeration
in some Districts in 1948. The percentage which each Region formed
of the national total was then calculated for the two census years,
andthe change in the percentage was extrapolated linearly.(1)

In the absence of any logicial alternative hypotheses, the
projections in this paper for 1980 and 1990 are done on the same
basis and are shown in Table III.

URBANIZATION

The size of the urban population has been taken as an
indication of those engaged in non-agricultural pursuits. In
conformi.y with United Nations definitions, all towns with
populations of 2,000 and more have been counted as "urban".(2)
This may be an optimistic assessment of the non-agricultural
population, particularly as the whole of the Nairobi Extra-
Provincial District has been included.(3)

In the 1948 census there were 17 anl in the 1962 census
34 towns with populations of over 2,000 people. In 1962 this
meant that 6.3% of the African or 7.8% the total population was
urbanized, about two thirds of whom were in Nairobi andMombasa.
The extent of urbanization is compared with other countries in
Table II.

The data on the 17ttowns with populations of more than
2,000 in 1948 give a reasonable indication as to the rates at which
urbanization has taken place. For the projections of future
urbanization, the 34 towns were assigned to their Regions and the
growth rates calculated for the 17 towns (by Regions) where
applied to them. (See Table III).

Since we are primarily concerned with the African rural
areas, commercial (i.e. large scale) farm and plantation labour,
which shows many of the characteristics of the urban labour force

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(1) For example in 1962 16.1768% of the total population was in the
    Central Region but as a proportion of total population its share
    is decreasing by 0.1009% p.a. hence its share in 1970 should be
    20.3747.
(2) With the exception of Bungoma in Western Region which had a
    population of less than 2,000.
(3) This adds about 60,000 persons which is probably not an unreasonable
    figure to assign to the population supported by the bicycle commuters
    of the city.

should possibly be considered as urban labour. Were the position of these farms and plantations fairly static, this step would be taken . However, in Kenya a vast resettlement scheme is being undertaken, the eventual objective being to buy out all large scale mixed farms for the African farmer. As a consequence, only urban population as defined by towns of over 2,000 is used.

Urbanization in Africa is undergoing rapid changes not only in terms of numbers but also in composition. The system of migratory labour, so common over most of Africa, appears to be breaking down so rapidly that the publications on the subject are often out of date before the printer's ink is dry. (1) No longer can the typical urban worker be considered to be temporary. As the urban labour force becomes more permanent, so the workers look to the towns to provide them with improved facilities in terms of housing, roads, sanitation, schools and hospitals, so that families may be brought up suitably in these towns. The situation shown in Nairobi in the two censuses indicates the nature of this change. In 1948 71% of African population in Nairobi were adult males. This percentage had fallen to 47% in 1962. The ratio of women and children to adult males had increased from 0.42 : 1 to 1.06 : 1 between censuses and it can be expected that over time this ratio will ten towards the national average of 3.37 : 1. (2) Thus the assumption that the very rapid rate of urbanization of 6% per annum which took place between 1948 and 1962 will continue may not be unreasonable, at least up until 1980. The rate of increase would be attributable to both increased employment opportunities and the increasing size and permanence of the urban family. It must be noted, though, that projections for individual towns at rates of 7% and more must naturally be subject to severe criticism when carried over too long a time period, since, as the base increases, this would necessitate incredibly large migratory, moves. In any case, such rates of growth call for fairly sophisticated planning by town and city councils if large slums are to be avoided.

While it is not the subject matter of this paper, it is pertinent to note that the investment in the necessary urban infra-structure required to allow even a six per cent annual increase in urban population would be very high indeed, and this is a sphere in which the capital/output ratio is likely to be particularly high. It has the effect of shifting substantially the transformation curve from "agriculture" to "industry" and eliminates simple comparisions of oportunity costs between the sectors. (3)

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(1) c.f. Migrants and Probetarians: A comment by E. Rado, reprinted in African Econ. Problems Vol II Book I p 189

(2) These figures were obtained, through private communication, from Dr. J.G.C. Blacker.

(3) S. Enke. Economics for Development. Prentice-Hall 1963 pp.136-8

With projections for the urban and total African populations, by subtraction, the difference indicates the size of the rural populations in the Regions. The projections are given in Table III. The figures in this table were used to draw up the semi-log diagrams (1-7). These diagrams show in a rather dramatic fashion the insignificant effect that urbanization is likely to have during the next few decades. What is true of Kenya as a whole (diagram 1.) is true to a greater or lesser extent of each Region except the Coast (cf. diagrams 2 - 7). Kenya's 6% per annum rate of urban growth compares very favourably with many other countries,(1) but few of the industrialised countries had to contend with rates of growth in the total population approaching 3% per annum. Kenya's coefficient of differential growth between her urban and total African populations indicates that urban share in the total population will increase by about 3.3% per annum.(2) That is to say, on these assumptions that the urban population will increase from 6.3% of the total African population in 1962 to about 6.8% in 1963 and 7.3% in 1965 etc. The very small proportion of population in the urban areas, and the rate at which the population is growing, precludes the absorption of the increase in population by the urban sector. A country with eight per cent of her population in the urban areas and a 3% per annum increase in her total population would initially require annual increases in the urban population in order of 40% if the numbers in the rural population were to remain static.(3).

These facts justify this attempt to examine the implications for agriculture of the very large increases in the rural population during the next two or three decades. They also justify the approach making the agricultural sector in Kenya the residual holder of population rather the alternative approach of planning agriculture for a specific population and assigning the residual to urban development. It is also made clear that whether there are low elasticities of demand for agric. products and whether the average per capita output from secondary and tertiary sectors is higher than in the agricultural sector, is of secondary importance. Where the proportions are so heavily weighed towards agric., it can only be through agricultural development that significant changes can be made in average per capita income levels.

IMPLICATIONS

While the "Kenya population problem" has usually referred to political issues in relation to land, this has not always been the case and there is a fairly extensive documentation of early fears of population growth. Thus the evidence of one of the District Commissioners before the Carter Commission in 1933 (4) could well have been made today and is a warning to all prophets.

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(1) e.g. Egypt rate has increased in the last ten years to 3.1% p.a. The presently developed countries experienced rates of urban growth of between 0.7% (France) and 4.2% p.a. (USA 1850-188) Dovring op. cit. table 2.

(2) This is calculated by subtracting the rate of growth of the rural pop. from the rate of growth of the urban population.

(3) This is calculated by dividing the rate of growth of the total population by the proportion of the population in the non-agricultural sector. See F. Dovring op. cit. e.g. 3 ÷ 7.3 = 41%. In subsequent years the rate would decline radically reaching the rate of increase in the total population as its limit.

(4) The Kenya Land Commission Report Cmnd 4556 HMSO 1934

"The future of the next thirty years or so may be
imagined as a race between the tendency of a growing population
to conjest the land and a growing skill to make the same land
support . larger population. During the earlier years of the
period skill will be in the lead and will result in greater
individual prosperity, but the rate of betterment will decline
and it seems likely that in about 20 years from now (unless
remedial measures are taken), approaching conjestion will
decrease the standard of life, as much as growth in skill will raise
it. After that a long flat top to the graph is the best we can
expect.(1)

The Royal Commission (1953-55) wrote in 1955: "there is no
evidence to suggest that up to the present the general rate of growth
of the African population has exceeded the overall ability of the
economy of the three territories to support it. Indeed, we believe
that the recently accelerated growth of population is in part both
a cause and a consequence of the greater economic opportunities .
which are open to the indigenous population. Thus the growth of
population should in itself present no serious overall problem of
population pressure provided the many obstacles to the economic
mobility of the factors of production necessary for the development
of the modern exchange economy can be overcome.(2)

The Commission was particularly concerned with the "dual
economy" and how to bring peasant agriculture into the modern exchange
economy. A great deal has been learnt and done since the Report was
published and there are many striking examples in Kenya of small
scale commercial farmers. The problem is much more serious: small
scale farming must become co..mercial and at the same time smaller
scale. The problem is how to continually shift the production function
upwards so that the full effects of diminishing returns so feared by
the D.C. may not be felt.

Earlier attempts at assessing population pressure and
the maximum populations that certain districts in Kenya could hold
were also made by officers of the Department of Agriculture. Not
surprisingly they started with the individual family farm. Assuming
a farm was to support eight persons, or six adult equivalents, they
made estimates of the full subsistence needs, and the excess income
needed to purchase the other necessities, for such a family. Then
on the basis of contemporary technical knowledge and taking into
account the ecology of an area, adequate farming systems were
planned to achieve the desired income levels. In order to obtain
the total population that could be supported in an area, each ecolo-
gical zone was divided by the average size of the planned farm and
the answer multiplied by 8, allowance being made for the use of a
small proportion for the public purposes (roads, villages etc.)

The most detailed of such plans were those worked out by
L.H. Brown for Central Province in 1952 and Nyanza Province in 1954
while he was Provincial Agricultural Officer in each of these regions.(3)
The "Swynnerton Plan"(4) incorporated the findings of these and other
studies in drawing up a national agricultural policy for African

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1) This is actually quoted from Land and Population in East Africa
   Colonial 290 HMSO 1952 P.2.

2) Royal Commission op. cit. p34

3) Revised and Consolidated Agricultural Policy Central Province
   Dec. 1952 and Draft Agricultural Policy. Nyanza Province. Oct.1954
   mimieographed reports by L.H. Brown. Provincial Agricultural
   Offices.

4) A Plan to Intensify the Development of African Agriculture in Kenya
   compiled by R.T.M. Swynnerton, Assistant Director of Agriculture,
   Government Printer, Nairobi 1955.

farming. The ultimate aim of this Plan was to establish '600,000
African economic farming units and raise the productivity of each
unit from present sales valued at a mere £5 to £20 per family to
£100 a year or more after providing for the needs of the family'(1)

Owing to boundary changes Brown's calculations cover districts
in five of the six Regions for which population projections have been
made. Sufficient details however are only given for the districts now
in the Central and Eastern Regions. These are shown in Table IV. For
those areas of Nyanza Province now in Western, Nyanza and Rift Regions,
Brown gave gross estimates by ecological zones but did not show
sub-totals by district. His estimates were significantly above those
given by previous agriculturalist in the Province and ranged from
688 to 240 persons per sqaure mile between the Kikuyu-Star grass Zone
and the impeded drainage sub zones. In both Provinces Brown suggested
that the population figures could be substantially increased allowing
full development of trades and other rural employment.

Writing some ten years later Brown recognised the implications
of a rapidly growing population when the holding capacity of the
land was recalculated(2) in terms of mere sunsistence. Thus going
back on the Swynnerton Plans hopes of 600,000 families with net
incomes of about £100. The Department of Agriculture's calculations
were based on 'reasonable yields above the present general level of
production.(3) They allow each family, on first class A land (i) (4)
3.5 acres thus allowing some 1,328 persons per square mile. Similar
calculations for other grades of land enable one to obtain some idea of
the absolute maximum numbers that could be held by the different
Regions.

Table V and its footnotes give the Land Use Categories for
the Regions of Kenya. These categories, based on rainfall regimes
conform basically with the major ecological zones and are the only
reasonable indication of land availability.

It will be noted that Kenya's Agricultural land (categories
A and B) is limited to about 17 per cent of her 220,000 square miles
of land area. This is due to the limitations imposed by rainfall,
temperature, soils, slope and tsetse fly. The area available for
agriculture can be expanded only marginally by the eliminration of
tsetse fly or by the development of irrigation schemes.

A gross calculation using Brown's estimates of population
densities and applying them to the figures in Table V assumes and it
is a very big assumption indeed the complete use of under-or unutilized land
and a completely irational land policy within each Region allowing for a
normal distribution of land on by rigid tribal or clan land rights within a
to that extent these calculations are unrealistic.(5) For this reason,
it would probably be far more reasonable to consider "maximum populations"
within a range of 25% with Brown's estimates as the upper limit. This
means a range from about 1,000 to 1328 persons per square mile. Granted
that Regional boundaries tend to incorporate similar tribal groups
the problem may here be looked at on a Regional basis. The redistribu-
tion of land rights may occur (or may have to occur) on a non-tribal,
trns-Regional, basis in the future. If this does happen, this paper
will have pointed out where the pressures for such reform are likely

(1) Ibid p.12

(2) A National Cash Crops Policy for Kenya by L.H. Brown, Chief
    Agriculturist/Regions and Acting Director of Agriculture.
    Government Printer, Nairobi, May 1963.

(3) Ibid p.41

(4) See footnotes to Table V

(5) E.g. Such gross figures are particularly misleading in the
    Eastern Region where the land with the capacity to hold more
    people is mainly in the Embu and Meru areas not in Ukambani
    c.f. Table IV.

to be felt most acutely.

On the basis of populations of between 1,000 and 1,328
persons per square mileon A(i) land, and the appropriate figures for
the other grades of land, the maximum agricultural populations that
could be held by each Region are:-

Coast	Between	1,534	and	2,045 thousand
Central	"	1,847	"	2,463 "
Eastern	"	3,217	"	4,289 "
Rift	"	10,336	"	13,782 "
Nyanza	"	1,752	"	2,336 "
Western	"	2,171	"	2,894 "

It must be appreciated that these figures can only be
regarded as guide-lines indicating the possible extent of population
pressures. The problem is in need of analysis on a much more local
level than is possible here. In the time period we are dealing with it
will be noticed that Nyanza Region is the only one where the projected
population will exceed the upper limit of the range (c.fr diagram 7).
Western, Central and Eastern Regions will be within the "danger" range
and pressing close upon the maximum.

As far as Nyanza is concerned there is undoubtedly considerable
potential for irrigation schemes in the Yala swap area and on the Kano
plains. The World Bank report (1) and the Kenya Development Plan(2)
estimate that some 50,000 acres could be irrigated. This would settle
about 17,000 families with 3 acres each (assuming that the high yields
and returns obtained at Mwea Tabere will lead to a reassessment of the
earlier allocation of 4 acres per settler). Assuming a previous
population density of 200 per square mile for these areas, the net
additional population that could be settled would be about 134,000
persons.

The other major irrigation scheme which will have some
effect on population is that proposed for the Lower Tana River.
Provided that a dam site can be found and that there are sufficient
areas of suitable soil it is estimated that some 300,000 acres could
be irrigated thus potentially allowing the settlement of 800,000 people.
It would be necessary for all the settlers to come from Nyanza if the
situation there were to be aleviated to any great extent.

Similar, but much smaller scale, irrigation projects using
the Athi River Basin, Lumi (Taveta) basin, the Ewaso Nyiro, Perkerra
Upper Tana would total 350,000 acres at best, consequently, in spite
of the tremendous capital outlay required, the effect on population
would be little better than marginal over the time period in question.

Resettlement projects will undoubtedly continue, but if
tribal land rights are safeguarded, the will be most effective in
the Rift Valley Region where the problem is least acute (cf diagram 6).
In any case, the effects on population are likely to be marginal.

It must be to the main body of present peasant f arming land
that major efforts are directed. The rural areas will have to absorb
these large increases in population, that is to say that the peasant
farmer will have to produce more to feed more people in the rural areas.
In addition, increased production will be necessary to feed a growing
urban population. If the terms of trade continue their adverse trend
and/or if the value of exports must be increased then the quantity
of exports will have to increase. In addition the peasant farmer may
be called upon to provide increased tax revenues.

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(1) The Economic Department of Kenya IBRD Report Govt. Printer 1962.

(2) The Kenya Development Plan (1964-70) IBRD

If one adds the expectation (and aim) of increased per capita incomes, that is to say that the increased population will have to be fed clothed and housed better, then the potential seriousness, on health, welfare, and political grounds, of the population problem begins to be seen.

It will require the proverbial tenacity of the Japanese farmer for the agricultural sector to measure up to these requirements. The Kenya peasant farmer must be given comparable tools, services and technical assistance if his utilization of limited land and water resources is to reach similar levels of productivity.

Conclusions.

The conclusions that emerge from the above are serious. Kenya's population is growing very rapidly. The proportion of the population in the agricultural sector and the rate of growth of the urban areas necessitate a large increase in the rural population. The limited land resources of the country suggest that there will be severe population pressures in some Regions within the next two or three decades.

The general economist who makes it his business to be interested in low income countries which have large proportions of their populations in agriculture cannot afford to consider the agricultural sector and its problems, or population growth, as being the exclusive reseves of small groups of specialists. Unlike the high income countries, or even India for that matter, most of the countries of middle Africa are facing rapid rates of population growth before any significant industrialization has taken place. The prblems thus presented require us to do a great deal more research and analysis of the agricultural sector so as to enable maximum use to be made of land resources that are currently being used at very low levels of efficiency.

TABLE I   TOTAL POPULATION ESTIMATES ANNUAL RATES OF POPULATION
                         GROWTH IN SELECTED COUNTRIES.

Country	Year of last Census	Total Population mid-year 1962	Rates of Growth
Kenya	1962	8.6	2.9
Tanzania*	1957	9.9	1.9
Uganda	1959	7.0	2.5
Ghana	1960	7.1	n.a.
Congo (Leopoldville)	1955-1957	14.8	2.4
South Africa	1960	16.6	2.6
U.A.R.(Egypt)	1960	27.3	2.6
Mexico	1960	37.2	3.1
Brazil	1960	75.3	3.4
Malaya	1957	7.4	3.2
India	1961	449.4	2.3
U.S.S.R.	1959	221.5	1.7
U.S.A.	1960	186.7	1.6
U.K.	1961	53.4	0.8

* Zanzibar and Tanganyika.

Source: United Nation's Demographic Yearbook 1963 Table I pp.123 - 142.

TABLE II   PERCENTAGE URBANIZATION IN KENYA AND SELECTED COUNTRIES

Country	Year	Percentage Urban	Percentage Rural
Kenya	1962	7.8	92.2
Tanzania*	1957	4.1	95.9
Uganda	1959	2.4	97.6
Ghana	1960	23.1	76.9
Congo (Leopoldville)	1955-1957	22.3	77.7
South Africa	1960	45.0	55.0
U.A.R.(Egypt)	1960	37.7	62.3
Mexico	1960	50.7	49.3
Brazil	1960	45.1	54.9
Malaya	1957	42.7	57.3
India	1961	18.0	82.0
U.S.S.R.	1959	47.9	52.1
U.S.A.	1960	69.9	30.1
U.K.	1961	78.3	21.7

Source: U.N.Demographic Yearbook 1963 Table 5.

* Zanzibar and Tanganyika.

TABLE III   RURAL AND URBAN AFRICAN POPULATION PROJECTIONS FOR KENYA BY REGIONS MID YEAR ESTIMATES 1962-1970-198 -1990

REGION	1962		1970		1980		1990	
	URBAN	RURAL	URBAN	RURAL	URBAN	RURAL	URBAN	RURAL
	'000	'000	'000	'000	'000	'000	'000	'000
Coast	120	535	201	624	388	762	755	82
Eastern	25	1,528	44	1,937	93	2,663	197	3,72
Central	24	1,287	58	1,529	175	1,884	524	2,193
Rift	95	1,651	124	2,074	173	2,819	242	3,92
Nyanza	18	1,595	30	2,074	56	2,951	104	4,284
Western	5	1,003	9	1,292	19	1,818	41	2,609
Nairobi E.R.D.	220	–	333	–	555	–	918	–
Total Kenya [1]	507	7,599	799	9,530	1,459	12,897	2,781	17,563

Source: Calculated from Kenya Census Statistics.   See text for the bases of the projections.

(1) Excluding the North East Region.

Table IV

Estimates of Population Potentials; 1948 and 1962 Census figures, Selected Districts

| Region | District | Brown's Estimates | | 1948 | 1962 | 1970 |
		min	max	Census Pop	Census Pop.	Estimate
		'000	'000	'000	'000	'000
Central	Kiambu	252	283	263	407 (353)*	(423)*
	Fort Hall	326	385	304	345 (408)*	(488)*
	Nyeri	198	232	183	255 (245)*	(306)*
Eastern	Embu	400	468	202	293	383
	Meru	857	1,005	313	469	708
	Kitui	562	616	356	551	853
	Machakos	600	605	211	285	342

Sources: Revised and consolidated Agricultural Policy. Central Province immeographed report by L.H. Brown. December 1952 Appendix II.
Kenya Population Cencus 1962. Government Printer, Nairobi July 1964.

*Estimates contained in brackets assume constant boundaries as when Brown did his analysis -- these same boundaries are used for the 1970 projection. The boundary changes in the districts of Eastern Region would not materially alter the figures presented here.

Land Usage Class	Coast	Eastern	Central	Rift	Nyanza	Western	Total
A (i)	445	1,455	1,064	5,046	1,023	1,907	10,540
A (ii)	-	10	-	1,625	-	-	1,635
A (iii)	474	-	234	2,698	-	256	3,662
A (iv)	643	103	104	2,220	1,110	531	4,711
Total "A" 35 inches or more	1,562	1,568	1,402	11,589	2,133	2,694	20,948
B (i)	425	1,676	1,451	2,168	621	-	6,341
B (ii)	601	1,227	156	876	559	-	3,419
B (iii)	679	1,342	42	4,874	536	-	7,473
Total "B" 25-35 inches	1,705	4,245	1,649	7,918	1,716	-	17,232
"C" & "D" Class - Less than 25 inches	23,586	46,293	-	47,497	-	-	165,644

TABLE V   LAND USE CATEGORIES BY REGIONS* (in square miles)

* Excluding North-East.

A. High Potential with adequate rainfall (35" and above)

(i) Very High Potential Land, with adequate rainfall, good deep soils and moderate temperatures (Kikuyu- Star Grass Zones).

(ii) High Potential Land as above, but too cold to grow two crops per year.

(iii) Land with adequate rainfall and deep soil but with a soil fertility problem or poor drainage.

(iv) Land with adequate rainfall but with shallow soil unsuited to arable agriculture.

B. Medium Potential (25" - 35" rainfall)

(i) With good deep soil suited to agriculture.

(ii) With soil fertility problem or with poor drainage.

(iii) With shallow soil unsuited to arable agriculture but suited to grazing.

C. Low Potential (20" - 25" rainfall) - suited only to ranching except under irrigation.

D. Nomadic Pastoral (less than 20" rainfall) - suitable only to poor quality ranching or wild life exploitations (latter probably best).

Sources: A National Cash Crops Policy for Kenya Govt. Printer, Nairobi May 1963, p.8
Kenya African Agricultural Sample Census 1960/61. Govt Printer, Nairobi May 1962, p. 2.

PROJECTED SECTOR CHANGES

IN

KENYA

PROJECTED SECTOR CHANGES BY REGIONS IN

KENYA

1960 —— 1990

2. COAST REGION
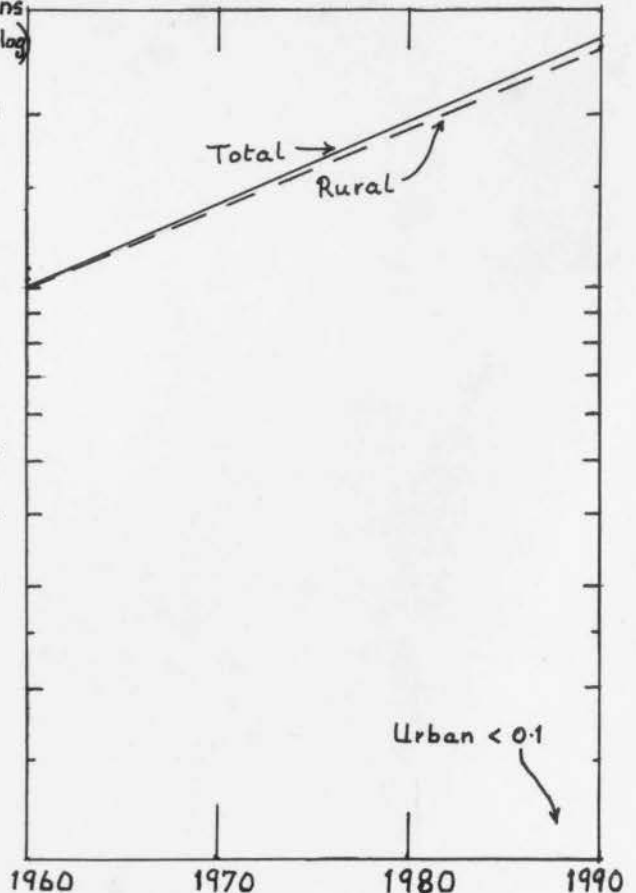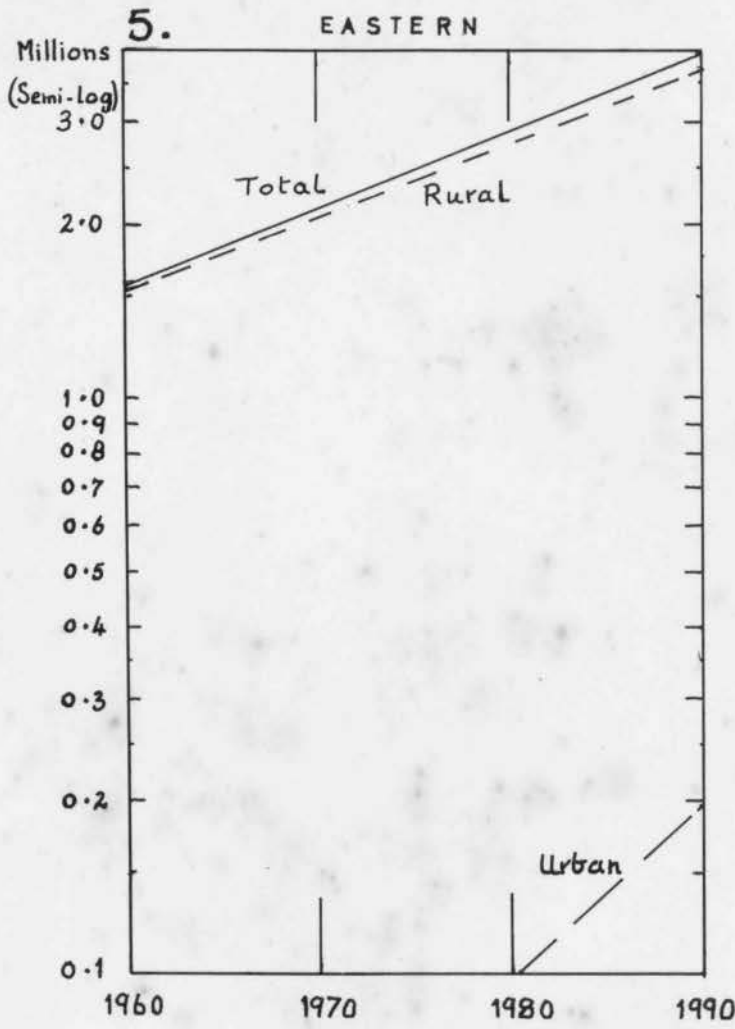
Millions (Semi-log)

Total
Rural
Urban

3. CENTRAL

Total
Rural
Urban

4. WESTERN

Millions (Semi-log)

Total
Rural
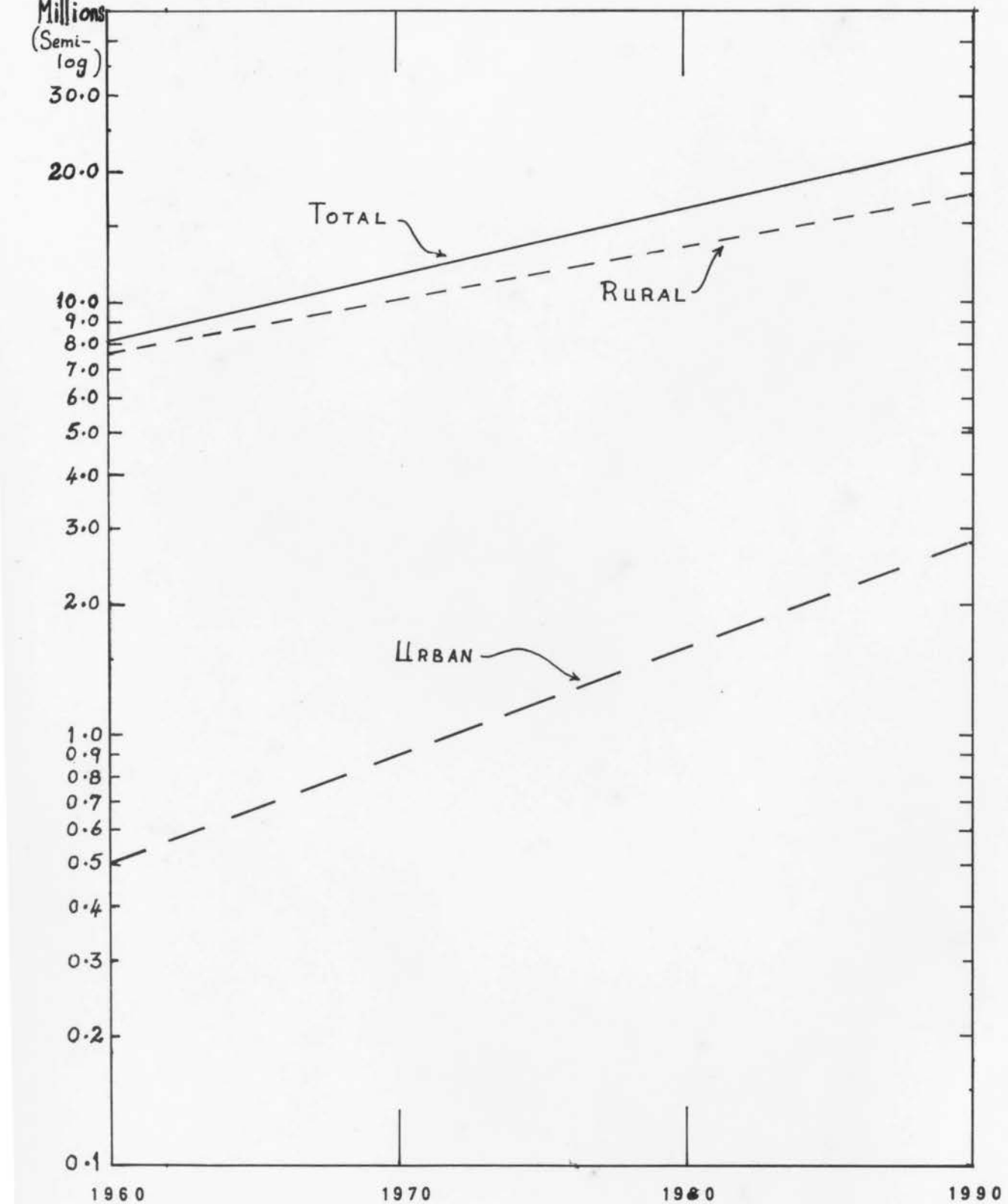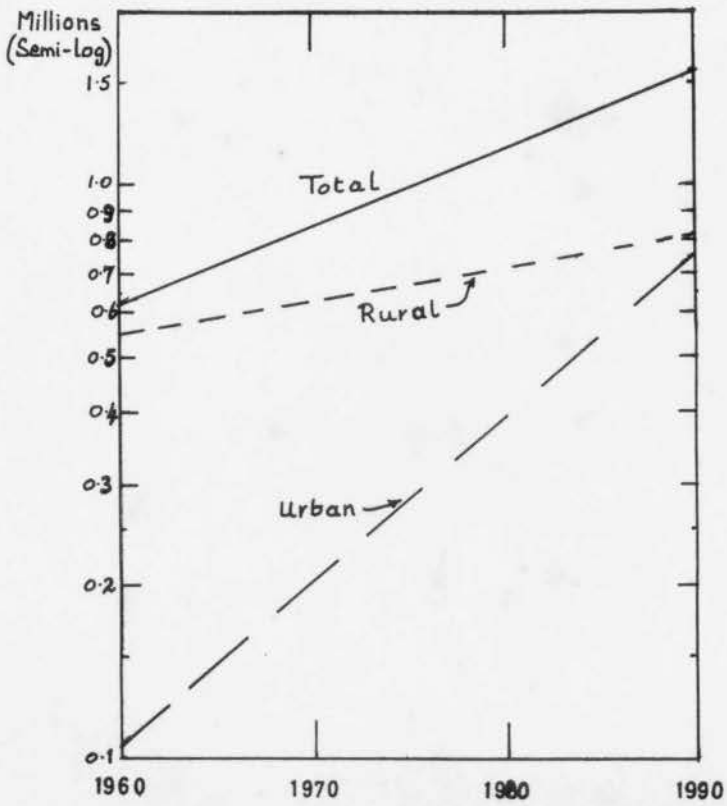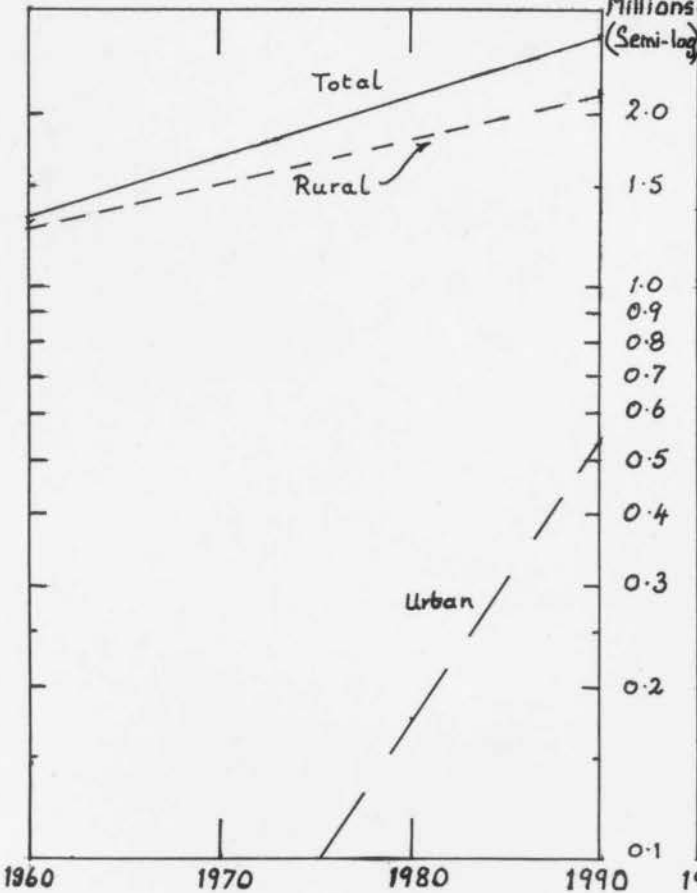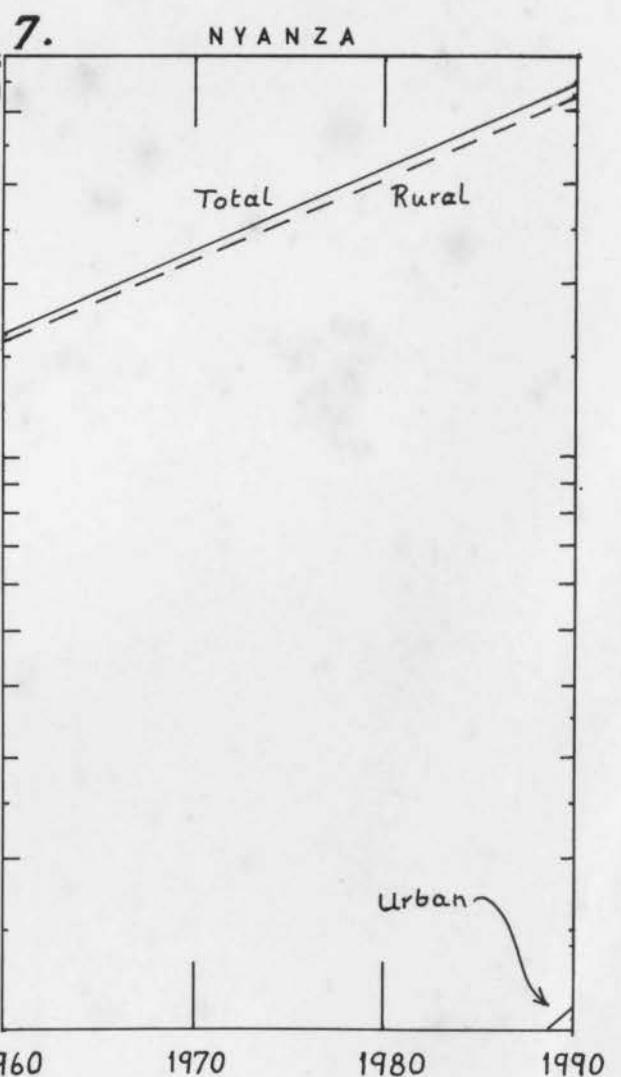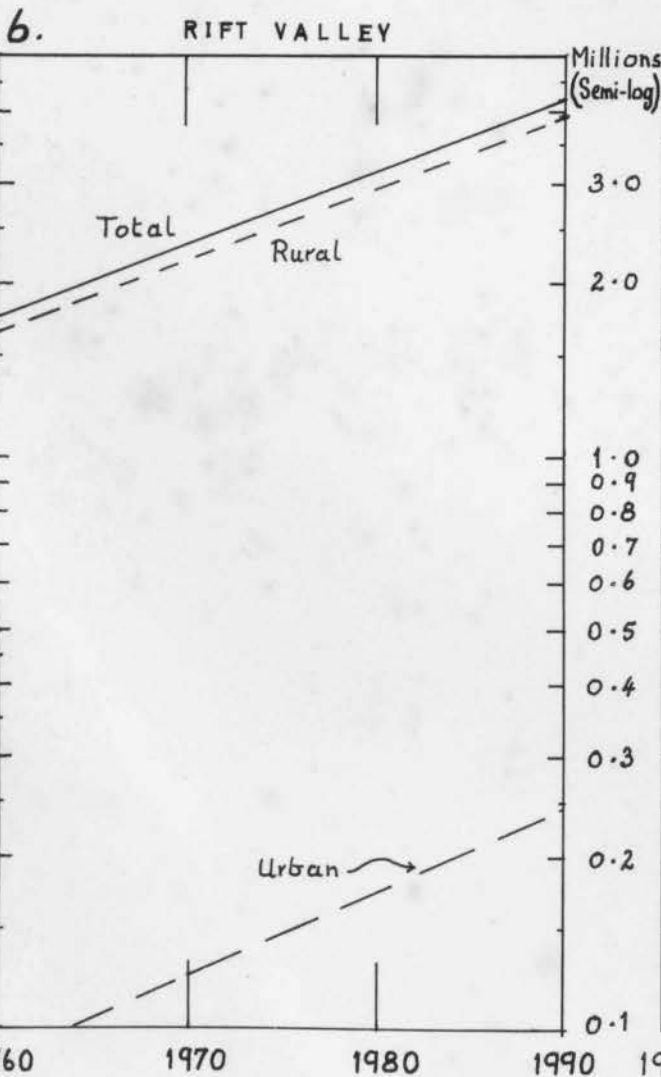Urban < 0.1

PROJECTED SECTOR CHANGES BY REGIONS IN
KENYA 1960 ——— 1990

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