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Population and Development

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KENYA

Population and Development

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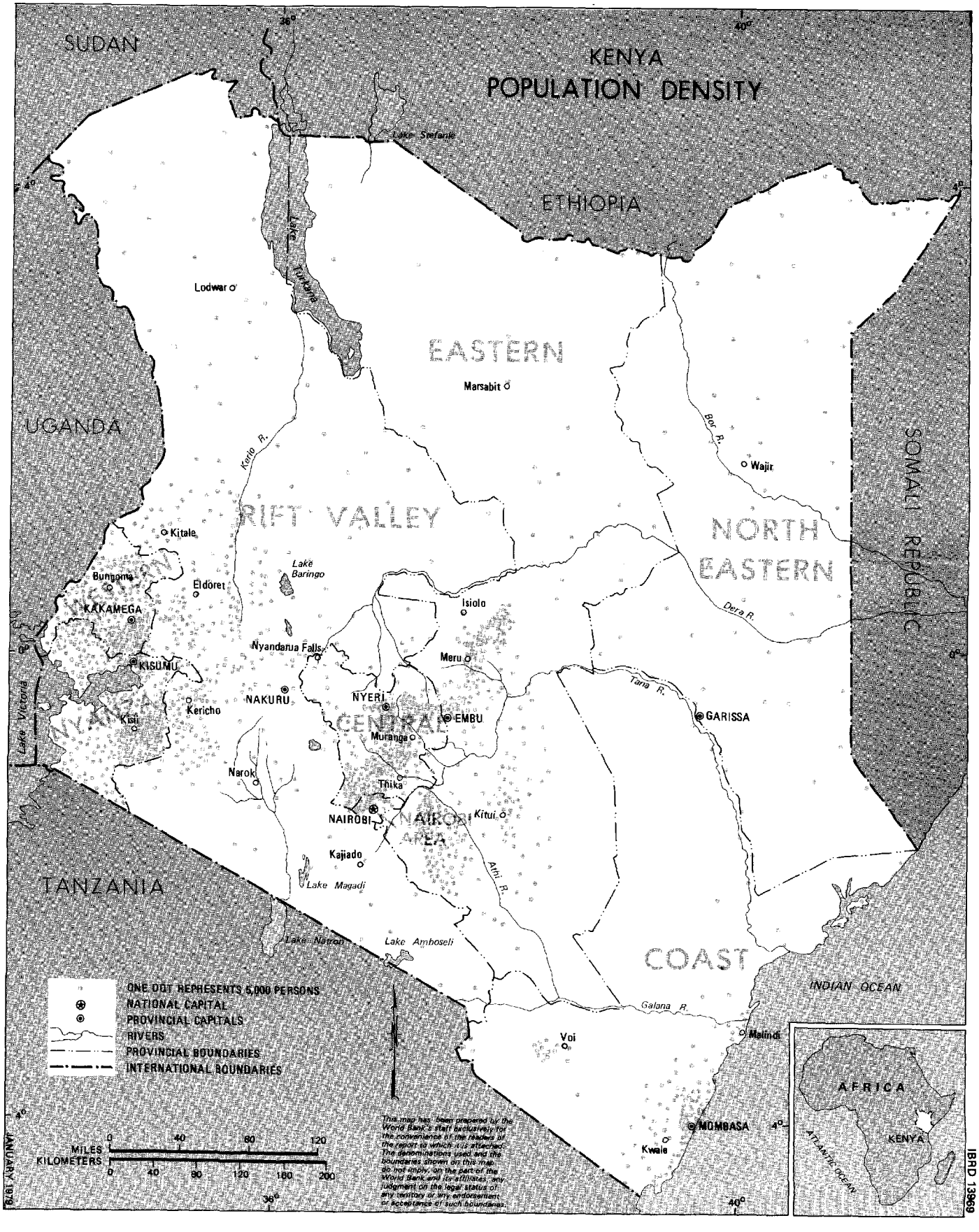
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SUMMARY AND CONCLUSION

1. Background

The population of Kenya in August 1979 was about 15,322,000. This makes Kenya the sixth most populous country in sub-Saharan Africa, tenth in the African continent, and forty seventh in the world. The 1969-79 intercensal growth rate of population estimated at 3.4% per year is one of the highest in the world. The current demographic trends do not lead us to expect any slowing down of population growth soon. In fact, the current rate of population growth may be even higher; the 1980 population growth may be approaching the rate of 4.0% per year.

The main features of Kenyan fertility are that it is high, has been high in the past, appears to be increasing at present, and shows considerable variation by region, tribal group, and socio-economic status. In 1973-75, Kenya's total fertility rate (TFR) 1/ was estimated at about 8. According to the UN selected World Demographic Indicators by countries 1950-2000, no country has such a high rate. In Kenya, fertility rates are high in all age groups, giving a fertility pattern of what is known as 'broad peak' type. In this regard, the Kenyan age specific fertility pattern is more akin to the Central American type than what is commonly associated with tropical Africa.

Estimates from earlier censuses show that the Kenyan fertility rates were high in the past, although somewhat lower than the current rate. Estimates of TFR from 1948 census varied between 6 and 7. From 1962 census, it was estimated at 6.8. Between 1962-69, there was an increase of fertility rates in all age groups, except at the end of the reproductive span. The estimated TFR from 1969 census was 7.6. Between 1969-75, the results of various demographic surveys showed further increase in fertility rates, giving the current TFR estimate of 8. This increase has recently been confirmed by the preliminary findings of the National Demographic survey and the Kenyan World Fertility Survey. Observed recent fertility increases in Kenya can be attributed to improvements in health, nutrition and general economic conditions. Experience in other countries has also shown that the initial impact of such development is an increase in fertility.

Although the overall rate in Kenya is high, there are interprovincial, inter-district, and inter-tribal differences, implying that fertility rates of women of some tribal or regional groups are lower than the others. Important variations in fertility rates exist among different educational groups and between urban and rural areas. These are sections of Kenyan population among whom fertility has declined in recent years, and there are others among whom it has increased. In the recent past, increases were probably larger than decreases and the national TFR has increased. In future this can change.

1/ The number of children an average woman would have if her reproductive experience were the same as that of the cross section of women at the time of observation.

Mortality in Kenya has declined considerably. In the intercensal period 1948-1969, the estimated crude death rate fell from 25 to 17. As with fertility, mortality varies by age, sex, tribe, region, and education. Mortality differentials indicate, among other things, differences in health conditions, and the population groups whose mortality rates are likely to decline in the future. Adult mortality in Kenya is relatively lower than infant and child mortality and it is relatively lower than in other countries of the same overall mortality level. Mortality rates are lower among females resulting in a life expectancy of 4.6 years longer for them. The tribal differences in mortality rates are significant; the largest difference is between Central Bantus and Western Hamitic, a difference of almost 15 years of life expectancy. The provincial difference between the minimum and the maximum life expectancy levels is 15-20 years. Differentials are even larger by districts: the highest expectation of life at birth (63.2 years) is in Nyeri district in Central Province, and the lowest (34.2 years), in Siaya District, Nyanza. Urban areas have lower mortality rates than rural areas. A fall in mortality is associated with increase in level of education. Inferences on determinants of mortality from interdistrict variations and child survival ratios in household surveys indicate that the principal determinant of mortality in the recent past has been the prevalence of malaria.

External migration has been negligible, but internal migration has played some role in population distribution within the country. Available census data show that in recent years Rift Valley, Coast, and Nairobi provinces have had sizeable gains in net lifetime migration through internal migration, while Eastern, Central, and Western provinces have had sizeable losses. In 1969, 40% of all lifetime migrants was rural-rural, and only about 33% was rural-urban.

Taking all factors into consideration, the future size of Kenya's population will depend more on fertility trends than on mortality or external migration. If the size of population is projected under alternative assumptions of fertility, the range of the size of the total population estimated for the year 2000 is 35.1 million and 28.6 million. The highest estimate is based on a very unlikely assumption that the rate will remain constant at the current level up to 2000. If we exclude the unlikely projection, the range of the size of population is relatively narrow--the highest and lowest estimates for the year 2000 being 32.5 million and 28.6 million respectively. The former estimate assumes 25% decline in fertility during 1975-2000 fertility while the latter is based on a 50% decline in fertility during the same period which can only be engineered if there is a major change in population policy. Next, we discuss the case for making such a policy switch.

2. Consequences of Rapid Population Growth

We have identified four important effects of rapid population growth on the Kenyan economy:

(i) The effect of diminishing returns in agriculture associated with population growth pressures on land and other natural resources, which tend to lower agricultural output per capita.

(ii) The effect of a high dependency burden on the nature of consumption and the possibility of saving.

(iii) The effect of labor force growth on the aggregate employment situation.

(iv) The effect of population growth on the pattern of public expenditures especially with regard to the basic human needs objective.

Although Kenya is a large country, more than 80% of cultivable land has very limited potential on the basis of present technology. As the pressure of population has built up in the high potential areas, big farms have been subdivided and in some places, for example, the Haraka settlement scheme, the process of subdivision has gone too far. Excessive fragmentation has led to a loss of output. In other areas, landlessness has emerged as a significant phenomenon; one study estimates that 11% of households are landless. Attempts have also been made to take up cultivation in marginal lands without adequate safeguards, thereby leading to degradation of soils and deforestation. Government is preparing programs for exploiting marginal areas involving irrigation, identification of cropping patterns suitable for semi-arid conditions and research on allied topics. It should also be possible to improve productivity and raise employment in the country's high potential areas. Altogether, Kenya's capacity to absorb additional population in agriculture at satisfactory income levels depends on the rate of technological progress and the speed with which viable solutions are found for organizational and institutional problems. The forthcoming Basic Economic Report on Kenya concludes that it is technically possible to expand agricultural output and employment sufficiently to accommodate population growth through the rest of the century. The report, however, states that, to achieve that goal, serious economic and political obstacles will have to be overcome and it concludes that, unless population growth slows down drastically by 2000, the Kenyan development problem may well become insoluble.

The available Kenyan data do not establish a direct link between the high dependency burden associated with high fertility and reduced savings capacity of households, as is suggested by some theoretical writing. It is true, however, that larger households tend to have lower per capita incomes than families of smaller size. It is also true that extended families (consisting of the conjugal unit and one or more additional relatives) tend to have a lower savings rate than nuclear families. The former have a structure conducive to the security of family members and provide for a pooling of risks, thereby reducing the incentives to save. It may be that, in the Kenyan context, rapid population growth favors the formation of extended families and indirectly militates against a quick increase in rates of household savings.

What are the prospects for gainfully employing the Kenyan labor force in the future? Between 1960 and 1970 the increase in the number of workers was 3.2% per annum. Under the constant fertility assumption, the expansion of the labor force will tend to accelerate to more than 4% p.a.

at the turn of the century and the number of workers would rise from 4.6 million in 1970 to 8.5 million in 1990 and to 12 million in 2000. To judge the economic prospects for the growing labor force it is essential to review past trends and the present structure of jobs. Employment in the high wage modern sector (consisting of medium and large scale private enterprise and government employees) rose by 4.8% per annum during 1970-77 or at a rate somewhat lower than expansion of output. Modern sector employment (including wage sector and self-employed) absorbed only 17% of the total labor force in 1977; the rest worked in traditional agriculture and in the informal sector. Earning opportunities in these parts of the economy varied greatly but roughly 4 million people or 30% of the total number of households in 1974 had incomes which made them absolutely poor. Nearly 75% of the poor were small farmers.

The conclusion is inescapable that the Kenyan economy could not provide gainful employment for all its workers during the past decade when GDP growth was taking place at around 6.5% per annum. Acceleration in the expansion of the labor force, implied by projections based on the premise of constant fertility, is likely to further complicate the employment problem. Employment in the modern sector is unlikely to expand much faster during the 1980s than during the past decade, given the deterioration in international economic conditions affecting the Kenyan economy. The bulk of the increase in the labor force will have to be absorbed in the informal sector and in traditional agriculture. The hope that many workers can be absorbed at satisfactory income levels in the informal sector has not been fulfilled; males employed in this sector increased by less than 4% p.a. during 1969-77. Furthermore, the expansion of this sector seems to be linked closely to that of the modern part of the economy; the latter provides inputs and is also a major market for the goods and services produced by the informal sector. Finally, traditional agriculture will have to harbor the rest of the labor force and prospects for gainful employment there depend on technological and organizational progress, as mentioned already.

Rapid reduction in fertility will bring down the rate of expansion of the labor force very significantly over the long run. Instead of rising from 3.2% to more than 4% per annum, implied by the constant fertility projection, the growth rate of the labor force will fall to 2.3% in the early 1990s and further to less than 2.0% at the turn of the century. This means a work force of less than 10 million in 2000; roughly, 2 million less than under constant fertility conditions. The attractiveness of the low fertility scenario from the employment standpoint is self-evident. A larger proportion of workers can expect to be in the high wage modern sector. The absolute number trying to earn a livelihood in the rest of the economy will be smaller, thereby diminishing somewhat the severity of the competition for jobs which generate incomes above the poverty level.

3. Basic Needs Provision

An important consequence of rapid population growth is the increased public expenditure for providing basic needs services--education, health, water and housing.

The Government recognizes the importance of education. Policy statements emphasize the right of every person in the country to a basic education. Within the resources available to it, the Government has made significant progress toward this objective. By 1976, 46% (65% males and 35% females) of the rural population over 15 years of age claimed to be literate. The objective of universal access to education, however, is far from achieved. The distribution of educational services both at individual and regional levels correlates closely with the distribution of income and wealth. At the individual level, those with higher income have access to primary and secondary schools; at the regional level, only the more developed districts and provinces have access to primary schools. The Government is aware of these inequalities, and its educational policy has been directed towards correcting them.

Government outlay on education has risen very rapidly. It accounts for about 30% of the total. If fertility remains at present levels, the number of children of primary school age will double by 1990. If fertility declines rapidly, the doubling will be postponed by about 6 years, thereby relieving the budgetary burden or making it possible to improve coverage and quality of education.

The Government policy on health is to control, prevent, and ultimately eliminate communicable diseases, health deficiency conditions, environmental health hazards, and problems associated with childbirth and child-rearing. The limited information available shows that the number of patients with communicable diseases admitted or treated in government hospitals has increased over time, indicating either improved access to hospitals or better use of existing facilities. There is, however, considerable variation in access. The provincial average population per health center varies from approximately 54,000 in Rift Valley and North-Eastern provinces to 118,000 in Nyanza Province. Another measure of access is provincial data on the percentage distribution of household by distance to health center, obtained from the Integrated Rural Survey. If lack of access is measured by percentage of household over 4 km. from a health center, there is a national average of Province. On the other hand, use of 8 km. as the measure of access reduces the proportion to 7.5% for Central Province and 43.5% for Eastern Province. A major constraint on government efforts to improve overall access to health facilities is the shortage of qualified health personnel. A large segment of the population is meeting its health needs by less conventional methods--and, indeed, evidence indicates that traditional health sources play an important part in Kenya's overall health system.

Present government outlays on health are one-third of those on education. To maintain present level of service they will have to rise by about 80% in real terms in the latter half of the 1980s, assuming no change in fertility. If government wishes to improve coverage and quality (twofold increase of the ratio of service units to population by 2000), the corresponding required rise in outlays is 152%. In each case, the budgetary burden diminishes by about 9% if fertility falls rapidly.

Similar estimates have been made for other basic need services, i.e., safe water and urban shelter. Altogether, government outlays on all these services (education, health, water and shelter) amounted to KE 54 million (1970 prices) per year on average during 1970-75 or about 30% of total budget expenditures. Simply to maintain present standards for these services will require that budget outlays expand by 7% p.a. in real terms during the next decade, if it is assumed that there is no change in fertility. This is a formidable budgetary burden. To carry it, government will either have to make an extraordinary tax effort or to allow basic needs outlays to squeeze out competing demands from directly productive sectors, e.g., agriculture and physical infrastructure, e.g., transport. Government revenue in 1970 prices rose at a trend rate of 5.1% p.a. during 1970-75 period while real GNP increased at 4.5% p.a.

Under these circumstances it will not be easy to accommodate proposals for improving the coverage or quality of basic needs services to which Government is committed, in principle. On the alternative assumption of rapidly declining fertility, the budgetary burden is reduced somewhat. Fiscal savings amount to only KE 2 million in 1980-85 but climb fairly rapidly to KE 59 million in 1995-2000, i.e. more than the total amount spent on basic needs services during 1970-75. If we had projected beyond 2000, the difference in budgetary burden between conditions of constant high fertility and rapidly declining fertility would have been more significant.

Kenya faces a real dilemma. Rapid decline in fertility will facilitate the implementation of Government's commitment to the provision of basic needs. And yet, it is argued in this report, that satisfaction of basic needs, such as education, is an important instrument for securing lower fertility.

4. Factors Explaining High Fertility

There has not been much research on determinants of fertility in Kenya, but the few existing studies show that most Kenyans desire seven or eight children. On the one hand, the number desired is larger, the higher is the amount of land owned. On the other hand, the ideal family size desired falls in urban areas and among women with substantial education.

In Kenya, as in other developing countries, certain economic realities sustain the popular desire for large families. Important factors in this respect are old-age support from children (benefit from children) and low or zero educational expenditures on children (cost of children). Within the traditional Kenyan society, children make significant economic contributions to the family, and the cost of bringing them up is negligible. As parents move to modern settings, however, values change, and net economic returns from children decrease. Urban and better-educated mothers are less likely to expect support from their children than are rural and less-educated mothers. Evidence also shows that Kenyan mothers have extremely high expectations for their children's education, because they perceive the economic returns from education as outweighing the direct and indirect costs. Given the prospect of increasing difficulty in obtaining modern sector employment,

a decrease in the net economic benefits from education can be expected. Kenyan parents are already extremely conscious of the educational costs of children. In the future this consideration may become an important factor in fertility decisions.

In the household analysis of fertility differentials it was found that fertility rates were significantly lower if the wife worked away from home, or if the husband were polygamous, or if the husband were temporarily working away from home (probably in a city) or if the wife had more education after standard five. The extensiveness of sterility in a district had a significant effect in depressing fertility rates.

Fertility rates in Kenya are not random. Because various factors significantly affecting fertility have offsetting effects, however, the overall effect on fertility of socioeconomic development is small. While rising levels of female educational attainment and urbanization tend to reduce fertility rates, rising levels of rural income, along with decreasing sterility rates, tend to raise them. On balance, it appears that the rise in fertility experienced by Kenya in the recent past will not continue indefinitely in the future.

Status and role of women are a key to an understanding of the high fertility phenomenon in Kenya. Available evidence indicates that the low status of women and their role in society significantly contribute to their high fertility. Women are underrepresented in the modern sector, because on the whole their educational attainment is lower than that of men. In the traditional agricultural sector, however, women bear the majority of the workload because males migrate to the cities; but this does not always mean that they obtain a major share of family resources. Husbands control family resources, especially land, and, because of their preeminent role in society, have more likelihood of education.

The relationship between women's status and fertility is neither direct nor simple: there is no one-to-one correspondence between variables used to define status and fertility. Education has a direct effect on the type of employment opportunities available to women; it affects the age at which they marry, and the nature of the relationship between husband and wife, which tend to determine decisions regarding family size. There is strong social pressure on women to marry and produce children, thus extending the kinship network. An intense desire is created for familial roles by community praise of the wife-and-mother status and severe censure of spinsterhood. Because in many ethnic groups a single woman may be granted land use rights by her family but may not inherit, real insecurity reinforces the strong desire for marriage. Most Kenyan women therefore marry at the onset of puberty; feelings of dependence underlie a woman's relationship with her husband and his friends, placing her in a near-zero power position vis-a-vis the family group into which she marries.

The low family status of Kenyan women has a major impact on their decisions regarding family size, their knowledge of birth control, and their access to contraceptives. When women are denied equal opportunities for

acquisition of resources, their status within the family is low. Most Kenyan women come into marriage with lower educational qualifications than their husbands, and this probably affects how they view their own position and therefore their right to communicate their feelings regarding desired family size and to discuss the use of contraceptives.

The nature of legal rights and obligations of couples toward each other and their children also affect their decisions concerning family size. Available information indicates that the heavy workload of Kenyan rural women within marriage induces them to have children, who are looked upon as potential source of labor. The current rule regarding property rights of women also makes them economically dependent on their children.

Significant reduction in fertility is feasible in Kenya if there are changes in fertility-related attitudes and an improvement in the role of women, especially in the decision-making process within the family. A vigorous, broad-based, population policy is therefore called for in order to lower fertility.

5. Population Policy and Program Development

A large-scale reduction in fertility through family planning (FP) alone is unlikely in Kenya without a general attitudinal change in favor of small family size. However, the current Maternal and Child Health - Family Planning (MCH-FP) Program can make a significant contribution towards the goal of fertility reduction. Some demand for family planning services does exist; this has to be effectively met and new demand has to be created. The major constraints of the current MCH-FP program are the acute shortage of trained paramedical manpower; the lack of an improved institutional framework and managerial capability to administer the program; and inadequate coverage and distribution of rural health facilities. The current program has not been successful in retaining acceptors, though it has been fairly effective in recruiting them. The low retention rate is reflected in the low prevalence of contraceptive practice: only a small proportion (2.5% in 1975) of reproductive-age women in Kenya use contraceptives.

Poor contraceptive coverage by the family planning program is the result of many factors: on the supply side, the important issue is access to and quality of services. Available information indicates that the majority of Kenyan women lack access to health facilities offering family planning services. Furthermore, the program suffers from a number of management problems that affect the quality of service rendered. There is a great need for an effective management information system and more intensive training for most categories of FP personnel.

On the demand side, the reasons for high drop-out rates and low prevalence of contraceptive use are to be found in the almost universal desire of Kenyan parents for a large family. The most important problem for planners is to find the linkage between socio-economic development and the demand for family planning services. The demand for these services is expected to rise with women's educational levels. The demand for family planning services is

stronger in urban centers than in rural areas. If there were better access to family planning resources and more education for women, there would be an increased demand.

Our study presents two alternative family planning coverages needed to attain alternative scenarios of population growth. The first one, type A coverage, is based on what might be possible considering the current status and trend of the growth of FP services but requiring intensified efforts. This actually corresponds to a decline of fertility of 30% (TFR of 5.5) by year 2000. The second one, type B coverage, corresponds to a decline of fertility of 50% (TFR of 4.0) by the same year, presupposes an immediate increase of substantive magnitude of FP acceptors and pursuance of an effective and broad based population policy. For Type A coverage, the number of new clients to be recruited during the period 1980-2000 will be 6 million, as against 10 million for the same period in the case of Projection B coverage.

Even Type A envisages a steady expansion of the program at a pace much higher than has hitherto been experienced in Kenya. Type A appears feasible only on the assumption that a strong family planning program will be pursued by the Government. This will involve not only intensification of current activities but also initiation of new activities and strategies.

First on the list of recommendations is a much more extended information education communication (IEC) program within and beyond the existing organization for family planning services. This would include non-formal educational activities for adults and youths (as a part of adult literacy campaigns or youth recreation programs), mass-media programs, and introduction of family life education into formal curricula in the secondary schools and colleges. For IEC to be effective, target groups must be identified and culturally acceptable messages developed.

The second important element for extension is in the use of new cadres of extension workers. IEC alone, in the form of mass media or even nonformal education, does not lead to the adoption of family planning. Personal contact, for which outreach workers are required, is often needed. In the Kenyan context, it appears that client-worker cultural (tribal) similarity is important enough that a case can be made for recruitment of local people as agents for extension work in given areas. A cadre of extension workers, consisting of high school educated men and women, with a short, initial training and a continued on-the-job training should be useful to facilitate a substantial extension of the program.

Another important condition for rapid expansion of the MCH-FP program is the support of related organizations for family planning. In this regard, Kenyan Women's organizations could be of great assistance. It is also important to explore the idea of extending organizational support for FP from health care and a broader base of development programs, e.g., the whole spectrum of rural development. Rural institutions can be involved in providing services according to local needs. It would be desirable if the Ministry of Health expands its contacts at the district level, using the framework of District Development Committees. In this connection, Health

Development Committees, which have been constituted for the purpose of maintaining Rural Health Centers, could be useful in coordinating the work of government and non-government functionaries at the local level.

The significant breakthrough must come through policies and programs that affect the determinants of fertility behavior and attitudes. Only then can family planning acceptance be expected to increase significantly. If the government intensifies its efforts, Type A coverage should be attainable. However, Type B coverage will need a comprehensive population policy going beyond the framework of the current program.

The comprehensive population policy, needed for Type B coverage, must have three broad objectives:

(1) To provide comprehensive family planning services to meet untapped demand;

(2) To provide incentives and disincentives which encourage family limitation without impeding freedom of choice; and

(3) To emphasize development programs which are valuable in their own right and which will accelerate the formation of smaller family size norms.

The objective 1 above is the bare minimum and constitutes the basis even for coverage A. Measures for achieving such coverage have already been discussed. What distinguishes coverage B from A is, however, the objective 2 and comparatively more vigorous pursuance of objective 3.

Objective 2: Incentives may be provided with the purpose of changing the preference for family size--a kind of compensation for foregone fertility. There can be a strong justification for such compensation if the private (perceived) net benefit of having an extra child exceeds the social net benefit.

A scheme of financial incentives for households, already having say four children, to avoid pregnancy could be especially suitable for a well-defined group of people for whom the scheme can be efficiently administered. Such programs might be introduced for government employees as well as modern sector wage earners, including tea estate workers. The Government should seriously consider the administrative and organizational issues involved in operating such schemes.

Another important method is to provide disincentives for having a large number of children. This could include elimination of income tax relief in cases of three or more children, paid maternity leave up to the first two pregnancies only, progressive increases in childbirth costs after the first two deliveries, and loss of priority for public housing if family size exceeds a defined level.

In Kenya, as in most LDCs, large numbers of people live in rural areas and their access to benefits and services from the Government are limited; withdrawal of these services and benefits, therefore, has no strong force. Of the benefits to rural people, education and health services and agricultural credit are the important items, but the availability of these to an average person in the rural areas is still somewhat limited. However, in the future, some of these are going to expand substantially and a discriminating policy to encourage fertility regulation may become feasible.

Objective 3: An important option for the Government is a policy of selective socioeconomic development, which will have a negative impact on fertility. The impact of such socioeconomic development is expected through an increase in effectiveness of the existing family planning program.

The improvement of education levels of women emerges as a possible area for effective policy action. Household analyses indicate that a negative relationship between wife's education and fertility apparently occurs only among those who have completed Standard 5 or above. This threshold of fertility decline may move downward as primary education spreads throughout the population. Such a trend is especially likely if what is now associated with secondary level education becomes available even with primary level education (e.g., awareness about or access to FP information and services). This process seems to have already started. Women who have completed at least three years of primary school are heavily overrepresented and uneducated women heavily underrepresented among family planning acceptors. In other words, some women with primary education are using contraceptives and thereby reducing their fertility from their potential (which is higher because of better health and higher level of living associated with primary education), although not as effectively as the women with secondary education or more. In that case, the threshold can go down if fertility attitudes and effective use of contraception by women with primary education in the future become the same as those of women with secondary education in the past. On balance, it can be said that implementing the policy of providing more educational opportunities for women is crucial to attaining a substantial decline in fertility, at least in the long run.

An associated but general policy recommendation is that Government development programs be directed toward improving the role and status of women, especially in relation to quality of life and the net economic cost of children. One important step toward improving the status of women in Kenya would be to provide them with access to services for agricultural development, for example, agriculture extension services, credit facilities, and the like. Currently these services are only made available to men, although women are largely involved in small-scale agricultural operations. To the extent that women cannot avail themselves of such benefits, they are dependent on men. If women engaged in agriculture are provided with services, they will depend less on men and thereby will have more influence in family decisions.

One frequently recommended means of reducing fertility is a campaign to reduce infant and child mortality. The reasoning is that children are not only loved and desired for themselves, but needed as a source of domestic and

agricultural labor. An improvement in child survival rates might lessen the perceived need for large families and create an economic situation that would lead parents to restrict their fertility voluntarily.

A decline in child mortality certainly appears to be necessary, though probably not sufficient, for a large-scale fall in fertility. Although our empirical analyses did not establish any significant relationship between mortality and fertility, reduction in child mortality is a goal amply justified for its own sake. In the short run, there will be a positive effect on family size; but, in the long run, fertility will fall because parents will not strive for a large number of children to ensure a desired number of surviving children.

The establishment of a pension or welfare system for the elderly and disabled can be recommended as a means of reducing fertility, since it would remove some of the economic necessity for large families. This too is a policy eminently justifiable for its own sake. The Government has instituted the National Social Security Fund to provide social security for old age for persons in wage employment, in addition to a pension program for public sector employees, and it was planned that, by 1978, 650,000 workers would be registered under the scheme. 1/ This would mean that only 67% of modern sector workers will be covered. This old age security program needs to be substantially expanded to cover the entire body of wage sector employees. The demographic effects of a comprehensive old age security scheme, however, are not easy to predict. Probably some decrease in mortality in old age might occur at first, with a consequent very slight increase in population growth. Any decline in fertility would probably be slower to come, though it could be expected to occur in time. The purely demographic effects in the short term, therefore, would not be large; nevertheless, some such policy would probably be useful for controlled growth in the long term.

Finally, we should note the expected effect on fertility of a general improvement in level of living. This is important for examining the role of development as a means of fertility regulation. We have analyzed the effects of various development indicators on fertility; we found that some of the effects were positive and some negative. What emerges from these results can be best described by the roles of supply and demand forces in the fertility outcome at the family level. At a low level of living, the fertility outcome (represented by the number of surviving children) is determined by supply factors (e.g., health of the mother, nutrition of children). As the level of living improves, it is no longer a matter of how many living children the couple can have, but how many they would like to have, and at that level demand factors become binding. In our results, we find that when women have education above Standard 5 (representing a certain level of living), fertility is lower. Here the demand factors (through attitudes regarding fertility) determine the outcome. Thus, the net effect of development on fertility depends upon which group is more affected by it. If most

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1/ Government of Kenya, Development Plan, 1974-78, p. 495.

of development goes to improve supply factors, fertility will increase, but if it goes to strengthen demand forces, fertility will decline. Two important policy conclusions follow:

First, if the process of development is confined to the high income group, who already have low fertility (through the effects of demand factors), then the decline in terms of fertility will be very little. In fact, the overall fertility rate will increase, if this is coupled with marginal improvement for the very poor, whose fertility is constrained by supply factors. On the other hand, if the benefits of development go to the vast majority and push them to a level where demand factors matter, total fertility will fall significantly. To make demand forces operative, a diversification of the benefits of development and substantial improvement of the level of living of the majority of the population is called for.

The second implication for policy is the necessity for programs that can strengthen demand forces without waiting for the full course of development to occur. This calls for more family planning information, education, and communication activities to strongly influence the preference functions of couples, so that demand factors become binding. As noted, a substantially expanded and intensified IEC component is necessary for attracting a growing number of clients to family planning programs. For a comprehensive population policy, what is needed is a much more broadly based IEC program directed not only to potential clients and their opinion makers at community level, but also to political/administrative leaders who influence the behavior of the prospective clients. Such an IEC program has to be implemented concertedly by all related agencies of the Government, but will have to be coordinated by either the operating ministry or an agency with influence over all ministries. This IEC program will have to be effective enough to motivate hesitant political/administrative leaders to actively participate in an all-out campaign for family planning.

Kenya today stands at a watershed. For the near-term its poulation will grow rapidly, no matter what policy is followed. This demographic momentum is the result of past trends which cannot be altered. But decisions regarding population policy made today can have a very significant impact on the country's future in the year 2000 and beyond. The total population is not very large in absolute size but the rate of its expansion is extraordinarily high. This will impose a serious burden on agriculture and on public finance. It will make more difficult the provision of basic need services and the creation of gainful employment opportunities for all Kenyans.

Chapter 1: DEMOGRAPHIC PROFILE AND TRENDS

1. Introduction

The population of Africa is on the threshold of unprecedented growth--this is fairly well known. What is not so well known is the magnitude of the potential growth, especially in relation to that of other, less developed countries. In 1950 the total population of Africa was 219 million--two-thirds of the combined population of North and South America, 62% of the population of India, and 39% of the population of the People's Republic of China. By 1975, the African population had increased considerably, both in absolute and relative terms, to 415 million--or 75% of the population of the Americas, 68% of the Indian population, and 46% of the population of China. These increases, while substantial, do not fully indicate Africa's long-term population potential, which may be as much as 1.7 times the combined population of North and South America, 1.4 times that of India, and 1.5 times that of China. 1/

Kenya's long-term potential of population growth is even more dramatic, indicating a long-term stationary population of 120 million, or 9 times its 1975 population. 2/ The corresponding ratio for Africa as a whole is only 5.5, just over half the Kenyan ratio.

For the next 10 to 20 years, the demographic situation in most African nations is virtually given. There is little that can be done to alter the size of population to any significant degree. This is not the case with the long-term growth potential. The cumulative effect of even small changes in growth rates made now would be substantial in the long run. Population policies must, however, be based on emerging demographic trends, interrelationships among demographic variables, and socio-economic factors in the African context. Here Kenya has reasonably good data, while most other African nations do not.

2. Population Size and Growth Rate (Tables 1.1, 1.2)

The population of Kenya in mid-1978 was about 15,177,000. 3/ This makes Kenya the sixth most populous country in sub-Saharan Africa (after

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1/ These are based on the calculation of long-term stationary population.

2/ This projection is based on the following assumption; a net reproduction rate of 1 (with a total fertility rate (TFR) of 2.363) is reached by the year 2050; female expectation of life at birth reaches a limit of 77.5 by the year 2110; and a stationary population with a TFR of 2.082, a female life expectancy of 77.5, and crude birth and death rates of 13.2, are reached by the year 2140.

3/ The census taken in November 1979 gives a provisional population total of 15.3 million and an intercensal growth rate of 3.4 percent. The census figures are not yet finalized and the measures for birth and death rates have not been estimated. We have not used the 1979 census results in this report.

Table 1.1: TOTAL POPULATION AND GROWTH RATE IN SELECTED EAST AFRICAN COUNTRIES, 1978

Country	Total Population mid-1978 (in 000's)	Annual Growth Rate 1975-80
Kenya	15,177	3.8
Rhodesia	7,007	3.6
Uganda	12,474	3.1
Tanzania	17,006	3.1
Rwanda	4,599	2.9
Malawi	5,313	2.5
Ethiopia	30,103	2.4

Source: For Kenya, Bank estimate; other countries, U.N. Demographic Indicators, 1975.

Table 1.2: ANNUAL POPULATION INCREASE IN KENYA, BY AGE GROUP, 1978

Age Group	Annual Increase	Growth Rate
0-14	325,000	4.5
15-29	120,000	3.1
30-44	70,000	3.1
45-59	40,000	3.2
60+	20,000	3.5
All ages	575,000	3.8

Source: World Bank estimates.

Nigeria, Ethiopia, South Africa, Zaire, and Tanzania), tenth in the African continent, and forty-seventh in the world.

The mid-1978 growth rate may be as high as 3.8% per year--enough to double the population before the end of the century. There are only three countries with a comparable growth rate as Kenya's (Kuwait, Libya, and Ivory Coast) and in all these, a significant part of the growth is due to immigration. Among the East African countries, only Rhodesia's growth rate even approaches Kenya's (Table 1.1).

Kenya's growth rate of 3.8% implies an increase of 575,000 persons per year, mostly among children under 15 years of age (Table 1.2).

3. Recent Trends in Population Growth (Table 1.3)

Kenya's growth has been rapid since World War II, with an increase from 5.4 million in 1948 to 8.6 million in 1962, an intercensal growth rate of 3.3% per year. The latest official figure (1969) was 10.9 million persons, indicating a growth rate of 3.4% per year, substantially the same as in the previous intercensal period.

Table 1.3: POPULATION GROWTH IN KENYA 1948-1969

Year	Population	Average Annual Growth	
		Number	Rate (%)
1948	5,406,000		
1962	8,636,000	231,000	3.3
1969	10,943,000	330,000	3.4

Source: Population Census, Kenya, 1948, 1962 and 1969.

This apparent near-equality casts some doubt on the accuracy of the 1948 census. Estimates show a natural increase rate of less than 3.0% per year; the rate of external migration is not large enough to explain the difference between this and the growth rate. It may be that an improvement in the accuracy of the census total for 1962 is responsible for the difference between the rate of natural increase and the intercensal growth rate of 3.3% during 1948-62; a growth rate of 2.8% per year and a total population of 5,800,000 for 1948 would be more consistent with later figures.

A growth rate of 3.4% per year during 1962-69 is fairly consistent with the independent estimates of birth rates and death rates for the period; there is, therefore, no overriding reason to reject the population figures for 1962 and 1969.

4. Population Distribution and Density (Table 1.4 and Map 1.1)

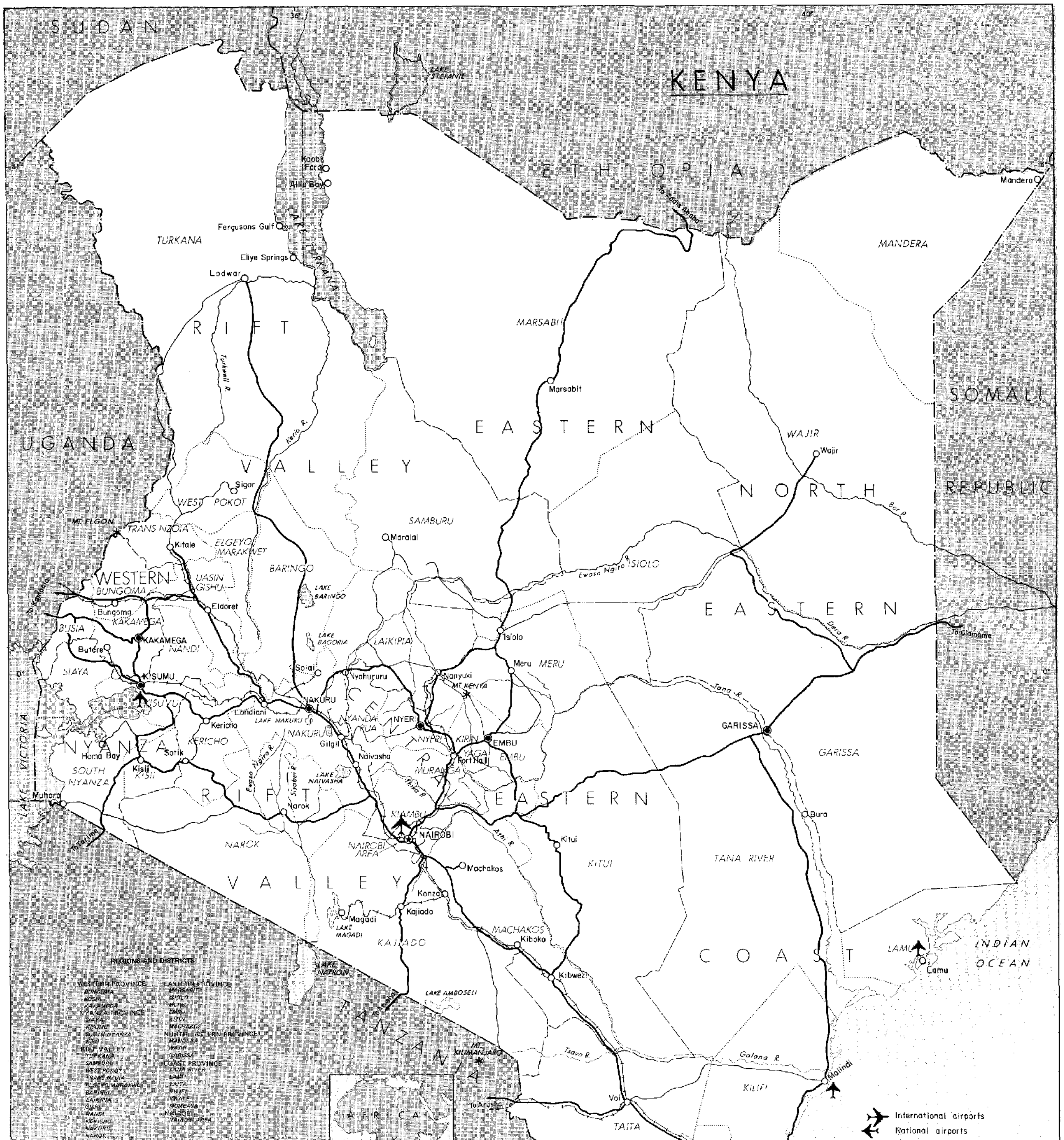
Kenya is divided into 8 provinces and 41 districts. The largest province is Rift Valley, with 30% of the country's total area and 20% of its population. The smallest in area is Nairobi, and the smallest with respect to population, North-Eastern Province. For the country as a whole, in 1969, the average density was 19 persons per km^2.

Table 1.4: AREA, POPULATION AND DENSITY, 1969 AND GROWTH RATE 1962-69

Provinces	Area Km^2	Population (000's)	Density per km^2	Growth rate 1/ % per year
Nairobi	684	509	745	5.6
Central	13,173	1,676	127	3.2
Coastal	83,041	944	11	3.4
Eastern	154,540	1,907	12	3.0
North-Eastern	126,902	246	2	1.4
Nyanza	12,525	2,122	169	3.7
Rift Valley	170,162	2,210	13	3.1
Western	8,223	1,328	162	3.8
Kenya	569,249	10,943	19	3.4

1/ These rates are based on adjusted total population for 1962.

Source: Population Census, Kenya, 1969.


KENYA
SUDAN
ETHIOPIA
UGANDA
SOMALI REPUBLIC
TANZANIA
LAKE VICTORIA
LAKE TURKANA
LAKE STEFANIE
INDIAN OCEAN
RIFT VALLEY
EASTERN
NORTH EASTERN
CENTRAL
WESTERN
NYANZA
COAST
TURKANA
MARSABIT
MANDERA
WAJIR
SAMBURU
WEST POKOT
TRANS NZOIA
ELGEYO MARAKWET
UASIN GISHU
BARINGO
LAIKIPIA
BUNGOMA
KAKAMEGA
BUSIA
SIAYA
NANDI
KISUMU
KERICHO
SOUTH NYANZA
KISII
NAKURU
NYANDARUA
NYERI
KIRINYAGA
EMBU
MERU
ISIOLO
MURANGA
KIAMBU
NAIROBI AREA
NAROK
KAJIADO
MACHAKOS
KITUI
GARISSA
TANA RIVER
LAMU
KILIFI
TAITA
KWALE
Mandera
Koobi Fora
Allia Bay
Fergusons Gulf
Eliye Springs
Lodwar
Marsabit
Wajir
Sigor
Kitale
Maralal
Eldoret
Bungoma
KAKAMEGA
Butere
KISUMU
Kericho
Londiani
Sotik
Homa Bay
Kisii
Muhoro
Soiai
Nyahururu
Nanyuki
Isiolo
Meru
NAKURU
Gilgil
Naivasha
NYERI
EMBU
Fort Hall
Narok
NAIROBI
Machakos
Kitui
Konza
Kajiado
Magadi
Kiboko
Kibwezi
Voi
GARISSA
Bura
Lamu
Malindi
MOMBASA
Kengo-Diani
MT. ELGON
MT. KENYA
MT. KILIMANJARO
LAKE BARINGO
LAKE BAGORIA
LAKE NAKURU
LAKE NAIVASHA
LAKE MAGADI
LAKE NATRON
LAKE AMBOSELI
Turkwell R.
Kerio R.
Ewaso Ngiro R.
Tana R.
Athi R.
Tsavo R.
Galana R.
Daua R.
To Addis Ababa
To Kampala
To Kisamayu
To Arusha
To Dar es Salaam
To Tabora
To Musoma
AFRICA
Kenya
REGIONS AND DISTRICTS
0 20 40 60 80 100 KILOMETERS
0 20 40 60 80 100 MILES
International airports
National airports
National capital
Provincial capitals
Cities and towns
Trunk roads
Secondary roads
Railways
International boundary
Regional boundary
District boundary
IBRD 12438R1
DECEMBER 1976

The regional pattern of population distribution is chiefly a reflection of the natural resource endowment of the land, basically rainfall and soil fertility.

There are three major population concentrations, one in the west, near Lake Victoria, another in the central area, adjacent to Nairobi, and a third in the east, on the Indian Ocean coast. All districts with population density above 100 per km^2 are located in one of these high density areas. The lacustrine population in western Kenya coincides with agriculturally high-potential lands: district densities here are all above 100 persons per km^2, e.g. 307 in Kisii, 222 in Kakamega, and 193 in Kisumu. In general, the density tends to increase from about 100 persons per km^2 close to the lake shore to well over 500 persons in parts of Kakamega and Kisii districts. This high density area merges eastwards into the western Rift highlands, where average densities range between 50 and 200 persons per km^2.

The second main population concentration extends from the city of Nairobi northeastward to the Nyambeni Hills in Meru District: densities of 400 to 600 persons per km^2 are found in southern Kiambu; and densities of 200 to 400 persons per km^2 are characteristic of the Embu and Meru areas.

A third population concentration extends from the area west of the Tana River delta southward to the Tanzanian border, with average densities of from 50 to more than 500 persons per km^2.

5. Population Growth by Region (Table 1.5)

Four of the provinces experienced more than the average national growth rate during 1962-69, and the other four had less than average rates. North-Eastern Province had the lowest rate, 1.4% per year, and Nairobi the highest, 5.6% per year 1/. On the whole, the intercensal growth rate was positively correlated with population density; the rank correlation coefficient for the eight provinces is +0.85.

1/ The reported growth rate for North-Eastern Province was actually negative. The rates presented in Table 2.4 are based on the adjusted population for 1962 taking into consideration the boundary changes since 1962. (See CBS, "Population Projections by Districts 1970-80" in Kenya Statistical Digest, September 1972), Vol. X, no. 3, Table 3, p. 2.

Table 1.5: AVERAGE GROWTH RATE AND DENSITY OF DISTRICTS

	Average Growth Rate	Density
High density districts (above 50)	3.8	-
Low density districts (50 or below)	3.0	-
High growth rate districts (above 3.4%)	-	182
Low growth rate districts (below 3.4%)	-	47

The correlation coefficient between density and growth rate at the district level is only +0.21, which is not statistically significant.

6. Rural-Urban Distribution (Tables 1.6, 1.7, 1.8 and 1.9)

Before colonization there were no towns in Kenya except the coastal ports, and the great majority of Kenyans still live in rural areas. In 1969, less than a tenth of the population was classified as urban. 1/ The mid-1978 estimate of about 12.2% indicates that Kenya is still one of the least urbanized nations in the world.

Table 1.6: URBAN POPULATION, 1962 AND 1969

Year	No. of Towns	Urban Population	Proportion Urban	Urban Growth Rate
1962	34	748,000	8.7	
1969	47	1,080,000	9.9	5.4

Source: Population Census, Kenya, 1962 and 1969.

1/ Urban population is defined in the census reports of 1948, 1962 and 1969 as the population of towns containing 2,000 or more inhabitants.

Table 1.7: URBAN POPULATION, BY PROVINCE 1/

Province	No. of Towns (more than 2,000 pop.)	Urban Population	Percent Urban
Central	6	45,855	2.7
Coastal	7	36,579	5.2
Eastern	7	37,965	2.0
North-Eastern	0	0	0
Nyanza	4	43,829	2.1
Rift Valley	19	148,576	6.7
Western	2	10,645	0.8

1/ Excluding Nairobi and Mombasa.

Source: Population Census, Kenya, 1969.

Table 1.8: DISTRIBUTION OF TOWNS AND THEIR POPULATION BY POPULATION SIZE, 1962 AND 1969

Population Size	1962		1969		Growth rate of towns in the size class in 1969 1/
	No. of towns	Total Population (in 000's)	No. of towns	Total Population (in 000's)	% per year
100,000 and over	2	523	2	756	5.3
20,000-100,000	2	62	2	80	3.6
10,000-20,000	3	44	7	91	2.8
5,000-10,000	11	70	11	71	5.8
2,000-6,000	16	49	26	82	5.4
All towns	34	748	48	1,080	5.0

1/ Growth of the same set of towns in 1962 and 1969.

Sources: Population Census, Kenya, 1962 and 1969.

The extremely low level of urbanization in Kenya is demonstrated more convincingly in Table 1.7 where the proportion of urban population is given for the provinces (excluding Nairobi and Mombasa). Of the population in Western Province, one of the most densely peopled and fastest growing provinces, less than 1% live in towns of more than 2,000. North-Eastern Province has not a single town with as many as 2,000 inhabitants. The largest number of towns with more than 2,000 inhabitants, the largest urban population, and the highest proportion of urban population are found in Rift Valley Province.

Nevertheless, the rate of urban growth appears high--partly because of the reclassification of 14 villages as towns in 1969, partly because of real growth. In 1948 there were only 17 towns with a population of more than 2,000; by 1962, the number had doubled, and by 1969 there were 48.

In 1969, Nairobi had a population of 509,000, or twice as many people as the second largest city, Mombasa (247,000). If the 1962-69 rates of growth continue, Nairobi's population will be 3.6 times that of Mombasa's by the end of the century.

Available data indicate that among towns with populations of 20,000, the growth rate is less than the rate of natural increase, perhaps due to out-migration to Nairobi and other urban areas. On the other hand, between 1948 and 1969 the growth rate declined in Nairobi from 7.9% to 5.8%, and in Mombasa from 5.5% to 4.7%.

7. Population Growth by Tribes (Tables 1.10 and 1.11)

Kenya's non-African population declined 22%, from 266,000 in 1962 (3.1%) to 208,000 in 1969 (1.9%). The decline was slightly higher among the Caucasians. Nearly two-thirds of the non-Africans lived in the Nairobi or Mombasa areas, but with the exception of Marsabit and Eldama Ravine, all towns experienced a striking shift, which was due partly to the heavy emigration of non-Africans after 1962, and partly to the increased in-migration of Africans from rural areas.

Table 1.9: GROWTH RATE OF TOWNS OF POPULATION 10,000 AND ABOVE (IN 1969), 1948-69

Towns	Population			Growth rate	
	1948	1962	1969	1948-62	1962-67
Nairobi	118,976	343,500	509,286	7.9	5.8
Mombasa	84,746	179,575	247,073	5.5	4.7
Nakuru	17,625	38,181	47,151	5.7	3.3
Kisumu	10,899	23,526	32,431	5.7	4.7
Thika	4,435	13,952	18,387	8.5	4.0
Eldoret	9,193	19,605	13,196	6.7	-1.1
Nanyuki	4,090	10,448	11,624	7.2	1.4
Kitale	6,338	9,342	11,573	3.1	3.3
Malindi	-	5,818	10,757	-	9.2
Kericho	3,218	7,692	10,144	6.7	4.0
Nyeri	2,705	7,857	10,004	7.9	3.5
Total excluding Malindi	261,225	653,678	921,626	6.6	4.9

Sources: Population Census, Kenya, 1948, 1962 and 1969.

Table 1.10: GROWTH OF NON-AFRICAN POPULATION IN KENYA, 1962 AND 1969

	1962	1969	% Change
Caucasians	55,759	40,593	-27.2
Asians	176,613	139,037	-21.3
Arabs	34,048	27,886	-18.2
Total	266,420	207,516	-22.1

Sources: Population Census, Kenya, 1962 and 1969.

Table 1.11: POPULATION GROWTH BY PRINCIPAL TRIBAL GROUPS, KENYA 1962-69 1/

	Tribes	1962	1969	% Change
1.	Kikuyu	1,642,065	2,201,632	34.1
2.	Luo	1,148,335	1,521,595	32.5
3.	Luhya	1,086,409	1,453,302	33.8
4.	Kamba	933,219	1,197,712	28.3
5.	Kisii	538,343	701,679	30.3
6.	Meru	439,921	554,256	26.0
7.	Mijikenda	414,887	520,520	25.5
8.	Kipsigis	341,771	471,459	37.9
9.	Nandi	170,085	261,969	54.0
10.	Turkana	181,387	203,177	12.0
11.	Masai	154,079	154,906	0.5
12.	Tugen	109,691	130,249	18.7
13.	Embu	95,647	117,969	23.3
14.	Elgeyo	100,871	110,908	10.0
15.	Taita	83,613	108,684	30.0

1/ Kenyan tribes with population of 100,000 or above.

Most of the principal tribal groups in Kenya experienced a high growth rate (see Table 1.11). The most numerous tribe is the Kikuyu, numbering about 2.2 million and living mostly in Central Province and Rift Valley, whose implied average annual growth rate is 4.2%, much above the national average. High growth rates are also reported among the other major tribes. The Luo, 87% of whom live in Nyanza province, increased by 32.5% between 1962 and 1969; and the Luhya, 89% of whom live in Western Province, increased by 33.8%. The growth rate was very low among the Masai, 97% of whom live in Rift Valley Province, and among the Ogaden and Somalis, who live in the North-Eastern Province: the Masai increased by only 0.5%, and the Ogaden and Somalis actually declined in numbers by 25.9%. 1/ In general, there is a small positive correlation between the size of a tribe in 1962 and its growth rate during 1962-69; the larger tribes grew faster than the smaller ones. This means that the relative size of the small tribes is expected to become smaller in the future.

8. Fertility Trends (Table 1.12)

The main features of Kenyan fertility are that it is high, has been high in the past, appears to be increasing, and shows considerable variation by region, tribal group, and socio-economic status. The total fertility rate (TFR) appears to have been about eight in 1973-1975. According to the UN Selected World Demographic Indicators by Countries, 1950-2000, however, no country has such a high rate. 2/

Is a TFR of eight for Kenya realistic? A comparison of the Kenyan rate with those of other populations and with rates observed in Kenya in the past seems to confirm that it is feasible. 3/

On the basis of the 1948 census, Blacker (1962) estimated a crude birth rate of 50 and a TFR of 6-7 for Kenya. Estimates from the 1962 census were again a crude birth rate of 50, but a higher TFR of 6.8. For 1969, the Central Bureau of Statistics (CBS) in Kenya estimated a crude birth rate of 50 and a much higher TFR of 7.6 (Table 1.12). The 1969 estimates of 6.8 for 1962 and 7.6 for 1969 were made after careful evaluation of the census data on children ever born by age of women, births during the 12-month period prior to

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1/ As in the case of North-Eastern Province as a whole, this reported decline is unreliable. See footnote on page 33.

2/ The highest rate given in that study was for Honduras, with 7.276.

3/ In Ireland in 1911, the TFR of rural Irish women who were married before age 20 was 8.81, close to the completed family size in some of the provinces and tribes in Kenya in 1969. For smaller populations even larger fertility rates were observed. Among Cocos Islands women, those marrying at 14 or 15 had averaged 10.8 children by age 45. Those marrying at 16 had 10.3 and those marrying at 18, 8.8. See: UN, The Determinants and Consequences of Population Trends, Volume 1: New York, 1973. pp. 73-74.

Table 1.12: ESTIMATES OF FERTILITY RATES IN KENYA, 1948-1975

Year	Sources	Reported TFR: Completed Fertility from Children Ever Born	Reported TFR: From Recent Births	Estimated: B.R.	Estimated: TFR
1948 a/	Census	5.3	-	50	6-7
1962 b/	Census	5.90	5.25	50	6.8
1969 b/	Census	6.69	6.60	50	7.6
1973 c/	Baseline Survey				
	A d/	6.87	-	-	-
	B d/	7.86	-	-	8.2 (8.0) e/
1975 c/	Retrospective Survey				
	A d/	7.22	-	-	-
	B d/	8.00	-	-	-
	C d/	7.16	-	-	-

a/ J.C.G. Blacker "The Demography of East Africa" in the National Resources of East Africa. E. W. Russell (ed.), Nairobi, English Press; 1962.

b/ CBS. 1969 Population Census, Volume IV, Analytical Report.

c/ CBS, Demographic Surveys 1973-76, Methodological Report, October 1977, Table 4.1, p. 43.

d/ A, B, and C are three sets of households in which different formats of the questionnaire were used. A cluster received a birth history format while the B cluster received a fertility question (No. of children ever born without a birth history). In C cluster a combination of the A and B formats were used. Women were first asked the summary question on number of children ever born. Next, these women were asked details of each birth.

e/ 8.2 is based on $P_{(1+)}/F_{(1)}$ ratio for age group 20-24 years and 8.0 is based on the average of the ratios for 20-24 years and 25-29 years.

the census (classified by age of women), and the age distribution of males and females. The quality of the available data might have improved between 1962 and 1969, however, and the estimated increase in the TFR could be partly a reflection of this improvement.

The status of the 1973 and 1975 survey estimates is different. There is reason to question both their validity and their comparability with the census-based estimates. 1/ Thus, the question whether the level of fertility in Kenya has risen or remained constant during the period 1962-1975 cannot be answered unequivocally with the available data. It is hoped that the recent National Demographic Survey (the results are not yet published) or the forthcoming World Fertility Survey will provide a definitive answer. 2/

1/ First, there is the sampling problem. The sample for these surveys was a stratified one-stage probability sample of 72 clusters of households selected from a universe comprising of six contiguous and easily accessible districts--Kakamega, Kisumu, Kericho, Nakuru, Kiambu, Machakos and Nairobi. These districts represented 33% of the total population in 1969, and their inhabitants include members of all the five major tribal groups. However, the sample may not be representative of the country as a whole. Comparison with 1969 census data indicated that in the study area fertility was somewhat higher, and mortality somewhat lower, than the national rates. The higher fertility rates observed for 1973/1975 could be due to the non-representative nature of the sample. However, if there was a real increase in fertility during 1969-1975, this increase would be larger in the relatively low fertility population groups, and hence outside the survey area.

Second, the fertility rates shown for 1975 are reported completed family size and not corrected fertility rates, and the different formats (A, B, C) of the questionnaire gave different estimates of completed family size. Households in the A cluster received a birth history format, while the B cluster received a fertility question (number of children ever born) without a birth history. In C cluster, a combination of A and B formats was used; women were first asked a summary question on number of children ever born and later details of each birth. The summary question (B format) gave a more complete coverage of children ever born.

Third, the 1973/75 figures are from sample surveys, while those for 1962/69 are from censuses. The reporting of children ever born could be more complete in sample surveys than in population censuses. Although the B schedule is very similar to the census questionnaire, and their results should therefore be comparable, there could well have been significant differences in the training, supervision, ability and enthusiasm of the interviewers.

2/ When the final draft of this report was prepared, the results of National Demographic Survey and Kenya World Fertility Survey became available. They gave a TFR of 8.1 for 1977-78, confirming the increase in fertility since the last census (1969).

For the purposes of this analysis, it is safer to err on the high side and accept the view that in some sections of the Kenyan population, fertility rates have indeed increased in recent years, so that a TFR of 8 in 1973-1975 is not implausible. 1/

1/ There are several reasons for believing that fertility rates might have increased in Kenya since 1969, and that the TFR in 1973-1975 may have been as high as 8. First, the estimated TFRs were higher than the reported completed family size by about 15% in 1962 and 1969, and by 5% in 1973. In the 1975 survey, the completed family size of women aged 45-49 was 8.0. Second, the difference between the reported completed family size in 1969 and 1973 was 1.2 children, and between 1969 and 1975, 1.3 children. These differences are too big to be explained by sampling deficiencies. Third, the corrected TFRs of 1962 and 1969 indicate an increase of 12%. This is consistent with the reported increase in total population between 1962 and 1969. A projection starting with the reported 1962 population and the estimated increase in the TFR gives a total population for 1969 close to the enumerated population. If the 1962-69 trend in the TFR had continued during the period 1969-1975, the rate in 1975 would have been 8.3. Thus a TFR of 8.0 for 1973/75 is not out of line with the past trend. Fourth, the proportion of childless women had decreased during 1962-1969 in every age group, but these proportions were high. Because health conditions have improved since 1969 the incidence of sterility would have decreased, and fertility increased, for sections of the population during 1969-1975. If the increase was not counterbalanced by decreases in other sections, national fertility would have increased. Fifth, although the average TFR in Kenya was quite high in 1969, there were large sections of the population (Coastal Province, illiterate women, etc.) among whom fertility rates were relatively low. In the absence of widespread contraceptive usage, and with improvements in health and general socio-economic conditions, fertility rates for these groups would have increased, raising the national average. Sixth, the population growth rate was higher among the high fertility tribes (Kikuyu, Luo, Luhya, for example). Thus, over time, the relative weight of these high fertility women will increase, which, even without any fertility change in any tribe, would raise national average fertility rates. Seventh, similar fertility increases are observed in Tanzania, Kenya's southern neighbor, for recent periods. Lastly, the methodological report on the demographic surveys conducted in 1973 and 1975 gives sufficient reason to believe that the B series of fertility measures gives a more complete coverage of children ever born (especially those children who had died) than the A or C series.

9. Age-Specific Fertility Pattern (Table 1.13)

Fertility rates in Kenya are high in all age groups; the peak is in the 25-29 age group, where nearly a third of the women have a baby per 12-month period. The rate in the 20-24 years age group is almost as high. Thus the Kenyan fertility pattern is the "broad peak" type rather than the "late peak" or "early peak" type. Such a pattern is more typical of Central America than of tropical Africa, although the Black population of South Africa also has a broad peak pattern.

The broad peak implies that the fertility rates are high in the younger and older age groups, in comparison with those of other countries that have single peaks, either late or early. For example, the current Mexican fertility level is only 8% below the Kenyan 1969 rate, but in the age group 15-19 years, the Kenyan rate is higher by 38%, and in the age group 45-49, it is higher by 45%. Compared to the TFR in India (1971), the Kenyan rate is higher by 32%, but in the age groups 35-39, 40-44, and 45-49 years, the Kenyan specific rates are higher by 40%, 73%, and 84% respectively. In other words, Kenyan fertility rates remain relatively high throughout the entire childbearing period (ages 15-49).

Between 1962 and 1969, fertility rates increased in all age groups, except those at the end of the reproductive age span (see Table 1.13). The increase was relatively larger below 30 years; as a consequence, the average age of childbearing decreased from 30.5 years to 29.8 years. Even without an increase in TFR, a decrease in the mean age of reproduction would lead to a higher population growth rate; with a 12% increase in fertility, the effect on the growth rate would be even stronger.

Three aspects of specific fertility rates in Kenya are worth noting. First, the small decline in fertility rate at ages above 40; second, the increase in specific fertility above the general average below 30 years 1/, and finally, the higher fertility rates at older ages compared with the corresponding rates in other countries similarly placed (possibly because in Kenya, frequent childbearing at older ages is culturally acceptable).

1/ The number of women in the group 15-29 years is 64% larger than the number in the next 15-year age group.

Table 1.13: ESTIMATED AGE SPECIFIC FERTILITY RATES, 1962 AND 1969

Age Group	Fertility rates per year 1,000 women, Kenya	
	1962	1969
15-19	107	132
20-24	268	331
25-29	290	337
30-34	262	294
35-39	211	223
40-49	140	135
45-49	82	68
TFR	6.8	7.6
Average Age of childbearing	30.5	29.8

10. Fertility Differentials (Tables 1.14, 1.15) 1/

Data on fertility differentials are available by district and province, by major tribe, and by educational attainments. These data indicate significant differences between geographic regions, between tribes, and between women of different educational attainments (see Chapter 5). Differences in health conditions and consequent differences in the incidence of sterility, both primary and secondary, appear to be important, and there are, of course, other factors related to tribal customs and practices.

1/ Chapter 5 is devoted to reviewing the state of knowledge about the determinants of fertility in Kenya and to providing statistical analysis of the 1969 census (district) data and ILO/University of Nairobi Survey (household) data. In this section, we provide a general introduction to the subject.

Table 1.14: REPORTED AND ESTIMATED FERTILITY MEASURES, BY PROVINCE, 1969

Provinces	Reported TFR		Estimated	
	From current births	Completed fertility from children ever born	TFR	CBR (1970-75)
Nairobi	5.17	4.64	5.6	40
Central	8.25	7.09	8.9	52
Coastal	4.67	4.87	5.9	43
Eastern	7.48	5.87	7.9	50
North-Eastern	5.32	6.88	6.7	44
Nyanza	6.15	7.67	8.2	55
Rift Valley	5.77	6.05	6.9	47
Western	7.86	8.22	8.8	56
Kenya	6.60	6.69	7.6	50

Table 1.14 shows fertility variations by geographic regions. The total fertility rates vary from 5.6 in Nairobi and Coastal Provinces to 8.9 in Western and Central Provinces. The TFR is relatively high in Nyanza Province also.

Corrected fertility rates are not available for districts. The reported current fertility (TFR) was above 8 in 2 of the 3 districts (Bungoma and Kakamega) of Western Province; in 4 of the 5 districts of Central Province, and in Kitui district in Eastern Province. Completed fertility (average children per woman who has completed childbearing) was 8 or above in 5 districts; the three districts that comprise Western Province, Kisii District in Nyanza Province, and Trans Nzoia District in Rift Valley Province. These districts are geographically close.

Geographic variation is related to variations by tribal groups (see Table 1.15). Fertility rates are lowest among Caucasians and Asians, who live mostly in Nairobi and Mombasa; as a result, fertility rates in Nairobi and

Mombasa are relatively low. Rates are high among the Central and Western Bantus and low among the Coastal Bantus and Western Hamitics. 1/

Fertility variations by level of educational attainment (see Table 5.6) are much larger than the inter-provincial or inter-tribal variations. Rates are highest among women who have completed Standards 1-4, and lowest among those who have the highest level of education.

Table 1.15: FERTILITY MEASURES BY ETHNIC GROUPS, 1969

Ethnic Group	Reported TFR	
	From current births	Completed fertility from children ever born
Central Bantu	7.73	6.55
Western Bantu	7.54	8.38
Coastal Bantu	4.74	4.91
Nilotic	5.86	7.27
Kalenjin	5.35	6.08
Other Nilo-Hamitic	5.45	5.49
Western Hamitic	4.02	5.16
Eastern Hamitic	5.88	6.69
Caucasians	2.15	2.35
Asians	2.51	5.24
Arabs	4.88	6.92

1/ Central Bantu consists of Kikuyu, Embu, Meru, Mbere, Kamba, and Tharaka tribes; Western Bantu consists of Luhya, Kisii and Kuria tribes. Coastal Bantu includes Mijikenda, Pokomo/Riverine, Taveta, Taita, Swahili/Shirazi, Bajun, and Boni/Sanye tribes, Nilotic includes only one tribe, namely, Luo. Nilo-Hamitic includes Nandi, Kipsigis, Elgeyo, Marakwet, Pokot, Sabaot, and Tugen tribes. Other Nilo-Hamitic are: Masai, Samburu, Turkana, Iteso, Nderobo, Njemps. Western Hamitic includes Rendille, Boran, Gabbra, Sakuye and Orma tribes, and Eastern Hamitic consists of Gosha, Hawiyah, Ogaden, Ajuran, Gurreh, Degodia and other Somali tribes.

The 1969 census does not provide information on fertility differentials between rural and urban areas. It appears, however, from the 1962 census data and from the results of the dual record system in 1974, that fertility in urban areas is markedly lower, both overall and at every level of education. Areal analysis of district data from the 1969 census shows a strong negative relationship between the urbanization rate and the observed fertility rate (see Chapter 5).

Improvements in health conditions, nutrition, and general economic conditions are the main factors underlying the recent fertility increases in Kenya. Experience has shown that the initial impact of socio-economic development is a reduction in sterility and an increase in the frequency of intercourse, both contributing to an increase in fertility.

The fertility rate of illiterate women in Kenya is lower than that of women with one to four years of schooling, possibly because of their higher morbidity rates and higher incidence of sterility. In the age group 30-34 years, the proportion of women who had never borne a child was 4.3% among those with no education, and only 2.5% among those who had completed Standards 1-4. In 1962, 17.8% of women 30-34 had no children at all, but by 1969 their proportion had decreased to 8.1%. A similar significant decline in the proportion of childless women can be observed in all age groups. There was a small but consistent decline (by age group) during 1962-69 in the proportion of women with one child (probably owing to secondary sterility).

The proportion of childless women varies by province, district, and tribal group. For example, in 1969 in Coastal Province, it was 8.4% (in the age group 30-34 years); whereas in Central Province it was only 4.6%, and in Western Province, only 2.7%. Among the Coastal Bantus, the incidence of childlessness (30-34 years) was 7.6%, whereas among Western Bantus, it was only 2.9%.

11. Mortality Trends and Differentials (Table 1.16)

At the time of the first census (1948), the crude death rate was 25, infant mortality was about 184, and life expectancy 35 years. In 1969, the crude death rate in Kenya was 17 per 1,000 population; infant mortality was 119 per 1,000; and life expectancy at birth was 49 years. This improvement in life expectancy was well above the LDC average, or about half a year per year.

1/ Actual death rates will differ because of differences in age composition.

Table 1.16: MORTALITY TRENDS IN KENYA, 1948-1969

Year	Infant mortality	Life expectancy at birth	Crude death rate
1948	184	35	25
1962		44	20
1969	119	49	17

Source: Population Census, Kenya, 1962 and 1969.

12. Mortality Variations (Tables 1.17-1.22)

By Age. Adult mortality in Kenya is relatively (compared with experience in other countries at the same mortality level) lower than infant and child mortality. About a third of the total deaths in Kenya in 1969 were among infants. The distribution of deaths by age group (Table 1.17) indicates that more than half the deaths occurred among children under five years. The reduction of infant and child mortality would bring about a significant change in Kenya's population profile.

Life table death rates for Kenya (1969) and those in selected model life tables are shown in Table 1.18. Those figures indicate that adult death rates are relatively lower in Kenya than in models incorporating patterns in other countries.

By Sex. In Kenya, as in most countries, mortality rates are lower among females. In 1969, the life expectancy among females was higher by 4.6 years, equivalent to nearly seven years of mortality improvement at the 1948-69 rate (0.6 year per year), or about 12 years of improvement at the estimated rate at the present time (0.4 year per year). A wide variety of independent sources support the above estimates.

Table 1.17: DEATH RATE AND PERCENT DISTRIBUTION OF DEATHS BY AGE, KENYA, 1969

Age	Death Rate	Percent Distribution of Deaths
0 -	138	34
1 - 4	24	20
5 - 9	8	7
10+	12	39
All ages	17	100

Source: Population Census, Kenya, 1969.

Table 1.18: LIFE TABLE DEATH RATE IN KENYA AND SELECTED MODEL LIFE TABLES

Country	Life Expectancy at Birth	Specific death rate			
		0 -	1 - 4	5 - 9	10+
Kenya, 1969	49.0	138	24	8	15
West Model	49.0	138	18	4	20
North Model	45.8	138	26	8	20
East Model	53.6	138	12	3	18
South Model	51.2	138	23	4	18

Sources: Population Census, Kenya, 1969. Coale and Demeny: Regional Model Life Tables and Selected Stable Populations; Princeton, 1966.

Table 1.19: SURVIVAL RATIO BY PARITY

Parity	% Surviving
1	92.6
2	94.5
3	93.8
4	90.6
5	92.2
6	92.1
7	90.9
8	89.7

Source: Data from 1969 Kenya Population Census.

Order of Birth. Infant mortality is observed to be related to parity in several countries; on the whole, higher orders of births have a higher mortality risk. Data from the 1974 ILO survey in Kenya (Table 1.19) support such a relationship.

Regional Variation. Mortality rates vary substantially from one region to another and between rural and urban areas. Life expectancy at birth by province is shown in Table 1.20. Among the eight provinces, Nyanza has the lowest life expectancy at birth and Central Province, only 150-200 miles away, has the highest; the difference is about 15-20 years. This is equivalent to a lag of 30 years of improvement in health conditions.

Table 1.20: EXPECTATION OF LIFE AT BIRTH BY PROVINCES, 1969

Regions	Expectation of Life at Birth			
	Census Estimate	Corrected /a By ILO	Corrected /b By World Bank	
			Male	Female
Nairobi	56.0	56.8	54.0	58.0
Central	57.8	60.1	54.7	61.0
Coast	47.2	43.4	45.1	49.7
Eastern	52.0	49.8	48.7	55.3
North Eastern	47.6	47.3	32.9	35.9
Rift Valley	55.3	54.1	40.7	43.9
Nyanza	42.5	38.6	39.4	45.6
Western	49.4	43.5	48.7	50.1
Kenya	49.0	47.8		

/a ILO Working Paper (Anker & Knowles), No. 60, Table 2.
/b Bank estimates.

Variations by district are even larger. The highest expectation of life at birth, 63.2, was in Nyeri district in the central region, and the lowest, 34.2 (excluding North-Eastern and Rift Valley provinces, where census data are dubious), was in Siaya district, in Nyanza. The difference between these two is 29 years, or half a century of health development in an average LDC.

Urban areas have lower mortality rates than rural areas. In 1969, the expectation of life at birth in Nairobi was about 57 years, or eight years above the national average; in Mombasa, it was only 49 years, marginally above the national level.

Tribe. In 1969 Central Bantus had the lowest mortality rate, and Western Hamitics the highest (data are dubious for the Eastern and Nilo-Hamitics) (Table 1.21).

Table 1.21: LIFE EXPECTANCY AT BIRTH, BY MAJOR TRIBES, 1969

Tribes	Expectation of Life at Birth Census Estimate a/
Central Bantu	54.6
Coastal Bantu	48.4
Western Bantu	52.2
Nilotic	42.0
Nilo-Hamitic	56.9
Other Nilo-Hamitic	52.1
Western Hamitic	39.8
Eastern Hamitic	48.6
All tribes	49.0

a/ These figures are probably underestimates for the Nilo-Hamitic and Eastern Hamitic groups, where the mortality data appear dubiously low; they probably resemble Western Hamitics in mortality levels.

Table 1.22: PROPORTION OF CHILDREN DYING, BY EDUCATIONAL ATTAINMENT OF MOTHER; AND PROPORTION OF PERSONS WITH PARENTS ALIVE, BY EDUCATIONAL ATTAINMENT OF RESPONDENT

Years of schooling	Proportion of children dying, by age of mother			Proportion of persons with parents alive, by age of respondent			
				Father		Mother	
	20 - 24	25 - 29	30-39	20 - 24	30 - 34	20 - 24	30 - 34
None	0.1685	0.1920	0.2191	0.6722	0.4565	0.8199	0.6647
Standard 1 to 4, (1-4 years)	0.1274	0.1316	0.1457	0.7398	0.5606	0.8823	0.7616
Standard 5 to 7, (5-8 years)	0.0882	0.0943	0.1149	0.7889	0.6239	0.9171	0.8043
Form I - IV, (9-12 years)	0.0482	0.0614	0.0585	0.8254	0.6723	0.9296	0.8392
Form V & over, (13 years & over)	0.0460	0.0241	0.0257	0.7952	0.7058	0.9138	0.8519

Education. All the data available on mortality variation by educational attainment indicate a consistent fall in mortality with increase in level of education. In all age groups, child survivorship increases consistently as the level of education of mother increases. Data on the survival of parents by educational attainment cannot be used for estimating the mortality of the respondents where educational attainment is shown, since the educational attainments of the parents may well have been totally different from those of the respondents; nevertheless, it is apparent that the mortality of parents tends to decline in proportion to the increasing education of the respondents (Table 1.22).

13. Determinants of Mortality 1/ (Table 1.23)

Inferences about the determinants of mortality are drawn mostly from inter-district variation in mortality rates and from child-survival ratios in household surveys. They indicate that the principal determinant of mortality in Kenya in the recent past has been the prevalence of malaria. In areas such as those along the Indian Ocean coast and around Lake Victoria where malaria is endemic throughout the year, mortality rates are high; and in areas like the Central Highlands, where tropical diseases are rare, mortality rates are low. Malaria remains a statistically significant factor determining mortality level by district even after the effect of other factors such as education, level of urbanization, and hospital facilities are controlled (Table 1.23).

1/ For details of the regression procedures used see ILO Working Paper no. 60, on which this section is largely based.

Table 1.23: ORDINARY LEAST SQUARES RESULTS FOR DISTRICT LEVEL ANALYSIS OF LIFE EXPECTANCY AT BIRTH[2/] FOR 1969[1/] WEIGHTED[3/]
(t values in brackets)

Variables	1	2	3	4	5
Constant	43.72	46.55	49.52	42.88	54.08
Percent of literate adults	.28 ** (2.25)	.13 (1.34)	.21 (1.45)	.15 (1.10)	.27 * (2.01)
Percent of urban population	-.04 (0.58)	-.13 (1.26)	-.14 (1.30)	X (1.10)	-.04 (.53)
Presence of malaria	X	-12.25*** (5.29	-11.57*** (4.83)	-11.74*** (4.87)	-11.09*** (4.64)
Hospital beds per 1,000 population	X	2.37 (1.63)	2.01 (1.30)	.60 (.54)	X
Hectares of quality-adjusted agricultural land per person	X	X	.31 (1.05)	.36 (1.05)	.31 (1.03)
Total fertility rate	X	X	-.62 (0.50)	-.11 (0.09)	-1.12 (0.93)
R^2	.14	.52	.55	.52	.52
$\bar{R}^2$	.09	.47	.47	.45	.46
F	3.01 **	9.91 ***	6.85 ***	7.56 ***	7.72 ***
N	41	41	41	41	41

*** Significant at the 1% level
** Significant at the 5% level
* Significant at the 10% level

1/ Adapted from Table 5 in Anker and Knowles, "An Empirical Analysis of Mortality Differentials in Kenya at the Macro and Micro Levels," ILO, Working Paper No. 60 (Geneva: ILO, 1977). P. 16.

2/ The improbably low mortality rates reported for North-Eastern Province and some districts of Rift Valley Province were not adjusted upwards in this analysis. Any such corrections might well affect the correlations reported here. In particular, the correlation between malaria prevalence and mortality levels might be weakened.

3/ Weighted by square root of population in each district.

Among other factors, the percentage of literate population, amount of quality adjusted land per capita, and the number of hospital beds per 1,000 persons were all found to be positively correlated to life expectancy, but many of the observed relationships were not statistically significant.

Analysis of household data 1/ indicated that child survivorship in Kenya in the early 1970s was significantly related to disease prevalence (principally malaria) in the area of residence, to demographic characteristics at birth (especially sex and year of birth), and to the socio-economic status of the household (especially income, mother's education, mother's health and type of medical facilities). Thus, the household analysis lends support to the principal finding of the district-level analysis, that a major mortality determinant in Kenya in recent years has been the presence or absence of malaria.

Among the demographic factors included in the household analysis, sex and year of birth have a significant effect on survivorship. Male births have significantly lower survival probabilities than female births, and births further back in time have significantly lower survival probabilities than more recent births. On the other hand, evidence on the relationship between the order of birth and child survivorship is inconclusive. While parity is significantly related to child survivorship, the relationship becomes insignificant when education of mother is included in the regression.

There is fairly strong evidence also from the analysis of household data, that socio-economic factors have a significant effect on child survivorship. An increase in income per equivalent consumer of KSh 6,500 per annum has about the same effect on survival probability as residence outside a malaria area. Income and mother's education are observed to have a significant positive effect on survivorship even controlling for housing characteristics such as sources of water supply, toilet facilities, and type of medical care utilized. This suggests that these latter variables alone do not provide the only channels through which socio-economic development operates to reduce infant and child mortality, and furnishes indirect evidence of the possible importance of such factors as nutrition and personal hygiene.

14. Migration (Tables 1.24 and 1.25)

The effect of external migration on population growth in Kenya has been negligible, but that of internal migration on population distribution has been somewhat significant, although relatively small compared with differential natural increase.

1/ For a detailed discussion of the analysis of household data, see ILO Working Paper No. 60, pp. 18-26.

Table 1.24: DISTRICT IN WHICH THE PROPORTION OF FOREIGN BORN WAS MORE THAN NATIONAL AVERAGE IN 1969

	District	% Born Outside Kenya
1.	Mombasa	11.8
2.	Nairobi	10.6
3.	Taita	9.9
4.	Turkana	9.9
5.	Samburu	9.1
6.	Marsabit	8.6
7.	Tana River	7.5
8.	Nakuru	4.0
9.	Kwale	2.7
10.	Embu	2.8
11.	Uasin Gishu	2.5
12.	Kajiado	2.4
13.	Kilifi	2.3

Source: Data from 1969 Kenya Population Census.

In 1969, 208,000 residents, or 1.9% of the total population, were persons born outside the country. This suggests a negligible degree of immigration, whether short-term or long-term. Of those born outside, the majority were born in Tanzania, Uganda, the United Kingdom, and India. The demographic impact of the foreign-born was heaviest in Mombasa, where nearly 12% of the population were foreign-born. Other districts in which the proportion of the foreign-born was more than the national average are shown in Table 1.24. In 1962 the number of foreign-born was 266,000, indicating a 22% decline, possibly owing to a net emigration, during 1962-69.

Table 1.25: LIFETIME MIGRANTS BY PROVINCES, 1969

Province	Lifetime In-migration /a Number	%	Lifetime Out-Migration Number	%	Lifetime Net Migration Number	%
Nairobi	386,273	75.9	303,580	59.6	+ 82,693	+16.2
Central	168,281	10.0	332,554	19.8	-164,273	- 9.8
Coast	212,652	58.9	27,666	7.7	+184,986	+51.2
Eastern	45,085	2.4	262,871	13.8	-217,786	-11.4
North-Eastern	10,962	1.8	10,380	1.7	+ 583	+ 0.1
Nyanza	193,986	9.1	186,069	8.8	+ 7,899	+ 0.4
Rift Valley	460,672	20.8	88,823	4.0	+371,849	+16.8
Western	72,210	5.4	200,946	15.2	-128,736	- 9.7
Kenya	1,550,122	14.2	1,412,889	12.9	+137,233	+ 1.3

/a Including those born outside Kenya.

Source: Data from the 1969 Kenya Population Census.

15. Internal Migration 1/ (Tables 1.25, 1.26, 1.27 and Map 1.2)

Information on internal population mobility in Kenya is available from data on birthplace collected in 1962 and 1969. Unfortunately, direct comparison between the two years--and hence direct estimation of intercensal internal migration--is impossible, because of provincial boundary changes made between the censuses. Birthplace data for 1969 provide estimates of lifetime migration between provinces and between districts, however (Table 1.25). Internal population movement in Kenya is substantial. In 1969, there were 1.4 million people who had been born in a province other than the province where they were enumerated; and 1.8 million born in a district other than the district of enumeration. Thus one in every eight persons living in Kenya in 1969 moved at least once in his life from one province to another, and one in every six from one district to another.

1/ The two following sections draw substantially on the recent paper "Lifetime Migration Patterns in Kenya, 1969" by David Sly, Population Studies and Research Institute, University of Nairobi.

Nairobi, Coastal, and Rift Valley provinces received the most in-migration. In Nairobi Province, approximately three out of every four persons were lifetime immigrants; in Coastal Province (dominated by Mombasa), one out of every four; and in Rift Valley, one out of every five. Forty percent of in-migrants to Nairobi came from Central Province, the principal source of migrants to the capital city.

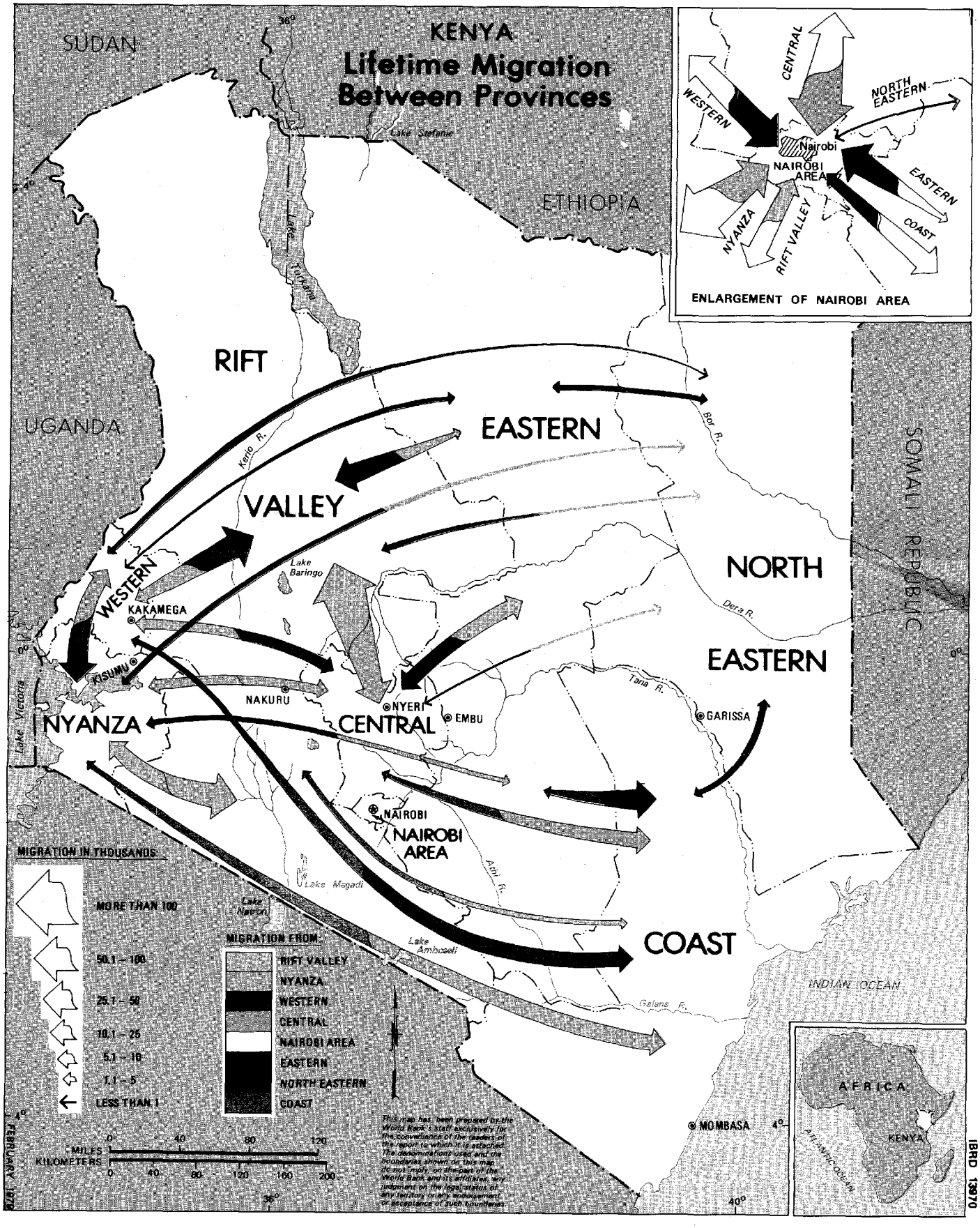
The chief provinces of out-migration were Nairobi, Central, and Western. Approximately two out of every three persons born in Nairobi were enumerated elsewhere in 1969; corresponding proportions for Central and Western provinces are one out of six and one out of seven, respectively.

Almost 40% of out-migrants from Nairobi Province were enumerated in Nyanza, and nearly 24% in Central; other important receiving provinces were Coastal (15%), Rift Valley (11%) and Western (10%). Nearly half of all out-migrants from Central Province were enumerated in Rift Valley, and another 40% in Nairobi. Western Province sent nearly half its out-migrants to Rift Valley, with another 27% enumerated in Nairobi and 13% in Nyanza.

On balance, Rift Valley, Coastal, and Nairobi provinces had sizeable net lifetime gains through migration, while Eastern, Central and Western provinces had sizeable losses. Net migration in Nyanza and North-Eastern provinces was not large.

Lifetime migration data, of course, may not represent recent migration patterns. Though provincial boundary changes make direct estimates of interprovincial migration between 1962 and 1969 impossible, indirect estimates of intercensal net migration for provinces may be derived as a residue from the subtraction of natural increase from net intercensal provincial population growth. These are given in Table 1.26, and display much the same general pattern as lifetime net migration. Three provinces--Nairobi, Coastal, and Rift Valley--had substantial net in-migration during the period 1962-1969. Net in-migration to Nairobi was 63,000, or 38% of intercensal growth (62% of natural increase); to Coastal, 35,000, or 17% of intercensal growth; and to Rift Valley, 64,000, or 15% of intercensal growth. Two provinces--Central and Eastern--had net out-migration during the same period. Net out-migration from Central was 105,000, nearly a quarter of the natural increase for the period; and from Eastern, 86,000, or 19% of the natural increase.

At the district level, lifetime migration within provinces is also substantial. In 1969 over half a million persons had moved from one district to another in the same province at least once, which amounts to 40% of the volume of migration between provinces. The provinces with high intra-provincial migration were Central, Coastal, and Rift Valley; while those with low intra-provincial migration were Eastern, North-Eastern, and Western. Nyanza falls between these groups, and Nairobi, which has but one district, is of course excluded from the analysis.


KENYA
Lifetime Migration Between Provinces
SUDAN
ETHIOPIA
UGANDA
SOMALI REPUBLIC
INDIAN OCEAN
Lake Stefanie
Lake Turkana
Kerio R.
Bor. R.
Lake Baringo
Dera R.
Tana R.
Athi R.
Galana R.
Lake Victoria
Lake Magadi
Lake Naivasha
Lake Amboseli
RIFT VALLEY
WESTERN
EASTERN
NORTH EASTERN
NYANZA
CENTRAL
COAST
NAIROBI AREA
KAKAMEGA
KISUMU
NAKURU
NYERI
EMBU
GARISSA
NAIROBI
MOMBASA
ENLARGEMENT OF NAIROBI AREA
MIGRATION IN THOUSANDS
MORE THAN 100
50.1 – 100
25.1 – 50
10.1 – 25
5.1 – 10
1.1 – 5
LESS THAN 1
MIGRATION FROM:
RIFT VALLEY
NYANZA
WESTERN
CENTRAL
NAIROBI AREA
EASTERN
NORTH EASTERN
COAST
MILES
KILOMETERS
0 40 80 120
0 40 80 120 160 200
AFRICA
KENYA
ATLANTIC OCEAN
36°
4°
0°
40°
FEBRUARY 1972
This map has been prepared by the World Bank's staff exclusively for the convenience of the readers of the report to which it is attached. The designations used and the boundaries shown on this map do not imply, on the part of the World Bank and its affiliates, any judgment on the legal status of any territory or any endorsement or acceptance of such boundaries.

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The volume of net rural-urban migration can be estimated directly for the period 1962-1969 from data on the urban population. Unfortunately, direct estimates of urban/rural, rural/rural, and urban/urban migration flows, and the relative importance of each of the four components, cannot be made, since the 1969 census data provided no breakdown of place of birth or place of enumeration by urban and rural categories. Some rough estimates can be derived by classifying districts and provinces as either rural or urban, and thence inter-provincial or inter-district migration as rural/urban, urban/rural, rural/rural and urban/urban, accordingly. The data resulting from procedures indicate that in 1969 about one-third of all lifetime migrants could be classified as rural/urban, and about one quarter as urban/rural; the highest proportion (about 40%) were rural/rural migrants, and only about 4% were urban/urban migrants.

16. Rural-Urban Migration (Table 1.27)

During 1962-69 the urban population of Kenya increased by 332,000, or 44% of the initial population. The average annual growth rate was 5.2%, considerably larger than the rural population growth rate (3.2%).

Table 1.26: NET MIGRATION BY PROVINCES 1962-69

Province	Population Growth 1962-69 (000's)	Natural Increase 1962-69 (000's)	Net Migration 1962-69 (000's)	Net Migration as % of Natural Increase	Net Migration as % of Net Growth
Nairobi	164	101	+63	+62	+38
Central	335	439	-104	-24	-31
Coastal	200	164	+35	+21	+17
Eastern	361	447	-86	-19	-24
North Eastern	24	24	-	-	-
Nyanza	480	458	+22	+ 5	+ 5
Rift Valley	433	370	+64	+17	+15
Western	309	303	+ 6	+ 2	+ 2
Kenya	2,306	2,306	-	-	-

Source: Data from the 1969 Kenya Population Census.

The growth of the urban population during 1962-69 was due to natural increase, rural/urban migration and reclassification of localities. A breakdown of these components is shown below:

Urban population:	1969	1,080,000	
	1962	748,000	
Total urban increase, 1962-69:		+ 332,000	
	% increase	44	
	annual growth rate	5.2%	
Natural increases in localities which were towns in 1962		180,000	(54%)
Net rural/urban migration		111,000	(33%)
Population of reclassified localities		42,000	(13%)

Net rural/urban migration in Kenya during 1962-69 was about 111,000, a third of the net urban growth during that period. Much of the rural/urban migration was directed toward Nairobi and Mombasa: an estimate of net migration to these two towns alone may be very close to the total rural/urban migration. This means either that other towns had no net gains at all or as is more likely, some of them had gains, but others had net losses. Towns like Eldoret, Nanyuki and Kitale probably lost population through net migration, while smaller towns gained.

Data on birthplace and tribal grouping for the urban population, collected in the 1969 census are summarized in Table 1.27.

In smaller towns (with less than 10,000 inhabitants) about half the population were born in the same district, and about two thirds in the same province; only 3% were born outside Kenya. In larger towns, however, only a third were born in the same district, and less than half in the same province; 7% were born abroad. Mombasa is similar in pattern, but with a greater proportion born abroad (12%), and a lower proportion born elsewhere in Kenya. Nairobi presents a striking contrast. Only a quarter of the population were born in the same district/province; two-thirds came from other parts of Kenya; and 11% were born abroad.

Comparison of birthplace data for the urban population with the total population shows that the urban population is less locally concentrated than the rural population. It is clear that the larger the town, the greater the proportion of its population formed by migrants from outside the province. In smaller towns, locally born inhabitants normally dominate, but in larger towns they are usually a minority.

Table 1.27: PERCENTAGE DISTRIBUTION OF URBAN POPULATION BY BIRTHPLACE 1/ AND TRIBAL GROUPING

Size Class of Towns	Total Population		Born in same district	Born elsewhere in same province	Born elsewhere in Kenya	Born outside Kenya	Central Bantu	Western Bantu & Nilotic	Nilo-, Eastern Western Hamitics	Coastal Bantu and Arab	Others
2,000-4,000	81,886	100	55	11	32	3	40	19	21	14	5
5,000-9,999	71,396	100	53	13	32	3	40	20	19	14	6
10,000-99,999	170,267	100	32	15	45	7	37	37	6	5	15
Mombasa	247,073	100	37	20	32	12	19	15	1	41	24
Nairobi	509,286	100	---24----		65	11	51	26	2	1	20
Total Population		100	81	5	12	2	38	34	19	7	2

Percentages may not add exactly to totals, due to rounding.

1/ Data on birthplace were apparently not collected for some towns, and collected from only part of the population in others. The percentages of No Response for the 3 size classes are 35, 9 and 3 respectively. However these omissions appear to be mainly due to random problems in census organization, and are not expected to bias the results significantly. No Responses have therefore been excluded from the analysis of birthplace here.

Analysis of tribal groupings indicates variation by size of town for tribal distributions also. In smaller towns the distribution by tribal grouping is reasonably well-balanced by comparison to that of the total population, except for some underrepresentation of western groups and overrepresentation of coastal groups. In larger towns, especially in Nairobi and Mombasa, Hamitic and Nilo-Hamitic groups are grossly underrepresented, and "Others" (non-Kenyan or non-African groups) are strikingly overrepresented.

Analysis of urban birthplace and tribal data by province (excluding Nairobi and Mombasa) can be briefly summarized: in general, the urban population is predominantly local, with two-thirds or more born in the same province. The exception is Rift Valley Province, where typically only 25-50% were born in the same province. The proportion born elsewhere in Kenya is between 40 and 60%. It appears, therefore, that migration into Rift Valley has been directed not only to land resettlement schemes, but also to the many towns in the province.

17. Determinants of Internal Migration (Table 1.28) 1/

Rural land resettlement caused considerable rural/rural migration in Kenya during the pre-1969 period. An analysis indicates that the proportion of urban dwellers in a district, their proximity to urban centers, and the proportion that belong to major tribes have significant positive effects on rural/rural outmigration, possibly because of the greater participation of urban dwellers in rural land settlement projects. It is reasonable to expect that relatively high-income and better-informed town dwellers and those belonging to large tribes were in a good position to take advantage of such opportunities.

Out-migration from districts to major urban centres (population 10,000+) seems to be determined more by perceived opportunities in the towns than by the characteristics of the districts of origin. Among those characteristics, education has a statistically significant positive effect, and greater land availability a uniformly negative effect.

Rural-rural migration and rural-urban migration appear to be partial substitutes for each other. Opportunities for rural settlement, however, have diminished considerably in recent years. At the same time, population pressure and educational attainment (both of which are positively related to rural out-migration) are increasing. It is therefore reasonable to expect future increases in rates of rural/urban migration. The urban population of Kenya is small relative to the rural, and scope for increased rural/urban migration is quite large. However urban unemployment rates will be a major factor determining how much of the rural population will actually migrate.

1/ Based mostly on ILO Working Paper No. 56.

Table 1.28: DETERMINANTS OF VARIANCE IN GROSS OUT-MIGRATION TO ALL DESTINATIONS 1/ (t statistics in parentheses)
Dependent Variable: M_i/P_i

Explanatory Variables	1	2	3
Distance to Nairobi/ Mombasa	- .1477 (-1.549)	- .1357 (-1.532)	- .1334 (-1.593)
Distance to Nakuru	.1773 (1.275)	.1614 (1.361)	.1601 (1.397)
Distance to nearest major town	- .3139 (-2.626)**	- .2201 (-2.197)**	- .2224 (-2.311)**
Land availability at place of origin	- .0938 (-1.241)	- .0418 (-.6760)	- .0418 (-.7280)
Education level at place of origin	.2232 (1.357)	.1456 (1.249)	.1429 (1.271)
Percent urban at place of origin	.0547 (4.423)**	.0551 (4.804)**	.0540 (5.108)**
Employment rate at place of origin	- .0869 (- .5779)	.0610 (.4506)	- -
Employment rate in nearest major town	.3473 (1.791)*	.3271 (1.962)*	- -
Average wage at place of origin	.1233 (.4012)	.1763 (.5559)	- -
Average wage in nearest major town	.6621 (.8295)	.3530 (.6804)	- -
Expected wage at place of origin	- -	- -	.0850 (.8198)
Expected wage in nearest major town	- -	- -	.3319 (2.187)**
Percent of grade cattle at place of origin	.0096 (1.924)*	- -	- -
Percent of population belonging to largest tribes at place of origin	.0982 (1.852)*	- -	- -
Population density at place of origin	- .0658 (- .4301)	- -	- -
Presence of major roads at place of origin	- .1800 (- .6760)	- -	- -
Prevalence of malaria at place of origin	.1423 (.7287)	- -	- -
Predominance of pastoral/ nomadic tribes at place of origin	.0922 (.3225)	- -	- -
Population of nearest major town	.0187 (- .0775)	- -	- -
Intercept	- 5.827	- 5.048	- 4.362
R^2	.81	.72	.72
Degrees of freedom	21	28	30

* Statistically significant at the .10 level.
** Statistically significant at the .05 level.

1/ Adapted from Table 1, Knowles and Anker, ILO Working Paper No. 56: "The Determinants of Internal Migration in Kenya: A District Level Analysis", ILO, Geneva, 1977.

2/ M_iP_i = the number of gross lifetime outmigrants in 1969 from a given rural district (M_i) divided by the populaton of that district (P_i) = gross outmigration rate.

18. National Population Projections (Tables 1.29 and 1.30) 1/

The future size and characteristics of Kenya's population will depend more on fertility trends than on mortality or migration trends. The crude death rate is relatively low (15-16 in 1975), and scope for further decline is limited to eight to nine points during the remaining years in the century and only two or three further points in the long run. 2/ International migration to and from Kenya has been negligible in the past, and there is no reason to believe that it will increase to any significant level in the future. On the other hand, the crude birth rate is now about 53 points, and the long-term decline would be as much as 38 to 39 points, or almost equivalent to the present growth rate.

Fertility Trends. Analysis in the previous sections has shown that TFR in Kenya was about 8.0 in 1973/75 and that fertility has probably increased during 1962-75. The increase was about 12% during 1962-69, and about 5% during 1969-75. The diminishing rates of increase indicate that by now fertility rates may have ceased to increase. Thus the rate in 1980 will be more or less at the same level as in 1975.

What is the likely course of fertility during the rest of the century? There are sections of Kenyan population among whom fertility has declined in recent years, and there are others among whom it has increased. The factors underlying the decline included education, urban residence, and acceptance of family planning methods; and those underlying the increase were improvement in nutrition and health conditions and decline in sterility rates. In the recent past, increases were probably larger than decreases, and the national TFR has increased. However, in future the relative weights are likely to change; decreases will surpass increases, and the national fertility will decrease. Accurate prediction of decline by the year 2000 would be difficult, but some intelligent guesses about the possible range of decline are possible, based on our analysis of socioeconomic determinants of fertility (Chapters 5 and 6) and the review of the prospects of the national family planning program (Chapter 7).

Any future change in fertility will depend on how socioeconomic development will influence fertility and on the success of the national family planning program in Kenya. As discussed in Chapter 5, socioeconomic development influences fertility through effects on marriage, age and duration, wife's participation in labor force, education of both husband and wife, couple's desired family size, health and fecundity of women and use of family planning methods. Our multivariate anlaysis later in the report shows that some of effects of the development indicators in Kenya on fertility are positive and some are negative. On balance, it appears that the negative effects in future will surpass the positive effects.

1/ At the time when this chapter was prepared, the 1979 census results were not yet available and could not be used in these projections. However, the updated projections, using the latest census data, will differ only slightly from those presented here and in no way will affect the broad conclusions of this report.

2/ "Long run" here means when long-term stationary population size is reached. At this stage, all populations have more or less the same death rate and hence the same birth rate, of about 14 births per 1,000 population.

Much of the negative effect of socioeconomic development on fertility is expected through an increase in effective use of family planning. In turn, the effectiveness of family planning use will depend on the degree of national effort in this area, the education of women beyond primary level, the reduction of infant mortality, the rate of urbanization, and the level of rural development. Predicting the magnitude of the effects of these factors on family planning and fertility are as problematic as predicting future fertility rates themselves. We recognise the problem of extrapolating the results of a regression model, estimated on the basis of past patterns of areal or household fertility variations, to project future fertility rates. Rather than doing that, we have assumed a plausible fertility range by the year 2000 and for any intermediate years. The range is decided on the basis of the currently experienced lower fertility rates among some socioeconomic groups (as for example, TFR of 3.8 among women with 9 to 13 years of schooling), different scenarios of the growth of family planning coverage and the experience of other less developing countries where fertility has recently declined. 1/ The range of fertility assumed for 2000 (TFR of 4 to 6) will also cover the fertility rate predicted by the regression model using household data (Chapter 5), if we assume reasonable changes in the core socioeconomic variables affecting fertility.

An important study by Molnos (1972) indicates that every Kenyan woman would like to have at least 4 children (to be named after the 4 grand parents). This is taken as a minimum in a range of TFR for the year 2000. This implies a fertility decline of 50% in a 25 year period -- a fairly rapid decline, considering Kenya's current fertility, its level of socioeconomic development, and the present coverage of its family planning program. TFR of 4 by 2000 is, however, plausible with a strong and comprehensive population policy by the Kenyan Government (to be outlined in Chapters 7 and 8). As an upper limit of the range, a TFR of six is taken. This assumes a rate of decline of 25% or half as much as in the lower limit. This is more or less consistent with a trend extrapolation of the current performance of family planning program in Kenya. Two intermediate alternatives are reductions of 30% and 37.5% during 1975-2000, or TFRs of 5.5 and 5 at the end of the period. Earlier analysis has shown that there is evidence of some increase in fertility in recent years; therefore, all the four projections have been made assuming an increase in fertility during 1969-75 (see Table 1.29).

Mortality. The ILO has estimated that the expectation of life at birth in Kenya will grow by about 13 years between 1969 and the year 2000 as

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1/ During the period 1970-75, twenty developing countries exprienced a decline in fertility of 10% or more. Six of these had 20% or more during the same period. See R. Faruqee (1979).

Table 1.29: FERTILITY AND MORTALITY ASSUMPTIONS IN NATIONAL POPULATION PROJECTIONS

Year	Projection Series 1	2	3	4
		Total Fertility Rate		
1969	7.6	7.6	7.6	7.6
1975	8.0	8.0	8.0	8.0
1980	7.9	7.4	7.2	7.1
2000	6.0	5.5	5.0	4.0
		Expectation of Life At Birth		
1969	49.0	49.0	49.0	49.0
1975	52.5	52.8	52.8	53.4
1980	53.6	54.3	54.3	54.6
2000	58.2	60.5	60.5	62.4

a result of socioeconomic change. 1/ With the population growth rate likely to remain above 3.0% per year during much of the remainder of the century, the Government's ability to devote enough resources to a dramatic reduction in child mortality will be limited. Under these circumstances, it seems unrealistic to assume an increase of 20 years in the expectation of life at birth from 1969 to 2000.

The degree of mortality decline will depend to some extent on fertility decline. Projections made according to the four assumptions about fertility are shown in Table 1.30.

Table 1.30 summarizes the results of the projection. The most significant feature of these figures is the relatively narrow range of the total population in the year 2000. The higher figure is 32.5 million and

1/ "When one takes into consideration the positive effect of likely improvements in medical technology and disease control, especially in the relatively high mortality malarious areas, it appears likely that life expectancy at birth in Kenya will be in the high 60s to low 70s by the end of the century". ILO Working Paper No. 56, p. 17. For the reasons above, the regression approach is not used. Instead, assumptions were made about future mortality trends, based on emerging trends in Kenya and other countries similarly placed. In recent years the declining trend in the incidence of malaria has been reversed, and malaria-related deaths are increasing all over the world. Similarly, declines in infant mortality and child mortality are meeting resistance in countries where socio-economic development is relatively slow.

the lowest is 28.6 million. If a future mortality decline is associated with future fertility change, as is assumed in these projections, even a relatively drastic decline of 50% during a 25-year period will not much alter the total population of the country at the end of the century. In the case of highly unlikely situation of fertility remaining constant throughout the rest of the century, the size of the total population can reach 35.1 million in 2000 (see Chapter7). However, in our projections in Table 1.30, we have only included the likely demographic scenerios for the future. If a single figure is to be given, the best bet is a total population of 31 million by the end of the century.

Table 1.30: PROJECTED TOTAL POPULATION AND IMPLIED VITAL RATES, 1975-2000

Demographic Indicators	Projection 1	2	3	4
Total Population (in millions)				
1975	13.5	13.5	13.5	13.5
1980	16.4	16.4	16.4	16.4
1985	19.6	19.5	19.4	19.4
1990	23.4	22.8	22.6	22.4
1995	27.6	26.6	26.1	25.6
2000	32.5	30.8	29.9	28.6
Birth Rate				
1975-80	53.0	53.0	53.0	52.9
1985-90	47.4	43.5	42.2	39.9
1995-2000	42.9	38.7	36.1	29.9
Death Rate				
1975-80	14.8	14.7	14.7	14.3
1985-90	12.7	11.7	11.6	10.9
1995-2000	10.4	9.1	8.9	7.8
Growth Rate				
1975-80	38.1	38.3	38.3	38.7
1985-90	34.7	31.9	30.6	29.0
1995-2000	32.5	29.7	27.1	22.2

Chapter 2: POPULATION GROWTH AND THE ECONOMY

1. Introduction

Before Independence, agriculture was Kenya's mainstay--as it continues to be--and the sector was characterized by a dichotomy of large commercial farms owned by Europeans and small subsistence farms owned by Africans. Asians were largely confined to trade and services. Since Independence, the European and Asian populations have declined drastically, but the basic characteristics of the economy have not changed significantly. Over 80% of the population still relies for its livelihood on non-wage income from small-scale agriculture. Although the new Kenya has enjoyed fairly rapid economic growth and political stability, some observers (e.g. Leys, 1975) have suggested that overall growth has not been accompanied by equally significant improvement in the living standards of the vast majority of people. The recently published Fourth Development Plan (1979-83) recognises that the problem of poverty remains extensive despite a series of past development plans aiming at improving the lot of the poor.

Kenya's first post-Independence plan was drawn up for the period 1964-70, but later this seven-year plan was replaced by a five-year plan for the period 1966-70. Two development plans covering 1970-74 and 1974-78 followed the first plan. In 1965, the Government published what is now known as Sessional Paper No. 10, "African Socialism and its Application to Planning in Kenya." This has remained the basic statement of planning goals, namely, freedom from want, disease, ignorance, and exploitation. These planning goals appear unchanged, and the Fourth Development Plan (1979-83) places particular stress on the alleviation of poverty and the meeting of basic human needs.

A review of the plan documents indicate that three basic themes underlie Kenyan planning strategy. 1/ First, there is emphasis on economic growth, which has been fairly well achieved. Second, there is emphasis on maintaining the framework of a mixed economy, where the goal of the public sector is viewed as to not only coexist with the private sector but also to guide it into socially desirable activities. Here the results have been viewed as only partly successful. 2/ Third, there is the principle of self-reliance and participation of the people in the development process, which has been expressed in the Harambee (self-help) movement. The 1979-83 Plan is based on two basic elements of strategy: the provision of income-earning opportunities for purchasing basic needs goods, that is basic needs income (BNI) and the provision of basic needs goods, such as nutrition, water, health, education and housing. Since employment creation would increase the income of the poor, the emphasis on this factor remains the same as in past documents.

According to Paul Collier and Deepak Lal (1979), the income share of the poorest 40% among three population subgroups, smallholders from Central Provicne and Nyanza and an urban sample from Nairobi city, has

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1/ The ILO Mission, consisting of Messrs. Thorbecke, Ghai and Godfrey (1977), reviewed in detail these major themes.

2/ Thorbecke, Ghai and Godrey (1977), Ibid. They argue that in Kenya the system of free enterprise has been successfully maintained and strengthened, but the outcome has not been socially desirable in all respects.

declined between the years 1963 to 1974, although the real income of the urban poor has risen in absolute terms. In the last few years, improvements in certain aspects of income distribution are noted by the study. First, beginning with coffee boom in 1977 and falling real wages in the urban areas, the income difference between urban wage earners and peasants may have reduced in last 2 to three years. Second, the premium for educated labor is reduced now as the labor market and employment expectations have adjusted to an increased supply of educated labor. Still, according to the same study relative income share of the poorest 40% declined in spite of the declared goals of government policies and programs in the past to redress income inequality Although the Collier and Lal study has found strong evidence of benefit of urban growth spreading to the rural economy in Kenya, serious urban-rural disparity in the distribution of benefits from growth still persists, according to the same study. In rural areas, inequality persists between the small farm cultivation and the large farm and plantation sector according to the earning figures in the reports from the Central Bureau of Statistics (CBS). In the urban centers differences between the formal and informal sectors are equally substantial (See CBS, Statistical Abstract, 1978) As for the level of absolute poverty in Kenya, available estimates indicate that in 1974 roughly 4 million people or 30% of the total number of households had incomes which made them absolutely poor. Nearly 75% of the poor were small farmers. As for the trend of absolute poverty, the available data only can provide a partial picture for periods before 1974. Collier and Lal (1979) using 3 local surveys has shown that the proportion of population in absolute poverty has remained more or less constant in Nyanza and Nairobi, whereas it has slightly declined in Central province.

The growth of aggregate output in Kenya averaged 6.5% between 1964 and 1972--a relatively impressive rate by the standards of poor LDCs. Over the period 1972-78, however, the rate was only 4.7%. Since population growth averaged at least 3.5%, the growth of output per capita was only 1.2% per annum at most during 1972-78.

It would be misleading, of course, to suggest that these rates of output and population growth can be regarded as entirely independent of one another: the relationships are complex and go in both directions. Here we consider several of the ways in which population growth and the concomitant rapid growth of the labor force and young age structure may have influenced the rate of growth and composition of aggregate output in past years or is likely to do so in the future.

Several of these relationships work in both directions. The only way to measure their net effect would be to construct an elaborate macro-economic model of the Kenyan economy. This we have not attempted - the magnitude of the task was well beyond the capacity of the mission. In addition, this has already been attempted with the construction of BACHUE-Kenya model, and - most important - the evidence of individual underlying relationships is still so sketchy to make such models conjectural and controversial. What we shall do instead is to review available information on certain critical links between population growth and the rates and pattern of development, in terms both of what it has meant in the past and what it is likely to mean in the future. Individually some of the discussion may seem somewhat inconclusive. It is not possible to assess the net effect of population growth on the growth of GDP, for example. Nevertheless, there can be little doubt that any positive effects of more rapid labor force growth on aggregate output are insufficient

to offset completely the drag of population growth on the growth of per capita income. Even more important, population growth has particularly adverse effects on the government distributional objectives of achieving full employment and basic needs provision for all.

2. Population Growth and the Economy 1/

We have identified four important effects of rapid population growth on the Kenyan economy:

(i) The effect of diminishing returns in agriculture associated with population growth pressures on land and other natural resources, which tend to lower agricultural output per capita.

(ii) The effect of a high dependency burden on the nature of consumption and the possibility of saving.

(iii) The effect of labor force growth on the aggregate employment situation.

(iv) The effect of population growth on the pattern of public expenditures, especially with regard to the basic human needs objective.

In this chapter, we discuss (i) and (ii). The next two chapters will deal with (iii) and (iv) separately.

(i) Increasing Pressures on Land (Tables 2.1-2.6) 2/

Although subsistence output may be a positive function of the numbers of people employed in it, there can be little doubt that in many areas of Kenya, pressures on land are already serious.

In Kenya, there are both small-scale and large-scale farms. The bulk of the small farm population is peasants who traditionally produced food crops, but has turned partly in recent times to cash cropping. The relatively few large-scale farmers, on the other hand, produce both cash and food crops for local and export markets. There are about nine hundred thousand small farms of two hectares or less. In addition, an estimated 200,000 nomadic families live on the 20% of Kenya's land that is unsuitable for cultivation.

1/ The focus of this report, as stated above, is on the critical links between population growth and development. The Basic Economic Report for Kenya (forthcoming) by the World Bank analyses the important linkages within the Kenyan economy and addresses its various structural issues relevant for economic policy and planning.

2/ In our analysis, the focus is on the effects of population growth. If we take a given area within the country, the effects from the natural growth of population will be naturally modified by the population movement (migration) in and out of that area, which will then affect agricultural situation of that area. No studies of determinants and consequences of internal migration are available and we have not attempted to analyse the links of population movement with agriculture. However, in the discussions of population pressure on land, one should bear in mind that if the pressure is reduced in one area because of out-migration, pressure will be heavier in areas with net in-migration.

The large-scale farms are located in the former "scheduled" areas, which before Independence (1963) were reserved exclusively for the use of foreign settlers. These farms market most of their output and buy most of their inputs.

Before Independence, it was possible roughly to classify large and small farms according to whether they were subsistence or commercial operations. Since then, however, the distinction has become increasingly blurred. Many large farms formerly owned by foreigners have been taken over by Kenyans, and some of these have been converted into settlement schemes for small-scale farming. 1/ In addition, some large farms have been acquired by cooperatives, partnerships, or limited companies and divided into smaller holdings. Finally, since the introduction of cash crops, especially coffee, on the small-scale farms, many former subsistence farmers are marketing a significant part of their output. 2/

The differences in the potential productivity of the land in Kenya are striking. It is estimated that only about 9% of the total land area is high potential and another 9% is medium potential. 3/ FAO estimates that in 1976 Kenya had a population density of 231 persons per square kilometer of agricultural land. 4/ This is very high by sub-Saharan African standards; the average for the whole of Africa was 40, while Ethiopia had 37, Tanzania, 31 and Uganda, 113. It is, however, true that the Kenyan density per unit of arable land is still lower than some Asian countries (e.g. it is 346 for India). But there is wide diversity within Kenya in population density, so the degree of population pressure on land in some parts of Kenya must be already as serious as in some Asian countries. 5/ When we consider the fact that the overall population growth in Kenya is much higher than the Asian countries it is clear that the situation in Kenya will soon be comparable to Asian high agricultural density and can get even worse in the future.

Several rough estimates of carrying capacity--how many people can be economically supported by the agricultural output of the land--based on assumptions of potential agricultural productivity, quality and mix of crops, and technological improvements, have been made for Kenya. Table 2.1 gives a 1973 IBRD estimate of carrying capacity at a given income level, namely KE 70 per farm, per annum (in 1972 prices). 6/ It also shows, by province,

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1/ A great many Kenyan plantations and ranches are still owned by foreigners, probably because these holdings are not suitable for subdivision, and few local prospective buyers can afford them.

2/ See the Basic Economic Report for Kenya (forthcoming) by the World Bank for an analysis of the historical trend and current status of the production structure of the Kenyan Agriculture Sector.

3/ W.M. Senga, 'Kenya's Agriculture Sector,' eds. F. Heyer, J.K. Martha and W.M. Senga, Agricultural Development in Kenya (Nairobi: Oxford University Press, 1976).

4/ FAO, Production Yearbook 1977.

5/ We come back to this point about diversity of agricultural density later in the section.

6/ IBRD. Agriculture Sector Survey Report, 1973.

Table 2.1: CARRYING CAPACITY OF LAND

Province	Rural Population, 1972	Population Surplus (+) or Excess 1972 Capacity (-)	Projected Rural Population, 2000	Population Surplus (+) or 2000 Excess Capacity (-)
Central	1,800,000	0	5,483,000	+ 2,938,000
Coast	750,000	- 1,250,000	1,601,000	- 576,000
Eastern	2,000,000	+ 300,000	5,250,000	+ 1,903,000
North-Eastern	na	na	529,000	+ 339,000
Nyanza	2,400,000	+ 840,000	6,385,000	+ 2,979,000
Rift Valley	2,300,000	- 370,000	5,394,000	- 3,110,000
Western	1,440,000	+ 100,000	4,351,000	+ 2,050,000
Total	10,690,000	- 3,710,000	29,000,000	+ 6,522,000

Sources: For 1972 estimates, IBRD Agriculture Sector Survey, Annex I, 1973.
For 2000 estimates, Government of Kenya, Physical Planning Dept., Ministry of Lands and Settlement, 1976.
This rural population projection is consistent with to the series of constant fertility, showed in Table 7.4 of this report.

how the rural population compares to the maximum carrying capacity, at a given income level and at two points in time--1972 and 2000. The figures for 1972, derived from the IBRD Agriculture Sector Report, indicate that the available land is capable of accommodating only 3.7 million more people in the rural areas than it supported in 1972. This is estimated on the assumption of given technology. The figures for 2000, prepared by the Kenyan Ministry of Lands and Settlement, were estimated on a different basis. First, the minimum income level assumed in the estimates of the Ministry of Lands and Settlement is Ks 125 per capita per annum (market prices). Second, the estimates of the Ministry of Lands and Settlement assumes that agricultural output will grow at an annual rate of 4.1%, largely through technological progress. This projected estimate of the effect of technological progress appears to be on the high side, considering the fact that actual rate of growth of agricultural output has been only 2% during the period 1972-77. One could, however, argue that population growth pressure itself may boost up technological development and help agricultural productivity much more than what was experienced in the past. Although such a possibility cannot be ruled out totally, a sustained productivity growth at a rate higher than the past is highly unlikely.

Under the specific assumptions outlined above, the carrying capacity estimates show that pressure on the land will increase drastically over the next two or three decades, from a negative 3.7 million (1972) to a positive 6.5 million by the year 2000. These figures have been used by Richardson et al. (1977) to argue that by the end of the century there will be an excess rural population of 3.5 million for which the Kenyan planners must make room, possibly through the creation of new urban centers of industrial and commercial activities. Of course, the Kenyan planners will also have to find ways to promote non-agricultural economic activities within rural areas.

Needless to say, the estimates of carrying capacity are somewhat speculative, sensitive as they are to assumptions about land quality, crop mix, current and potential output per hectare, and, of course, the income levels assumed as acceptable when the land is being fully utilized.

Because so much of Kenya's land is not cultivable with current methods, technological developments may prove critical to the whole question of carrying capacity. Prospects for irrigation and the exploitation of marginal lands are receiving the attention of both Kenyan planners and international agencies. 1/ Research focuses on cropping patterns and the development of species suitable for semi-arid areas; it also studies the question of sharing risks, because in some of these areas climatic variations frequently cause crop failure. Given the existing technology and the known water resources, potential agricultural output is assumed to be two to four times the present average yield. 2/

The Basic Economic Report for Kenya (I.B.R.D., forthcoming) takes a fresh look at the prospects of the agriculture sector to absorb the growth of rural population. The report examines three basic ways of increasing agricultural production and employment -- (1) expanding agricultural land supply

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1/ For a thorough review of Kenya's irrigation prospects, see I. Carruthers and A. Weir, in Heyer et al., 1976, Rural Water Supplies and Irrigation Development.

2/ IBRD, Agriculture Sector Survey Report, 1973.

through irrigation, drainage, or conversion of forests and pastures, (2) shifting cropping patterns towards crops (e.g. coffee) of higher value and greater employment potential, and (3) intensifying land use through innovations. Assessment of the report gives a much less pessimistic picture than the estimates of carrying capacity in other reports. The report estimates that it is technically possible to expand agricultural output and employment sufficiently to accommodate population growth through the rest of the century. The report, however, states that to achieve that goal, serious economic and political obstacles will have to be overcome and it concludes that, unless population growth slows down drastically by 2000, the Kenyan development problem has no solution.

An important aspect of carrying capacity in Kenya is the wide diversity in man/land ratio. Population density is correlated with quality of land, but there is still a wide divergence, which makes the population pressure in certain areas far more acute than in the rest of the country, both from the point of view of present status and that of future outlook--particularly the latter. One estimate shows that over eight times the national average amount of high potential land is available per person in certain districts of Narok, and more than ten times the average in Lamu 1/; on the other hand, in some districts of Kakamega, Kiambu, and Nyeri, the availability of high potential land to population is only 50% of the national average. Inter-regional differences are only part of the diversity. Judith Heyer and J. K. Waweru have given an account of the variation that exists even within the same region. 2/

Food Supply and Nutritional Status

Food requirements of a growing population exert a direct pressure on land. Estimates of food requirements of the total population are usually derived from energy requirements of persons and the safe level of protein intake. Although food requirements are not the same thing as the effective demand for food, which has to also consider 'income effects,' a recent study of FAO shows conclusively that for most developing countries the increase in population will be by far the dominant factor in influencing total demand for food. 3/ It is, therefore, important to review the situation of food availability on per capita basis in Kenya and see how that is likely to be affected by population growth, among other things.

A recent intercountry study by International Food Policy Research Institute (IFPRI) shows that, even in aggregate terms, Kenya will soon be facing serious deficiencies in meeting food needs of the total population, in view of its rapid growth. Table 2.2 includes the projections made by IFPRI for Kenya, along with two other projections based on alternative population

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1/ Richardson et al. (1977).

2/ J. Heyer and J. K. Waweru. "The Development of the Small Farm Areas," eds. F. Heyer and others, Agricultural Development in Kenya (Nairobi: Oxford University Press, 1976), p. 188.

3/ FAO Provisional Indicative World Plan for Agricultural Development, August 1969, Vol. 1.

growth rates. 1/ Alternative I is actually the high population growth case with the assumption of constant fertility, which produces a larger population size than IFPRI population figures. Alternative II assumes a declining fertility rate (corresponding to Population Projection 4 in Table 1.30). In Table 2.2 production figures are obtained by essentially using a trend line from past data, with some adjustment in those (noted in Table 2.2) to reflect the effect of differential population growth rates on production. Based on IFPRI projections, two sets of consumption figures are presented corresponding to two scenarios of income growth, low and high. Low income growth assumes that the current stagnation of economic growth of developing countries (because of increased cost of energy) will continue in the future. The high income growth assumes a return to the long-run economic growth pattern of these countries.

Table 2.2 clearly brings out the impact of population growth on food balance in the economy. By 1985 the Kenyan economy will have to import food, unless food production in the future grows much faster than what is indicated by the trend line. IFPRI estimates that, by 1990, there will be deficit of 830,000 metric tons under the scenario of low growth of income. If we extend IFPRI projections to 2000, the deficit increases to 1.8 million metric tons under the same assumptions of income growth. Population increase, accounting for nearly 88% the increase in demand for food, is the major reason for the shortfall, which would increase to nearly 1.9 million metric tons if income grows according to the high alternative. If population grows faster, as in Alternative I, it contributes about 90% of the increase in demand for food with income growing according to the low growth assumption. Even under the assumption of a declining fertility rate, food deficits occur and are largely explained by the growth of population size. But the total shortfall is smaller by nearly six hundred thousand tons by the year 2000 between Alternatives I and II, reflecting the effects of differential growth of population.

The current food balance in Kenya is, thus, going to be adversely affected soon by the substantial increase of food requirements of a rapidly growing population. 2/ Even the aggregate picture of the adequacy of the current food balance sheet to supply energy and protein requirements on average can be misleading for assessing the nutritional status of the Kenyan

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1/ In our analysis, the effects of population growth are considered in the light of different scenarios of fertility rates, which we expect to be the predominant factor of population growth (compared to mortality and international migration). However, if reduction in mortality becomes the major source of population growth (which is unlikely in Kenya as explained in Chapter 1), the nature of food demand may be somewhat different than what is projected here.

2/ Here we have only considered population growth impact on the aggregate food availability. Meeting food needs of a growing population may also have an adverse effect on the balance of payment position of the economy. This may happen through (a) increasing food imports if the domestic food production cannot cope with increasing food needs and (b) some shifting from the production of exportable commodities to food crops.

Table 2.2: PROJECTED FOOD CONSUMPTION AND BALANCE FROM DOMESTIC PRODUCTION
(1,000 Metric Tons)

	1975 Actual Consumption	1985 Consumption		1990 Consumption		2000 Consumption			% Contribution of Population to Demand Growth 1975-2000	
		Low Income d/ Growth	High Income e/ Growth	Low Income Growth	High Income Growth	At 1975 per capita level	Low Income Growth	High Income Growth	Low Income Gr.	High Income Gr.
IFPRI Estimate a/	2167 (170)	3174 (-488)	3209 (-523)	3760 (-833)	3822 (-895)	4900 (-1426)	5276 (-1800)	5420 (-1945)	87.9	84.0
ALTERNATIVE I b/	2167 (170)	3273 (-560)	3309 (-596)	3937 (-967)	4002 (-1032)	5318 (-1757)	5695 (-2134)	5852 (-2291)	89.3	85.5
ALTERNATIVE II c/	2167 (170)	3147 (-461)	3182 (-496)	3712 (-786)	3773 (-846)	4361 (-886)	5162 (-1687)	5305 (-1830)	73.3	69.9

Note: ( ) Balance between Domestic Production and Consumption.

Source: a. International Food Policy Research Institute Research No. 3, p. 133. The projections have been extended up to 2000.
b. Estimates are based on projections of population using TFR remaining constant at 8.0. The estimates of consumption are determined by using the same procedure as in IFPRI projections. Production figures are adjusted upward to reflect some positive effect of population growth on food production. (Production grows at an annual rate of 1.83% per year, instead of 1.73% as in IFPRI projections, which is based on the trend line of production for the period 1975-1990.)
c. Estimates are based on projection IV of Table 1.30, i.e. TFR declining to 4.0 by 2000.
d. This is based on recent slow per capita growth because of increased energy cost.
e. This is based on the long-term growth pattern in the past.

people. Much depends on the nature of food distribution, for which data are scarce. Given our knowledge of the distribution of income and consumption, it seems reasonable to expect that significant numbers of children and adults in Kenya are facing serious nutritional deficiencies.

An approach in evaluating nutritional status is to convert standards of minimum or desirable consumption into measures such as the minimum monthly income necessary for an adequate diet, or the minimum size of landholding necessary for subsistence for an average household. A recent ILO report by Ghai et al. (1977) takes "the pattern of food consumption regarded as optimal by Bohdal 1/ ...given local production and feeding habits, adjust(s) it to yield 2,252 calories per person...per day, and valuing it at prevailing local market prices, ...calculate(s) the minimum food expenditure necessary for an adequate diet for a rural household in each province in April/May, 1977." 2/ These figures are presented in column 1 of Table 2.3. In column 2, we have the figures of the total food consumption (including both purchases and own production) from the Integrated Rural Survey of 1974-75. Column 3 adjusts these figures for the increase in price level between December 1974 and March 1977. We then calculate total food consumption as a percent of the estimated minimum food expenditure necessary for an adequate diet and compare this figure with the results of the nutritional survey. It is clear from the table that the degree to which the population makes the minimum food expenditures necessary for an adequate diet varies from one province to another and the two of the provinces which come lowest in the table, Western and Nyanza, are also the most densely populated.

As part of the Integrated Rural Survey 2 (IRS 2) the Central Bureau of Statistics has conducted a nutritional survey of approximately 1,400 children ages one to four. Comparisons were made between growth indicators and anthropometric standards. The objective was to investigate the incidence of severe and moderate childhood Protein Energy Malnutrition (PEM). Information on height, weight, and age was used to compute the nutritional status indices in terms of percent of standard weight-for-age (W-A), height-for-age (H-A), and weight-for-height (W-H). Low H-A, or stunted growth, is associated with chronic food deprivation. Low W-H, or a wasted condition, is associated with acute food deprivation, and exposure to disease, contaminated food, or water, leading to diarrhea.

The survey indicates that while the incidence of severe PEM is rather low in Kenya, mild and moderate PEM are fairly widespread, affecting about a third of rural children. 3/ The proportion of children surveyed with a W-A index below 80% of standard varies from about 40% in Central and Eastern provinces to 24% in Nyanza and Coastal provinces.

1/ M. Bohdal, N.E. Gibbs, and W.K. Simmons, "Nutrition Survey and Campaign Against Malnutrition in Kenya," 1964-68.

2/ D. Ghai, E. Thorbecke, and M. Godfrey, "Alleviating Poverty and Meeting Basic Human Needs in Kenya," ILO Consulting Mission, 1977.

3/ Central Bureau of Statistics. "The Rural Kenyan Nutrition Survey, February-March," Social Perspectives 2:4 (September 1977), pp. 5-6. For additional information see Republic of Kenya, Child Nutrition in Rural Kenya. Nairobi: Government Printer, 1978.

Table 2.3: FOOD CONSUMPTION AND EXPENDITURES FOR ADEQUATE DIET AND NUTRITION (K Shs)

Province	Minimum Food Expenditures for Adequate Diet April/May 1977 1/	Total Food Consumption: Purchased and Own Production 74/75 2/	Total Food Consumption: Adjusted to March 77 Price Level 3/	Total Food Consumption as % of Min. Exp.
Central	5449	3118	4365	80
Coast	NA	2613	3658	NA
Eastern	5622	3068	4295	76
Nyanza	5400	2039	2854	53
Rift Valley	5924	2564	3590	61
Western	6010	2108	2951	49
North Eastern	NA	NA	NA	NA

1/ D. Ghai, E. Thorbecke and M. Godfrey, "Alleviating Poverty and Meeting Basic Needs in Kenya," ILO Consulting Mission, 1977. P. 18.

2/ Table 8.16, IRS, 1974-75. P. 62.

3/ According to Economic Survey 1977, Table 5.15, p. 49, food prices increased approximately 40% during the period December 1974 - March, 1977.

As Table 2.4 indicates, the geographical distribution of malnutrition is not concentrated in the poorer provinces. Nyanza Province, one of the poorest, has only 55% of children below 90% of the W-A standard while Central Province, with the best income and consumption picture, has 76%. Besides the possibility that this reflects a problem of data, the phenomenon of low nutrition in areas with higher average income probably indicates the effect of cash crops and suboptimal expenditure pattern from a nutritional point of view. When an opportunity to produce cash crops arises, some households reduce their own food crop production, thus becoming more dependent on the market distribution system, which may not have kept pace with cash crop

Table 2.4: NURITIONAL STATUS, INCOME AND CONSUMPTION LEVELS BY PROVINCE

Province	% of children with W-A index less than 80 percent 1/	%of children with H-A index less than 90 percent 2/	%of children with W-H index less than 90 percent 3/	% of children having MAC below 14 cms 4/	% of households with income less than 300 KS 5/ per month	Average Total Income 6/	Total Household Food Consumption per year: Purchased own Production 7/	Mean Household Size 8/	Food Consumption, Household Members
Central	39	33	31	53	46.09	4473	3118	6.95	449
Coast	24	30	19	34	52.74	3139	2613	8.04	325
Eastern	41	32	38	47	52.78	4020	3068	6.74	455
Nyanza	24	21	25.5	29	54.83	2546	2039	6.58	310
Rift	34	27	29	43	49.68	3426	2564	7.51	341
Western	27	29	21	32.5	70.73	2808	2108	7.44	233
Total	33	28.5	28.5	40	54.73	3450	2594	6.97	372

1/ "The Rural Kenyan Nutritional Survey February-March, 1977" Social Perspectives, Vol. 2, No. 4 (September, 1977), Fig. 2.1.

2/ Ibid. Figure 2.3

3/ Ibid. Figure 2.2

4/ Ibid. Figure 2.4

5/ IRS 1974-75, Basic Report, Table 8.1.

6/ IRS 1974-75, Basic Report, Table 8.12.

7/ IRS 1974-75, Basic Report, Table 8.16.

8/ IRS 1974-75, Basic Report, Table 6.1 (March, 1977).

production. Also, with rise in income, households consume food items which are more expensive but less nutritious. There is little evidence to suggest that the overall nutrition situation is improving, and in certain areas it has probably deteriorated. Table 2.4 also shows how other indicators of malnutrition vary by province.

A nutritional study of children ages 1 to 60 months in both an urban area and a contiguous rural area was conducted in Thika Division during August and September 1977. 1/ A random sampling was made of houses, plots, and landplots. The results, presented in Table 2.5, show that 4% of rural subjects were severely malnourished, whereas 25% were mildly malnourished or at risk. Among urban subjects, less than 1% were severely malnourished, and 18% were mildly malnourished. It should be observed that the 25% below 80% of the standard here is considerably less than the 39% figure reported for Central Province by IRS. The lower rate in the urban area may be associated with the absence of slums in the district town of Thika.

While much of the interest in nutritional status has been focused on children, especially those under five years of age, there is evidence to suggest malnutrition in adults as well. For example, "The Relationship of Nutrition and Health to Worker Productivity in Kenya," by Latham and associates, examined 281 road-workers: 102 from Nyeri (Central Province) and 179 from Kwale District (Coast Province). The study concludes that 38% of men in Nyeri and 41% of men in Kwale District had a weight-for-height below 85% of standard. 2/

Consequences of Increasing Pressures on Land. Relative to the colonial period with its policies of reserving much of the best agricultural land for European settlers, there has been a gradual shift from large to small-scale farming reflecting, among other things, growing population pressures. Although the rate of change has been slow, the direction is clear. The effect of this shift on overall agricultural output has been generally favorable, with output per acre inversely related to farm size. With regard to employment, highly intensive cultivation on small farms has the virtue of requiring a high labor input per hectare.

On the other hand, population growth in the drier areas has led to a pressure exceeding the carrying capacity of land, which in turn has led to lower income per capita, and even to famine. As long as good quality land is at a premium, the trend to increase output cannot be sustained indefinitely simply by dividing large holdings into smaller ones. If we examine the growth rate of the small scale farm sector, as indicated by the growth of marketed output, we find that most of the growth came from a small fraction of small-

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1/ This is based on "A Community Nutrition Survey Among Children 1-60 Months for the Purpose of Identifying Nutritional Problems and Formulating the Basic Principles of Nutritional Education and Other Strategy in Thika Division," by Mrs. Nancy C. Mbungu, Nutritionist, Thika School of Community Nursing, Thika District Hospital, Kenya.

2/ "The Relationship of Nutrition and Health to Worker Productivity in Kenya," IBRD Technical Memorandum No. 26. May 1977.

Table 2.5: NUTRITIONAL SURVEY OF CHILDREN IN THIKA DIVISION

	Urban			Rural		
	Total	No. below 60% of standard W-A	No. below 80% of standard W-A	Total	No. below 60% of standard W-A	No. below 80% of standard W-A
Male	117	1	19	92	2	22
Female	107	0	24	87	6	21
Total	224	1	43	179	8	43

Source: "A Community Nutrition Survey Among Children 1-60 Months for the Purpose of Identifying Nutritional Problems and Formulating the Basic Principles of Nutritional Education and Other Strategy in Thika Division," by Mrs. Nancy C. Mbungu, Nutritionist, Thika School of Community Nursing, Thika District Hospital, Kenya.

holders - from those farmers who were on high potential lands and who could profitably introduce crops like coffee and tea. For example, only 3.3% of farmers in Muranga reaped almost 64% of the benefit from coffee income in 1970-71. 1/

The rate of growth of total agricultural output, in fact, has already shown a sign of decline. From an impressive growth rate of 4.6% per year during the period 1964-72, the annual growth rate of agricultural output has come down to 2% during the period 1972-77, although agriculture population during the same period increased by more than 3.5% per year. This implies that per capita agriculture output has been declining since 1972. The higher growth rate of agriculture output prior to 1972 can be ascribed to various factors (availability of arable land, diffusion of high yielding maize, growth of coffee production, etc.) but the recent sluggish rate is at least partly ascribable to diminishing returns to labor, as arable land resources have been fully utilized. 2/ The FAO Production Yearbook for 1977 provides some ertimates about the trend of the availability of arable land resources in Kenya. The FAO estimates that arable and permanent crop land expanded by 21.3% from 1961-65 to 1971. Most of this increase in cultivation came at the expense of permanent pasture. In comparison to the period 1961-65 to 1971, the FAO estimates that arable and permanent crop land expanded by only 3.3% between 1971 and 1976.

The harmful effect of population pressure on Kenya's farmland is currently taking many forms. First, as Mbithi and Barnes have shown, part of the marginal land (low, dry land) is becoming arid because overpopulation is leading to improper cultivation. 3/ Squatter migrants on marginal lands often harmfully exploit natural resources, both by destroying forests and by using poor farming techniques, e.g., inadequate fertilization and soil conservation. Heyer and Waweru (1976) have noted that relatively large numbers of people in Eastern Province are moving into hitherto unexploited areas because of population pressure. Prospects there appear somewhat better, but the land is poor and no agricultural infrastructure exists. As a result, the area is rapidly deteriorating, and the migrants are being forced to move again. Although this trend is in keeping with the old tradition of shifting cultivation, it is becoming too intensive and lengthy a process: if squatters stay more than three years in one place, using improper techniques of cultivation, the results are often well-nigh irreversible. In addition, concentration of population leads to depletion of valuable water catchments, thus upsetting the equilibrium between land use and land capacity.

Second, even on better quality land, excessive fragmentation can lead to a loss of output--a fact made clear by data from settlement schemes. On some Kenyan farms held by groups or cooperatives, members have unofficially divided the land among themselves, and as a result output has been lower than

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1/ Heyer, et. al. (1976).

2/ It has to be recognised that in the short run other factors, e.g. change in terms of trade of an export commodity or good weather may prove more important in explaining the rate of output growth. But the secular trend of agricultural output growth on per capita basis is influenced by diminishing returns to a given input (e.g. labor), with limited arable land resources unless productivity is continuously improved by technology. In Kenya, the recent record of the rate of agricultural output growth does not reflect a sustained productivity improvement.

3/ Mbithi and Barnes. Spontaneous Settlement Problems in Kenya (Nairobi: East African Literature Bureau, 1975).

it would have been under more efficient management or more rational distribution. This problem is acute in the Haraka settlement scheme, where each family is given a small farm (five to seven acres) on condition that the children will seek their livelihood elsewhere when they become adults. In practice, the children do not go elsewhere, and the land is parcelled out between them; as the size of individual farms gradually declines, loss of productivity follows. 1/

In the short run, breaking up of large farms of better quality land will be necessary and will probably cause no loss of output but, if the increase of population pressure in the rural areas is not controlled, in the long run, the prospect of further absorption of the increase in population in agriculture will end. 2/ The apparently rosy picture of the growth of the small farm sector in the past fades in the context of long-run future, especially when we consider the diverse quality of the land, its constrained agricultural potential under existing technology, and the limits to which subdivision is economically efficient and even feasible.

Third, landlessness is an important consequence of growing population pressure and a measure of rural proverty; unfortunately, data are sketchy. 3/ The first Integrated Rural Survey IRS 1 did not include landless households, but IRS 2 has made provision for this category. Preliminary findings by Thorbecke and Crawford (1978) show that nearly 11% of the total number of households are reportedly landless, and about 41% of them were estimated to be below the poverty line determined by the Ministry of Finance and Planning (MFP). The concept of landlessness in IRS 2 is somewhat confusing, however. There are entries for landlessness per se, and also figures for households with holdings of zero hectares. Although the total proportions of households without land and households with zero hectares seem to be close, the provincial distribution of these figures is widely divergent: from 4.7% landless

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1/ It can be argued that, in many parts of high potential area, subdivisions will not create a similar problem as experienced in some settlement schemes, which may not be representative of all high potential areas. It should still be borne in mind that, since high potential areas are limited and since productivity loss can result from excessive subdivision even in high potential areas after a point, the adverse effects of excessive pressure on land in Kenya are potentially very serious.

2/ The Basic Economic Report for Kenya (forthcoming) by the World Bank reviews the evidence on the relationship between farm size and output, employment and efficiency, and also examines in detail the various aspects of the question of subdividing large farms. The preliminary analysis indicates that there is considerable employment benefit in the short- and medium-term from the subdivision of large farms without any output loss. However, projecting to the future, the prelminary findings emphasize that, if population growth does not slow down dramatically by the end of the century, agricultural employment cannot grow sufficiently to accommodate population growth.

3/ Drafts for the five-year plan (1979-83), which has since been published, indicate that a major study on landlessness will be undertaken.

in Western Province to nearly 20.3% in Rift Valley Province. The link between landlessness and rural poverty is seen in Nyanza and the Western provinces, the two that are poorest, as measured by the proportion of households below certain consumption and income standards (Table 2.6). These two provinces also have the lowest percentage of households without land. This does not indicate any inconsistency of the data because it is perfectly possible that provinces with large holdings have higher income, and also that households without land could be deriving income from the non-agricultural sector.

Table 2.6: PERCENTAGE OF SMALL FARM HOUSEHOLDS BELOW POVERTY LINE BY PROVINCES (1974)

Provinces	% of Households Below Poverty Line		
	ILO Estimate I a/	ILO Estimate II b/	MOFP Estimate c/
Central	17.8	18.2	32.0
Coast	37.7	43.5	35.3
Eastern	27.1	28.5	40.2
Nyanza	50.7	55.5	42.0
Rift Valley	36.5	38.8	34.0
Western	47.7	51.6	56.0
Kenya	35.8	38.5	41.0

a/ Consumption criterion at KSh 1,700
b/ Consumption criterion at KSh 2,200
c/ Income criterion at KSh 2,000

Government development strategy now stresses marginal land development as a means to support the growing rural population. Preliminary estimates show that agricultural production in the marginal/semi-arid areas has been increasing at 1.5% per annum, whereas population has been growing at the rate of at least 3.5% per annum. 1/ As a result, farmers and pastoralists have been dependent on outside help for food, often in the form of government relief.

Nearly 80% of Kenya's land area is arid. 2/ About 40% of all arable land in the country falls into this category, and about half the unimproved livestock graze on these areas. About a fourth of the total population or 3.5 million people, mostly pastoralists or range subsistence cultivators,

1/ In some areas, production has actually fallen because of excessive and improper cultivation. See J. Heyer and J.K. Waweru. "The Development of the Small Farm Areas," eds. J. Heyer and others, Agricultural Development in Kenya (Nairobi: Oxford University Press, 1976).

2/ The low-potential area can be further subdivided into semi-arid land, on which arable agriculture is possible but risky; and arid/very arid land, where only livestock production is feasible.

live there and contribute much less than the potential output of their land toward their own welfare and national development.

Machakos and Kitui districts and Eastern Province provide examples of how marginal lands are used in Kenya. These areas are characterized by low and highly erratic rainfall--crop production risks are high, and failures are common. The timing of farm operations is crucial--planting and weeding cannot be staggered without much output loss. Maize, sorghum, millet, beans, cow peas, pigeon peas, and grams are the dominant subsistence crops while cotton, sunflower, castor, sisal, fruits, and vegetables are the cash crops. Cassava is considered a famine crop. Traditional and intermediate technologies are used on nearly all the farms, and modern inputs such as fertilizer, insecticide, and mechanization are used rarely. Soil erosion is an increasingly severe problem in many areas.

Thus far, agricultural research on low-potential land has received insufficient support in Kenya. The development of crop packages, cropping systems, and better management practices are essential to increase carrying capacity. Price incentives for apprpriate crops must be offered, and existing inequalities corrected. A review of the farm gate prices of Kenya's major crops since 1970 shows that crops suitable for low potential lands, especially cassava and songhum, have had significantly lower price increases during 1970-76 1/ than most agricultural crops. A price support policy, in addition to initial investments, will be necessary, if low potential lands are to be developed and utilized.

Kenya's ranch lands are densely populated in comparison with pastoral areas in other African countries. 2/ Ranching has been adversely affected by population pressure, which has caused overstocking, and which in turn has damaged water and forage resources. In addition, the traditional system of ranching has changed, and sedentary pastoralists who keep small herds for their own use have gradually been replaced by groups or ranches with communal facilities but little managerial know-how. Marginal land development programs must include plans for managing input as well as stock limitation, grazing quotas, public financing for group ranches, regulations against suboptimal livestock holdings and the rehabilitation of natural resources.

(ii) Population Growth, Consumption Pattern and Savings (Tables 2.7-2.10)

Several studies of household expenditure behavior - Massell and Heyer (1969), Massell (1969) and Central Bureau of Statistics (CBS-1972)--have looked at the relationship between household size and consumption patterns in Kenya. These studies estimated the expenditure and household size elasticities for a number of consumption items. 3/ The results of one of them (CBS, 1972) is presented in Table 2.7. It appears that an increase in household size will cause a shift in the distribution of expenditure from transport, recreation, alcohol, and tobacco and even clothing and housing toward basic foodstuffs.

1/ Republic of Kenya, Maize and Produce Board, Annual Reports 1970-1976.

2/ Kaufman, R. Von. "The Development of the Range Land Areas," eds. J. Heyer and others, Agricultural Development in Kenya (Nairobi: Oxford University Press, 1976), p. 255.

3/ These estimated elasticities measure the effects of change in total expenditure and in household size on expenditure for a particular item of consumption.

Table 2.7: ESTIMATED ELASTICITIES OF HOUSEHOLD EXPENDITURE IN URBAN AREAS (1968/69)

Consumption	Expenditure Elasticities	Household Size Elasticities
Cereals	0.179**	0.523**
Pulses	0.143**	0.348**
Other vegetables	0.491**	0.372**
Meat	0.590	0.240**
Fruit	0.819**	0.379**
Eggs and fish	0.495**	0.486**
Milk and milk products	0.567**	0.398**
Beverages	0.487**	0.020
Alcohol and tobacco	1.142**	-0.650**
Fuel, light & water	0.921**	0.296**
Housing	1.352**	-0.129
Clothing	1.085**	-0.331
Transport	2.077**	-0.397
Recreation	1.505**	-0.310
School fees	1.087**	0.699
Personal care & health	1.183**	0.079

** Statistically significant of .01 level.

Source: Central Bureau of Statistics, Kenya Statistical Digest (June 1972).

The population growth rate is reflected in family size because, the higher the population growth rate, the higher the total fertility rate, other things remaining the same. The population growth rate has, thus, a significant effect on household consumption patterns: larger household size is associated with higher consumption of food in relation to non-food items. 1/

It has frequently been argued that the high dependency burden associated with a very youthful population is a deterrent to household saving, and hence lowers the level of national investment and the rate of growth. The available Kenyan data do not establish a direct link between dependency burden and savings.

There is evidence that larger households have higher total incomes, but lower per capita incomes. Table 2.8 presents a cross-tabulation of smallholder households, with income from IRS 1. 2/ The results show a positive

1/ A continued high growth rate of population affects the agriculture sector by keeping the demand for food crops high. An increase in the population growth rate has normally a positive effect on household size and that increases the total food demand proportionately more than the demand for nonfood items.

2/ The IRS 1 sample excludes non-agricultural households, urban households and households with holdings of more than 20 acres. A large group of households reported negative income but showed substantial levels of consumption; the main reason for this was the inclusion of transient changes in the value of livestock.

Table 2.8: PERCENTAGE DISTRIBUTION OF HOUSEHOLDS BY HOUSEHOLD SIZE & INCOME

	Household Size Group							
Income Group (In KSh)	1	2-3	4-5	6-7	8-10	11-15	16 over	Total
Less than 0	1.86	16.03	21.13	19.29	32.95	7.02	1.72	100.00
	(7.84)	(7.66)	(5.97)	(5.28)	(9.73)	(3.98)	(3.17)	(6.67)
000 - 999	6.32	30.38	23.36	15.01	17.58	6.80	0.62	100.00
	(43.15)	(23.57)	(10.69)	(6.67)	(8.43)	(6.62)	(1.81)	(11.80)
1,000 - 1,999	1.88	23.68	27.87	27.72	11.78	5.77	1.30	100.00
	(27.12)	(38.75)	(26.97)	(25.99)	(11.91)	(11.19)	(8.19)	(22.44)
2,000 - 2,999	1.09	8.77	33.23	28.30	19.74	7.77	1.11	100.00
	(9.92)	(9.10)	(20.46)	(16.83)	(12.66)	(9.56)	(4.43)	(13.82)
3,000 - 3,999	0.72	9.77	22.05	22.96	28.99	11.22	4.30	100.00
	(5.45)	(8.46)	(11.29)	(11.39)	(15.51)	(11.52)	(14.38)	(11.73)
4,000 - 5,999	.61	8.04	23.17	26.60	21.45	16.22	3.90	100.00
	(5.41)	(8.07)	(13.76)	(15.30)	(13.31)	(19.32)	(15.13)	(13.52)
6,000 - 7,999	—	4.13	15.96	22.47	31.62	20.87	4.94	100.00
	(--)	(2.43)	(5.55)	(7.57)	(11.49)	(14.55)	(11.21)	(7.95)
8,000 and over	0.14	2.22	10.24	21.66	31.02	22.51	12.20	100.00
	(1.11)	(1.96)	(5.36)	(10.98)	(16.96)	(23.62)	(41.67)	(12.08)
Total	1.56	13.76	23.26	24.01	22.26	11.60	3.56	100.00
	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)
Mean income per household	1392	1934	2892	3499	4028	4932	6022	3484
Mean income per member	1392	774	643	538	448	397	335	498

Notes: ( ) are column percentages.

Source: IRS 1 (1974-75, Central Bureau of Statistics).

correlation of household income and size: mean income per household increases with household size. Because the vast majority of the rural population are smallholders, and the sample size is large (1,669 households), the results permit some valuable insights about demographic and economic characteristics. More than 50% of single-member household have annual incomes less than KSh 1,000, whereas the corresponding proportions of families in the categories of six members or more are in the neighborhood of 15%. Of those households that report annual incomes of KSh 8,000 or above, nearly 65% have eleven or more members, whereas less than 3% of those have three or less members in the household. Such a positive relationship between household size and income is not surprising, because the larger the household size, the larger the holding size (see Table 2.9).

No definitive statement can be made about the cause-effect sequence from the observed associations in Tables 2.8 and 2.9, but from the per capita standpoint, it appears that the larger the household size, the less income and less land holding per member. Other things remaining the same, high population growth leading to large family size may result in a significant fall in per capita income. Table 2.8 shows that as the membership of the smallholder household increases above seven, the decline in income on a per capita basis becomes pronounced.

Table 2.9: PERCENTAGE DISTRIBUTION OF HOLDINGS, BY HOLDING SIZE GROUP AND HOUSEHOLD SIZE GROUP

Holding Size (ha)	Household Size							% Total
	1	2-3	4-5	6-7	8-10	11-15	16 and over	
	----------members----------							
Below 0.5	8.81	15.32	14.53	15.33	13.83	10.94	13.01	13.91
0.5-0.9	13.90	28.58	17.60	19.12	14.14	13.66	12.92	17.92
1.0-1.9	46.54	18.94	31.79	25.83	25.17	28.83	20.03	26.99
2.0-2.9	19.89	12.03	12.36	18.31	15.19	16.29	9.51	15.11
3.0-3.9	6.34	4.31	10.25	6.89	11.85	11.17	10.06	8.89
4.0-4.9	0.03	14.17	7.37	5.47	.67	4.63	12.36	7.22
5.0-7.9	3.90	4.41	3.44	5.95	8.88	8.51	16.59	6.50
8 and over	0.60	2.25	2.66	3.10	4.27	5.97	5.53	3.47
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Average Per Capita Holding	1.80	.82	.45	.32	.25	.20	.19	.30

Source: IRS 1 (1974-75), Central Bureau of Statistics. P. 45.

Table 2.10 records the mean estimates of income, consumption, savings, and size per household against holding sizes, using IRS 1 data.

Table 2.10: MEAN HOUSEHOLD DATA PER HOLDING SIZES (in hectares)

	Below 2.0	2.0-3.9	4.0-7.9	8.0 +
Mean household income (in Ksh)	3,127	3,704	4,937	5,755
Mean household consumption (in Ksh)	3,079	3,580	4,590	4,362
Mean household saving (in Ksh)	48	124	347	1,393
Mean household size	6.8	7.4	7.6	8.4

Source: Integrated Rural Survey 1, 1974-75.

It is clear from Table 2.10 that household saving goes up with holding size, but so also does household size. The net effect of household size on savings cannot be concluded from these figures; to evaluate that effect, we have to keep the holding size constant. However, the data show that, up to the holding size of 8 hectares, the average household propensity to save increases proportionately more when the mean household size goes up from 7.4 to 7.6 than when the size goes up from 6.8 to 7.4. This relationship does not hold for the category of 8 hectares or more, because of the wide range of holding sizes the group contains (between 8 to 20 hectares), which probably put the category into a somewhat different class of household.

One of the better studies of the relationship between household characteristics, income, and savings was made by Kelley and Schwartz (1978) for Nairobi, Mombasa, and Kisumu, using data from a Urban Household Budget Data collected by the Central Bureau of Statistics for the period December 1968 to October 1969. The sample consists of 1,146 households, mostly African, mainly from the upper and middle-income groups, divided into three categories: nuclear, near-nuclear, and extended. 1/ The analysis explores the effect of the family structure on income and savings.

1/ Nuclear households were households that contain only a conjugal unit: household head, his wife and their children, having no interdependence with other households. The near-nuclear households were those containing a single conjugal unit with some economic interdependence with other individuals or households. Extended households were those containing both a conjugal unit and one or more additional relatives.

The results obtained from this study are not conclusive. Kelley and Schwartz found that the larger the family size, the larger the income. Income in near-nuclear households exceeds that of nuclear household by about KSh 91 for the period of the survey, whereas income in extended households exceeds that of nuclear households by about KSh 275. The large income differential between nuclear and extended families appears to be due to mere difference in the size of the households. Extended households have more adults and more children, and as a result, the earnings derived are larger. Kelley and Schwartz considered possible factors that might explain why extended families are associated with higher income: more individuals employed in the family, more hours of work per employed individual, and higher wage rates.

In further analyzing the data, the authors found that the more extended the household, the younger the age of the head of household and his wife. The mean age of the household head decreases from 37 in nuclear households to 31.7 in extended households. They also found that the more extended the household, the more educated the household head and his wife, and finally, the greater the workforce participation of the household head's wife, the greater the household size. These factors could explain the higher total income of the extended household in comparison to that of the nuclear household. It appears also that the impact of children varies according to household structure: in extended families, children exert a positive contribution to income. The sign of the variable for the near-nuclear families is also positive, but the size of the coefficient is not significant.

The more important issue, however, is savings. It is expected that extended families will save less than nuclear families. Several reasons can be cited as the basis for this hypothesis. Besides consumption needs arising from the larger size of the family, there is less need to save for retirement, since parents rely on their children for support in old age. Moreover, there is less precautionary need to save, because the larger the family, the more the members can safeguard each other against income and consumption variations. However, if the human capital investment is considered, the position of the extended family may change. Kelley and Schwartz point out an important qualification in evaluating the savings activities of extended families. Since such a family is a network of households, it is difficult to account for simultaneous savings and dissavings by different members. An important result obtained is that the number of children in the household, when controlled for income and household structure, does not influence the level of total or financial saving. This finding, of course, is at variance with the commonly held view that the dependency burden exerts a negative impact on household saving, a result generally obtained without controlling for the household structure.

The study does however show that at a given level of income, the nuclear family (generally smaller in size) tends to save more than the near-nuclear or extended family (generally larger in size). Such results, of course, support the conventional wisdom. The authors also find that the average nuclear family tends to save (for the survey period) about KSh 62 more than the near-nuclear family, and KSh 84 more than the extended family—that is, the structure of the family has the desired or expected sign; the results are significant. It appears that nuclear families comparatively earn less,

but save more, whereas extended families earn more but save less. 1/ In other words the dependency ratio itself, reflected by the number of children, may not be the critical question. The difference in the savings behavior of nuclear versus extended families is actually consistent with the assumption that these two family structures respond differently to savings needs. The extended family itself offers security to its members, which decreases the importance of savings, whereas the nuclear family must focus more on saving to protect itself.

Rapid population growth leads to a larger family size and an extended form of family structure. In Kenya the latter is especially true. We have analyzed in Chapters 5 and 6 that women marry quite early and fertility is high even in young ages. The marriages take place when the husband is still a part of the extended family and remains so for a large part of his life cycle. This extended structure of family and the high fertility of women in Kenya are mutually reinforcing as our analyses in later chapters show, and the cumulative effect of rapid population growth on savings is negative.

If the effect of rapid population growth on savings is negative, the situation is further aggravated by the increase in investment funds required by the rapidly growing population. First, if the average capital stock per worker is to be maintained, faster addition to labor force would require more investment funds. We come back to this point in the next chapter. Second, rapid population growth will require more public sector expenditure on basic needs services like education, health, housing and water. We analyze this effect of population growth in Chapter 4.

1/ Kelley and Schwartz claim that their empirical results are based on a more broadly formulated view of household behavior than is normally used. Their framework emphasizes the substitution possibility between consumption and saving as well as between work force participation and labor, and between home production and other kind of activities.

Chapter 3: LABOR FORCE GROWTH AND EMPLOYMENT

1. Introduction (Tables 3.1 and 3.2)

One of the consequences of population growth in Kenya is the increase in numbers of working age population. Population increases have both short- and long-term effects on the labor force. If part of the increase is contributed by a decline in mortality rate, the effect is through an extended survival of the actual labor force, while the effect of fertility rates will at any given time have its major impact on the size of the labor force after about 15 years, when children can be expected to become fully active economically.

The ILO estimates that the Kenyan labor force grew from 3.34 million in 1960 to 4.57 million in 1970. This indicates an annual growth rate of 3.2%. During the same period, the population is estimated to have grown at an annual rate of 3.3%. Between 1960-70, the proportion of estimated labor force over the total population declined from 41.2% to 40.6%. 1/ In the same period, the ratio of population, 0-14 and 64+, over the work age population, 15-64, declined from 87.5% to 84.5%. 2/ Thus a greater proportion of the total population was of working age, and yet labor force size as a proportion of the total population declined.

The difference between growth in working age population and decline in labor force proportions can be explained by the trend in age-sex specific activity rates. Table 3.1 presents these rates for 1960 and 1970. We note from Table 3.1 that while the rates of both sexes have declined, female activity has declined more rapidly than male. 3/ The table also shows that there is a decline in activity rates for all ages, but more so in the younger age group indicating that the overall decline is partially caused by a higher age at entry into the labor force. The recorded decline may result from the varied quality of data collection; or it may be real, reflecting changes in socio-economic circumstances. The changing conditions of demand and supply may have discouraged some people from entering the labor force, or entry may be postponed as educational opportunities grow.

The difference in rural-urban participation rates may partially explain the greater decline of overall female activity rates (see Table 3.2). An important migration trend is rural to urban, and this may cause overall female rates to decline. Among the possible reasons for this are

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1/ ILO, Labor Force Projections 1950-2000, vol. 2, Geneva, 1977.

2/ Ibid.

3/ These activity rates are generally consistent with the preliminary results from the Kenyan Labor Force Survey carried out by the Central Bureau of Statistics between June 1977 and June 1978. According to these results, 70% of all rural Kenyan males of age 15 years and above and 68% of the females of the same age range were at work on the day of the survey. These rates are slightly lower for males and slightly higher for females than those recorded in Table 3.2 for rural areas for the year 1969. For the preliminary results of the Kenyan Labor Force Survey, see Frank L. Mott, 'The Rural Labor Force in Kenya,' Population Studies and Research Institute, Feb. 1980 (mimeo.).

Table 3.1: AGE-SEX SPECIFIC ACTIVITY RATES, 1960 AND 1970

	1960			1970		
	Total	Male	Female	Total	Male	Female
	(in %)					
0 - 9	0.00	0.00	0.00	0.00	0.00	0.00
10 - 14	30.38	37.81	23.00	26.84	32.22	21.35
15 - 19	62.77	83.73	42.00	59.73	78.96	40.45
20 - 24	71.63	97.70	46.00	70.19	95.82	44.22
25 - 44	73.41	98.81	49.00	72.89	98.40	47.42
45 - 54	75.32	98.61	54.00	74.80	98.12	52.18
55 - 64	72.40	96.17	52.00	71.82	94.81	50.51
65+	49.67	73.44	31.00	47.51	69.55	28.69
Total labor force %	41.16	54.49	28.21	40.63	53.83	27.37
Total in thousands	3,340	2,179	1,161	4,570	3,033	1,536

Source: Labor Force Projections 1950-2000, Vol 2, ILO, Geneva, 1977.

Table 3.2: AGE SEX SPECIFIC ACTIVITY RATES, URBAN/RURAL 1969 (in %)

	Urban		Rural	
Age	Male	Female	Male	Female
10 - 14	18.40	5.00	55.10	41.90
15 - 19	86.10	8.30	86.10	65.50
20 - 24	93.50	29.30	93.50	73.10
25 - 54	97.70	31.20	97.70	77.30
55 - 64	92.80	16.70	92.80	66.70
65+	23.70	12.50	71.10	42.00

Source: ILO calculations from census data (BACHUE-Kenya, Technical Appendix).

the incompatibility of many urban occupations with childbearing and child rearing and the general scarcity of urban employment.

Since urban wage rates have been substantially higher than the rural ones, families may have been economically better off from migration, even if the wife has been unable to find work. Looking ahead, however, one can envisage an increase in female participation rates in the urban areas as the economy grows and as more women receive education and training than in the past. This process will be hastened if institutional measures are taken to favor female participation in urban employment.

2. Labor Force Projections (Tables 3.3)

Based on the available evidence about age-sex specific activity rates, labor force size is projected under varying scenarios of population growth. Table 3.3 records the projections and indicates that the difference in the estimates become more pronounced in later periods because of the effect of age structure. By the year 1990, the difference in labor force size under series A (constant fertility assumption) and under C (an assumption of a decline of TFR from 8 to 4 by the end of the century) is in the vicinity of 6%. The series under B, which is considered by the mission the most likely scenario of population growth, generates a labor force size of 8 million by the year 1990; 0.3 million less than the constant fertility series (A). By the year 2000, the differences widen, and there is nearly 18% difference between series A and C. Since the effect of differential fertility on the size of working age population and labor force is evident only after a time lag of 15 years, we extended our projections to 2010. The difference in labor force size between series A and C comes to 6.8 million by 2010 - a difference of nearly 37 percent. 1/

Table 3.3 also records the growth rates of the working age population. The difference in growth rates between series A and C becomes quite substantial toward the later period; these estimates underline the impact of differential population growth rates on the size and growth of labor force. 2/ It should be noted that even under the assumptions of substantial decline in fertility (series C), the working age population continues to rise at a rate well over 3% per year by the end of the century because of the age structure effect.

1/ As explained in Chapter 1, we expect that fertility will be the dominant factor in population growth in Kenya and our projections of population (labor force) growth are based on different fertility trends with, of course, consistent assumptions about mortality. However, if mortality plays a more significant role in population change in future than we anticipate, this will have an effect on future labor force size and composition. Since we do not expect any drastic change in mortality trends except that mortality rates will slowly decline (see Table 1.29), we have not focused on the effects of mortality changes, independent of fertility trends, on labor force growth and composition.

2/ The projection of labor force is based on the past estimates of activity (participation) rates, which may themselves change in future due to changes in labor market conditions, educational opportunities or a host of other socio-economic factors. A change in overall participation is expected from changes in the activity rates of women. There may be a fall in these rates, as we have remarked for the period, 1960-70, but with economic growth, they are expected to go up.

Table 3.3: PROJECTION OF WORKING AGE POPULATION 1/ AND LABOR FORCE 2/
(in 000's)

	A				B				C			
	Population 15-64	Annual Rate of Growth in Preceding 5 Years	Labor Force	Annual Rate of Growth in Preceding 5 Years	Population 15-64	Annual Rate of Growth in Preceding 5 Years	Labor Force	Annual Rate of Growth in Preceding 5 Years	Population 15-64	Annual Rate of Growth in Preceding 5 Years	Labor Force	Annual Rate of Growth in Preceding 5 Years
1980	8038.4		6189.0		8038.4		6193.8		8045.1		6205.3	
1985	9429.5	3.19	7219.6	3.08	9428.3	3.19	7123.3	2.79	9442.1	3.20	7094.2	2.68
1990	11222.7	3.48	8468.7	3.19	11223.4	3.48	8137.6	2.64	11255.4	3.51	7988.8	2.38
1995	13737.2	4.04	10053.1	3.43	13735.0	4.03	9301.0	2.67	13811.8	4.09	8950.3	2.27
2000	16768.9	3.98	12054.5	3.63	16469.3	3.63	10602.6	2.62	16428.9	3.47	9827.3	1.87
2005	20480.2	3.99	14817.5	4.12	19464.6	3.34	12204.4	2.81	19083.3	2.99	10825.1	1.93
2010	25145.0	4.10	18299.7	4.22	22812.1	3.17	13876.0	2.56	21741.9	2.61	11464.2	1.15

Source: (1) IBRD projections by the Mission. Projection A assumes a constant TFR of 8.0 for 1975-2000. Projections B and C are based on Projections 2 (assuming TFR declines to 5.5 in 2000) and 4 (assuming TFR declines to 4.0 in 2000) respectively of Table 1.30, Chapter 1.

(2) Calculated using Age-Specific Activity Rates in ILO's Labor Force Projections, Vol. II, p. 91. (Also included here is the working population 10-14 and over 64 years.)

3. Employment Trends and Prospects (Tables 3.4-3.8)

Labor force represents the supply side, whereas employment also reflects how much of the labor is demanded by the economy. It is conceivable that population growth may also affect the demand for labor through demand for product, but in the Kenyan context there is very little evidence of such an effect. In any case, our treatment of the demand side is very simplistic. We have extrapolated the past trend. Conceptually, it would have been better to model the economy to project demand for labor, but practically such an approach would face serious problems of data and our incomplete knowledge of some of the relationships we want to model. 1/

Formal Sector. According to one I.L.O. estimate, 71% of total employment in 1969 was in traditional agriculture (see Table 3.4) and a further 13% was in other parts of the so-called "informal sector." 2/ The rest of the employment is provided by what is referred to as the "formal" or "modern" sector, consisting of wage employment in medium-and large-scale private and public enterprises and a modicum of self-employment.

In Table 3.4 we see that the modern sector accounted for about 16% of total employment in 1969. Of this 16%, modern wage sector accounted for the most of it - nearly 14 percent; the remaining one percent consisted of self employment in the modern sector. Since the data on self employment in

Table 3.4: DISTRIBUTION OF EMPLOYMENT IN 1969

	Total	Percentage
Traditional Agriculture	3,052,976	71.29
Informal	561,983	13.12
Formal	667,394	15.58
(a) Wage	627,215	14.65
(b) Non-Wage	40,179	0.94
Total	4,282,353	100.00

Source: ILO, Technical Appendix to BACHUE-Kenya Model.

1/ Research being undertaken in connection with the Basic Economic Report of the Bank for Kenya may make this possible eventually.

2/ The term "informal" sector is used fairly widely without being defined precisely. Often "informal" work implies no more than work where wage rates and working hours are not formally fixed. Commonly, the term is used to mean both self-employment and small enterprises, that are not formally registered or recorded, e.g. street vending, cottage crafts. It is in this latter sense that most reports on Kenya refer to the informal sector, so also does this report.

the modern sector is sketchy and, in any case, its size is relatively very small, we shall only analyse the trend and prospects of the modern wage sector employment in the rest of the chapter.

Table 3.5 records the distribution and growth of modern sector wage employment since 1970. The share of the sector in the total employment rose from 14.7% in 1970 to 16.0 in 1977. The annual rate of growth of modern wage sector employment for the period 1970-77 is 4.8%.

Table 3.5 indicates that the share of wage employment in the modern agriculture sector (large farms and plantations) is declining. This is an expected trend arising from the subdivision of large farms and the growth of small scale farming by families. The prospect of absorbing further increase in labor force in the agriculture sector through this process is examined later in this chapter. Wage employment in the manufacturing sector has been growing at a slower rate than output growth.

The role of the public sector in the total wage employment of Kenya's mixed economy is an interesting one (Table 3.5). The public sector's overall share of wage employment is not only relatively high (around 40%)--it is generating significant new wage employment. Since 1972, 55% of the new jobs created in wage employment have been in the public sector. This raises the important question of whether the growth of the public sector (dominated by services) is in part a response to the comparatively slower growth of private sector employment. 1/

It is difficult to make projections of future employment patterns without an elaborate long-term economic model. Nevertheless, a simple extrapolation of past trends in modern sector employment under alternative assumptions of economic growth would be helpful to indicate the order of magnitude of future employment in the formal wage sector. 2/

1/ Further check of the wage employment data, disaggregated at the district level, shows that the public sector dominates in those districts where the private wage employment is low. See CBS Statistical Abstract, 1977, Table 263, p. 271.

2/ Projections undertaken here are simplistic and the method is arithmetic. The projections ignore the equilibrating process of labor markets. To simplify matters, the total wage employment is disaggregated into 3 broad sectors, Agriculture, Industries (combining Mining, Manufacturing, Utilities and Construction) and others (which aggregates Trade, Transport, Finance and Services), out of 9 sectors in Table 3.5. The sectoral composition of total output by the three broad sectors were estimated for the two years, 1972 and 1972. The trend was observed and extrapolated. The productivity growth of these 3 broad sectors were estimated for the period 1972-77 by relating employment growth in relation to output growth by the three broad categories. Extrapolating that trend of productivity, employment by those 3 sectors were generated under two scenarios of economic growth--4.5% annual growth rate (actual growth rate of GDP during 1972-77) and 7% annual growth rate (projected by the new Five-Year Plan 1979-83).

Table 3.5: FORMAL (MODERN) SECTOR WAGE EMPLOYMENT (000's)

	1970	1971	1972	1973	1974	1975	1976	1977	Annual rate of growth 1970-77 (%)
Agriculture	204.5 (31.7)	211.1 a/	246.9	265.4	261.1	240.6	243.0	260.3 (28.8)	3.45
Mining	2.9 (0.4)	3.0	3.2	3.1	3.9	3.5	3.9	3.4 (0.4)	2.27
Manufacturing	82.3 (12.8)	92.8	84.8	94.4	101.3	100.7	108.8	117.9 (13.1)	5.14
Utilities	4.8 (0.7)	5.2	5.1	5.4	5.7	7.7	8.6	9.7 (1.1)	10.05
Construction	30.8 (4.8)	34.8	37.6	41.2	44.4	40.5	47.1	48.9 (5.4)	6.60
Trade	32.6 (5.1)	35.9	47.6	46.6	57.0	53.7	60.2	62.6 (6.9)	9.32
Transport	44.9 (7.0)	45.6	45.3	44.1	46.3	45.5	47.7	48.1 (5.3)	.98
Finance	9.9 (1.5)	10.7	17.5	20.3	21.9	24.1	25.4	29.7 (3.3)	7.56
Services	231.8 (36.0)	240.6	231.8	240.9	284.6	302.7	312.8	322.4 (35.7)	4.71
Total Private Sector	397.0	412.2	432.8	462.5	496.1	476.7	501.0	526.5	4.03
Total Public Sector	247.5	267.5	287.0	298.9	330.1	342.4	356.4	376.4	5.99
Grand Total	644.5	679.7	719.8	761.4	826.2	819.1	857.4	902.9	4.81

Source: Ministry of Finance and Planning Statistical Abstract 1972, 1977 and Economic Survey 1978.

a/ ( ) indicates percentage share of the sector of the total modern wage employment.

Table 3.6 shows the projected wage employment under alternative assumptions of growth of total output. Table 3.7 then projects the proportion of labor force employed in formal wage employment under alternative assumptions of population growth. It appears from the table that even under the optimistic scenario of growth, the total employment in the wage sector comes to only 26% by 1990, if we take the series B of working age population growth rate. In case of constant fertility (Series A in Table 3.3), wage sector employment, even with rapid economic growth, constitutes 25% of the labor force by 1970 (see Table 3.7).

Table 3.7 clearly brings out the importance of population (labor force) growth in determining the relative size of the formal wage sector employment in total employment. If the total output is growing at the rate of 4.5% per year, under its assumption of constant fertility the modern wage sector only absorbs about 19% of the labor force by the year 2000; whereas if the labor force grows according to series C, nearly 24% of the labor force is expected to be in the modern sector. Although the projections have been done rather mechanically, they bring out the order of magnitude of the difference between alternative growth rates of the labor force. The difference is wider in the later periods and is more significant in the case of faster growth of the economy. Under 7% rate of growth of the total output, the difference in the proportion of labor force in the modern wage sector employment between the series A and C will be about 8% by the year 2000, whereas under 4.5% growth alternative the difference will be 4%. Under the most likely scenerio of labor force growth (series B), the proportion of labor force employed in the modern wage sector will be between 22 to 38%, depending on how the total output grows between 4.5% and 7% per year.

Our discussion of employment prospects so far has ignored the existence of various labor markets and the role of wages in equilibrating supply and demand condition in those labor markets. Table 3.8 presents the available data on the trend of real wages. If we consider the estimates of different years comparable, the trend shows a gradual decline in real wages. This shows that a part of the employment growth in the past was contributed by a fall or real wages. If the real wages did not show downward trend, the employment growth in the modern wage sector could have been slower. Our extrapolation of the past modern wage sector employment growth to the future implicity assume a continuation of past trend of real wages in the future. If the real wages in future rise, employment growth would be slower than what we have projected. 1/

1/ Actually one can crudely estimate a trade off between wage increases and employment increases. If we assume a Cobb Donglas function $X = L^a e^{bt}$ where b is the growth rate of all other complementary factors of production, capital and technical progress, we can, then, differentiate logarithmically the first order conditions yielding $d \log w = (a-1)\, d \log L + b$ where w is the wage rate. Giving values to a and b, we can derive trade offs.

Table 3.6: PROJECTION OF FORMAL WAGE EMPLOYMENT (000)

	1977	1980		1985		1990		1995		2000	
Sector	Base Year	I	II	I	II	I	II	I	II	I	II
Agriculture	260.30	262.27	282.53	264.91	323.57	267.53	370.26	269.49	422.64	270.20	483.74
Industry	179.90	212.21	228.65	279.13	340.92	367.31	508.36	483.13	757.70	636.31	1130.80
Others	462.70	537.84	579.93	689.54	842.20	876.94	1213.72	1107.39	1736.70	1384.46	2460.38
Total	902.90	1021.32	1091.11	1233.58	1506.69	1511.78	2092.34	1860.01	2917.04	2292.97	4074.92

Notes: I assumes 4.5% annual rate of growth of GDP (actual rate of growth between 1972-77).

II assumes 7.0% annual rate of growth of GDP (projected rate of growth for the new Five-Year Plan).

Table 3.7: PROPORTION OF LABOR FORCE EMPLOYED IN FORMAL WAGE SECTOR

	I			II		
	A	B	C	A	B	C
1977	.162	.162	.162	.162	.162	.162
1980	.165	.165	.165	.176	.176	.176
1985	.171	.173	.174	.209	.212	.212
1990	.178	.186	.189	.247	.257	.262
1995	.185	.200	.208	.290	.314	.326
2000	.190	.216	.233	.338	.384	.415

Notes: I assumes 4.5% annual rate of growth of GDP (actual rate of growth between 1972-77).

II assumes 7.0% annual rate of growth of GDP (projected rate of growth for the new Five Year Plan).

Table 3.8: AVERAGE REAL WAGES IN THE FORMAL WAGE SECTOR 1972-77

	1972	1973	1974	1975	1976	1977	Annual Growth Rate 1972-77
Private Sector	n.a.	n.a.	324.4	315.2	321.3	310.7	-1.4%*
Public Sector	497.9	502.9	457.7	442.4	483.5	458.2	-1.7%
Total	412.5	400.1	457.7	368.4	388.7	372.1	-2.1%

*1974-1977.

Source: Economic Survey 1977 and 1979.

The institutional rigidities in the Kenyan wage structure in the past favored the educated white-collar worker, restricted the full interplay of supply and demand forces in the labor market (ILO, 1972). Although the situation has changed considerably, the problem still persists (see William House, 1979). It is possible that with even better adjustment in real wages in the future, the growth of wage sector employment may experience a faster rate than that implied by our projections in Table 3.6. However, even under assumptions of future adjustment in real wages in the formal sector and a rapid economic growth, the relative size of wage sector employment is not expected to dominate, given the continued rapid increase of working age population. In other words, a large section of the increment of the labor force will have to go into the low-wage informal sector, or traditional agriculture, or be unemployed.

In our analysis, we have only used broad categories of labor use, formal sector, informal sector and traditional farming. This is appropriate for the focus of our analysis in the chapter. But a full treatment of employment issues will have to disaggregate labor use by location, by skill, etc. and examine the interaction of demand and supply in these markets. When disaggregated by location (e.g. urban-rural), labor movement (migration) becomes an important factor in determining the supply and demand forces in the labor market. In that case physical distance may prove to be a restriction in the adjustment process.

Another simplistic way of examining employment prospects in the modern sector is to estimate the investments needs for absorbing new entrants into the labor market. During 1975-76, the increase in wage sector employment was about 38,200 and total gross domestic investment for that year was about KE 144 million (in 1970 prices), giving KE 3,770 of investment per new worker in the age sector. If this investment is taken as an average requirement for creating a job in the modern sector, the total investment needed for absorbing 16% (current rate), 20% and 25% of the total increment of the labor force in the modern sector during the period 1980-2000 is KE 3,537 million KE 4,421 million and KE 5,526 million under the series A. The corresponding figures for series C are KE 2,184 million, KE 2,730 million and KE 3,413 million giving a savings of 38% from the difference in population growth between the series A and C. The assumption of a constant amount of investment (capital formation) needed to create a job in the modern wage sector is too simplistic. In practice, how much additional capital will be required will depend on the possibilities of technical and economic substitution of capital and labor and the latter will depend on the relative prices of labor and capital. We have already noted the possibilities of trade off between real wage increases and unemployment increases, which actually reflects the scope of additional employment creation with lower relative price of labor. Since, in Kenya, the real wages have already been declining, the actual investment per new worker in the past already reflects the substitution. However, if the trend of falling real wages becomes even stronger in future, making relative prices of labor cheaper, more employment in the modern sector will be created for less additional investment than our projections. In any case, the difference in investment requirement will be substantial and similar to our simple projections above, under alternative scenerios of labor force growth, if the purpose is to absorb a certain proportion of labor force in the modern sector employment.

Informal Sector. This sector received considerable attention in the ILO Special Report on Kenya in 1972, which characterized it as the dynamic source of employment in Kenya. Its characteristics are easy entry, reliance on indigenous resources, unregulated and competitive markets, and small-scale operation. Although this sector uses labor intensively, it is closely linked with the formal sector, because the latter often functions as its market and a source of input. The informal sector, thus, cannot continue to be the major source of employment growth in the face of a sluggish growth of the formal sector.

Data on the informal sector has remained extremely limited. A recent survey of 580 heads of households in the informal sector in Nairobi 1/ indicates that the average income of each head of household is lower than the average wage in the modern sector. But the net incomes of these household heads of the informal sector compare very favorably with the minimum wage of the formal sector because of the use of unpaid apprentices and family workers in the informal sector enterprises. The results of Collier and Lal study (1979) indicate that, in recent years, the growth of the sector has been much slower and its potential for employment much less than what was indicated in 1972 ILO report.

Traditional and Small Scale Farming: Even with the scenario of an optimistic growth of the Kenyan economy, the size of the formal wage sector reaches only 38% of total employment by the end of the century, assuming labor force grows as in projection B (see Table 3.7). Along with the formal sector, if we assume a similar growth pattern in the informal sector, the traditional and small-scale farming will still remain the largest source of livelihood for Kenyans, constituting nearly 50% of the total employment. If 7 percent growth rate of the economy is not sustained for the entire period of the projection, which is very likely, the role of traditional and small-scale agriculture will be much more significant for absorbing labor.

Our earlier analysis of the effects of rapid population growth on the agricultural output indicates the employment potential of the small-scale farming in future. 2/ A gradual shift to small-scale agriculture resulting from increasing population pressure on land will increase labor absorption, because employment per acre is inversely related to farm size. 3/ This

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1/ William House (1979).

2/ The Basic Economic Report for Kenya (forthcoming) by the World Bank discusses the prospects of output and employment growth of the agricultural sector. See the footnote about this at p. 72.

3/ These data are based on surveys of small farms in various settlement schemes in 1967-8 and large farms in Trans Nzoia in 1970-71. The data indicate that, in small farms of less than 10 acres, there are 808 jobs, on average, per 1,000 acres. The corresponding figures for farm sizes, 10-19.9, 30-39.9 and 50-59.9, are 399, 159 and 111 respectively. In case of large farms per 1,000 acres are 93, 44 and 14 for farms less than 250, 750-999 and 2,000 or more acres categories respectively. See Ministry of Finance and Planning, Statistical Digest Vol. X, no. 1, March 1972, pp. 7-8.

employment potential exists only for better quality land, however, and there is a limit to the accrual of employment benefit from the transition from large- to small-scale farming. As noted in our discussions of the effects of rapid population growth on the agricultural output, unless population growth in the rural areas slows down, there could be, at least in the very long-run, a drop in the total number of workers that could be productively employed in the agricultural sector. 1/

Since more than three-fourths of Kenya's arable land is of low potential, development of marginal lands for agriculture and livestock has been considered as a means to support the growing rural population. Government planners admit that returns to this kind of investment are low--in fact MOFP sources show that economic benefits from the adoption of new technology are barely equal to the cost. 2/ According to a detailed analysis of a major marginal land development project, Machakos Integrated Development Project, the benefit/cost ratio for crop production is only 1.23:1. 3/ Since marginal land development is a resource-intensive program, one can conclude that, as the potential of subdividing large-scale farms will exhaust, there will be extremely slow growth, if any, of the agriculture sector, and very little prospect for absorbing increasing rural population, if the current rate of increase continues up to the end of the century and beyond. In the short to medium run, the size of labor force increase is more or less given and it is inevitable, as our analysis shows, that agriculture will have to absorb the bulk of the increment to labor force. Analysis elsewhere 4/ shows that this is also technically possible but if the population growth does not slow down significantly by the turn of the century, agricultural employment cannot just cope with the increase in labor force.

1/ This conclusion will be invalid only if there is a breakthrough in the farming technique, which makes it possible to have much more labor intensive agriculture than currently anticipated. Even then, there will be problems of congestion, pollution and some damage to environment from intensive farming. The limit to the growth of agricultural employment in the long run does not negate the possibilities of nonfarm employment in the rural areas. In fact, with increasing population pressure on land, nonfarm sector will have to inevitably grow to absorb part of the labor force increase.

2/ Ministry of Agriculture, Small Farm Sector Policy Paper, 1978 (mimeo.)

3/ Ministry of Agriculture, Draft Plan Agriculture Sector, 1978 (mimeo). Compare this to an estimated benefit/cost ratio of another project of agricultural development, Integrated Agricultural Development Plan III (IADP III), which aims at providing infrastructural services for the subdivided farms from previously group-owned large farms. Under conservative assumptions about the benefit of the project (that the farms after receiving the services under the project will at least operate at the level of efficiency that an average well-managed farm currently performs), the benefit/cost ratio is 2:1. In fact, the ratio should be substantially higher because the project by providing services (extension, farmer training, input supply, market facilities and credit) is expected to boost productivity beyond the level of an average well-managed farm currently operating without those services.

4/ I.B.R.D. Basic Economic Report for Kenya, forthcoming.

Chapter 4: POPULATION GROWTH AND BASIC NEEDS SERVICES

1. Introduction

The Government of Kenya has expressed a commitment to the alleviation of poverty and the satisfaction of basic needs, as a central theme of the Fourth Development Plan. This interest in basic needs strategy represents in part a concern that overall economic growth has not brought about a significant improvement in the welfare of the poorest citizens. In part, it also represents the recognition that meeting basic needs is a key strategy for human capital development, which is rightly viewed not only the desired outcome of, but also a necessary input to, economic development.

2. Education (Tables 4.1 - 4.6)

The Kenyan Government recognizes the importance of education as an essential public service. Policy statements emphasize the right of every person in the country to a basic education. Within the constraints imposed by resources, the Government has made significant progress toward this objective, with the promotion of universal primary education for the young, adult education, and literacy campaigns.

For the current plan period (1979-83), the Government proposes to adopt a two-phased approach to basic education. During the first phase, full seven-year universal primary education for all Kenyan children will be the goal, accompanied by an improvement in the quality of education. During the second phase of the program, which would be implemented in the 1980s, basic education would be extended through two years of junior secondary schools. 1/

Data on literacy rates in Kenya are limited. It is, however, fair to say that at Independence well over 80% of the population was illiterate. According to the 1969 census, 96% of females and 90% of males over age 50 had never been to school. In the age group 20-24, 62% of the females and more than 31% of males were illiterate (Table 4.1).

Table 4.1: EDUCATIONAL PROFILE OF TWO AGE COHORTS, 1969 CENSUS

Educational Level	Over 50 years old		20-24 years old	
	Male	Female	Male	Female
No education	85.8	96.4	31.3	61.6
Some primary education	12.3	2.8	50.2	43.1
Some secondary education	1.3	.5	17.1	4.1
Form 5+	.6	.4	1.3	.6

Source: Population Census 1969, Vol. 3, Central Bureau of Statistics, 1971.

1/ Republic of Kenya, Report of the National Committee on Educational Objectives and Policies, December 1976.

Information from the literacy survey conducted by Central Bureau of Statistics (CBS) as part of the Integrated Rural Survey 2 (IRS 2) in 1976 gives us a more up-to-date idea of literacy in rural Kenya. In 1976, 46% (65% males and 35% females) of the rural population over 15 years old claimed to be literate. 1/

In line with its plans to make universal primary education available to all, in 1974 the Government abolished fees for the first four years of school. In theory, this opens up educational opportunities for the current 6-14 age-group. Actual access to education, however, remains a problem. In Kenya, as in many less-developed countries, the distribution of services and opportunities correlates closely with the distribution of income and wealth. At the individual level, those with higher incomes have access to better-equipped schools with a higher proportion of qualified teachers and better-quality education as measured by the pass rate at the first school-leaving certificate. Because progress from one level of school to another is so dependent on performance in examinations taken at the end of each level, those children whose parents are able to buy them high-quality educational services at the first level have a much better chance than their lower-income peers for superior performance at the Certificate of Primary Education (CPE) examination, and thus access to the few government-maintained secondary schools with low fees and better quality education.

At the regional level, the districts and provinces that have made strides in overall educational development are also those with more school-age population enrolled in primary schools. In 1976 Central Province, with 15.3% of the country's population, the number of pupils in primary schools exceeded the eligible age cohort, whereas North-Eastern had only 9% in primary schools (Table 4.2). 2/ The abolition of fees in 1974 for the first four years of primary education made little difference to the enrollment in primary schools in North-Eastern Province, whereas enrollment ratios in the other provinces had increased substantially by 1976. Capital expenditure on primary schools is the responsibility of local communities; consequently, the number of primary schools reflects district or provincial prosperity or the ability to raise the necessary capital.

1/ Central Bureau of Statistics, 'Literacy in Rural Kenya,' Social Perspectives, 2-3 1977.

2/ The table taken from the Court and Kinyanjui report (1977) presents enrollment ratios using the age cohort 6-13 as the eligible group for primary schools. In other reports, and elsewhere in this report, the age cohort 6-12 is used to estimate primary school enrollment ratios.

Table 4.2: ENROLLMENT IN PRIMARY SCHOOLS 1965-1976 AS PERCENTAGE OF PROJECTED SCHOOL AGE POPULATION AGES 6-13.

Provinces	% of Population 1969	Enrollment Ratio		
		1965	1971	1976
Central	15.3	68	90	116
Coast	8.7	33	43	67
Eastern	17.4	52	71	103
North-Eastern	2.2	2	9	9
Nyanza	19.4	36	47	87
Rift Valley	20.2	35	43	83
Western	12.2	51	61	113
Nairobi	4.7	57	72	76
Kenya	100	45	59	93

Source: Table 1 and column 2, Table 6 of Court and Kinyanjui report, Access to Educational Opportunities in Kenya: IIEP Working Paper, 1977 (Mimeo).

At the secondary level, educational access is more restricted, and at the higher levels it is the privilege of a tiny minority. There are two categories of secondary schools: government-financed and self-help (Harambee). The first category have either national or provincial catchment areas. In 1970, these schools held 48% of all Form I places in the country. The self-help (Harambee) schools, with limited local catchment areas and admission not based on merit, are financed by local contributions and through payment of school fees. In 1970, these unaided secondary schools held 52% of all Form I places, and by 1975 the proportion had risen to 61.3%.

Aided schools on the average have a higher percentage of qualified teachers and a higher number of students qualifying in the nationally administered terminal examination than the self-help schools. The Government of Kenya is conscious of the need to reduce inequalities in access to education in the country, and its education policy since Independence has been directed toward this objective. In the 1960s, expansion of the educational system was seen as a means to relieve the shortage of skilled manpower and equalize educational opportunities among racial groups. In the 1970s the Government has continued the expansion policy and at the same time has moved toward equalization of access to aided schools--hence the efforts to increase the number of government schools at provincial levels. As a consequence, between

1960 and 1976 all provinces increased their shares of the total number of aided secondary schools. The self-help movement has worked against this, however, and is the main sector in which secondary schooling expanded between 1963 and 1975.

One plan to remedy the discrepancy in delivery of educational services calls for the provision of 3,000 additional primary places in the nomadic areas, and conversion of some provincial secondary schools into national schools.

Population Growth and Educational Expenditure. One of the obvious consequences of the high birth rate and population growth in Kenya is the large proportion of school-age children. As in most developing countries, this proportion is increasing, with a correspondingly large educational expenditure.

Between 1964 and 1975, education expenditure increased from 1.0% to 7.3% of the GNP, or 8.0% to 27.5% of the total government current expenditure. Private expenditure on education has also escalated considerably, partly because capital expense for primary schools is borne by communities. It has been estimated that between 1966 and 1972 the ratio of private expenditure on education to that of the government was approximately 61%. 1/

A way of illustrating the implications of alternative rates of population growth on the government educational effort is to estimate the savings likely to result from reduced fertility levels and smaller numbers of children of school age. We have done this for primary and secondary age cohorts, based on three population projections. Our intention here is to show quantitatively the financial benefits that can be obtained from slower rates of population growth.

In the projection private costs or costs of tertiary education are not included. The projection calls for some estimate of the average annual salary of teachers, as well as the annual cost of teacher training: these are based on actual figures of 1970, with some assumed increase of salary over time. 2/ The attrition rates for primary and secondary school teachers are known to be 2.8% and 6.9% per annum, respectively. 3/

1/ M. Smith and R. Rasmussen: Self Reliance in Kenya: The Case of Harambee, Scandinavian Institute of Africa Studies, Uppsala, 1977.

2/ For the sake of simplicity, average costs of teacher training for primary and secondary schools are assumed to remain constant at K£ 265 and K£ 6,000 (1970 prices) respectively for the whole period. The average annual salary for the two categories of teachers are also assumed be constant at K£ 588 for the primary schools and K£ 1,040 for the secondary schools. In practice the costs will rise in constant prices, and the cost estimates will become larger according to the rate of increase of teachers salary in real terms.

3/ In 1970, 6.9% of all government secondary school teachers dropped out of service. Social Perspective, 2:6, November 1977.

Calculations of the total number of students to be serviced in primary and secondary schools are based on past trends. Given the high repeater rate in primary schools, and the strong probability that this will continue to be a feature of the Kenyan primary school system (in view of its high payoff in terms of increased probability of access to secondary schools), we expect enrollment at primary schools to be in excess of the total number of the eligible age cohort. In 1975, the primary school enrollment ratio, taking the age cohort 6-12 as the eligible group, was above 100%, although not all eligible children were in school. We expect that by the year 2000, if past trends are maintained, primary school enrollment will be 112%. In 1970, 10% of the eligible age cohort 13-17 were in secondary schools. Maintenance of past trends would increase the proportion enrolled in secondary schools to 17%. We also assume that trained-teacher/pupil ratio in primary schools and secondary schools would remain more or less the same as in the base year (1975) for the entire period.

Savings in terms of educational expenditures resulting from reduced population growth rate. Three population projections were made with varying assumptions about fertility (and consistent mortality) trends. Projection 1 assumes a constant fertility level up to the end of the century. Projections 2 and 3 are based on population projections in Table 1.30 and correspond to situations of a moderate fall and substantial fall of fertility (Projections 2 and 4 of Table 1.30) respectively.

The costs in terms of teacher input are not higher in the initial period for population Projection 1 than in Projections 2 and 3, because of higher child survival rates in Projections 2 and 3. This is clear from the prospective school age population in Table 4.3. Declining birth rates in these projections do not offset the increases due to lower infant mortality levels up to 1990. By the year 2000, the difference in school age population both in primary schools and secondary schools becomes substantial, and the effect of reduced birth on educational expenditure begin to manifest itself.

Tables 4.4 and 4.5 give the projected additional and total number of teachers that would be required, given the estimated population. From 1980, given the current rate of population growth, an average of 7,800 new primary school teachers and about 1,200 new secondary school teachers would be required every year. A reduction in fertility as associated with Projection 2 would reduce the estimated population of primary school children by about 196,000 by the year 1990 and over 1 million by the year 2000. This would reduce the number of new primary teachers needed by about 1,500 per year; the corresponding decrease in the number of secondary school teachers would be about 80 per year. Achievement of the low fertility associated with Projection 3 would reduce these by 2,100 and 100 per year, respectively, over what would be required for the school-age populations of Projection 1. Since Kenya produces about 4,000 primary school teachers and about 150 secondary school teachers a year, 1/ it is quite obvious that the shortfall in available trained teachers would be considerably less if fertility were to be drastically reduced. Furthermore, the investment cost associated with increasing the current output of primary school teachers from its 4,000 level to about 5,670 per year would be considerably less than what is associated with the first projection. Meeting the requirements for teachers for the population associated with

1/ Government of Kenya, Draft Development Plan, 1979-83, "Education and Training." (Nairobi: Ministry of Education, November 1977.)

Table 4.3: PROJECTED SCHOOL-AGE POPULATION 1975-2000
(in 000's)

Year	Projection 1	Projection 2	Projection 3
(a) Primary Education (Male and Female)			
1975	2,588.6	2,588.6	2,588.6
1980	3,153.1	3,153.1	3,153.1
1985	4,107.8	4,136.3	4,164.0
1990	5,089.4	4,905.6	4,846.6
1995	6,018.9	5,327.2	4,996.2
2000	7,312.6	6,936.0	5,259.5
(b) Secondary Education (Male and Female)			
1975	1,488.7	1,488.7	1,488.7
1980	1,743.0	1,743.0	1,743.0
1985	2,093.4	2,093.3	2,095.6
1990	2,716.8	2,744.5	2,766.3
1995	3,455.1	3,397.0	3,391.4
2000	4,069.6	3,674.1	3,492.5

Table 4.4: PROJECTED NUMBER OF NEW TEACHERS REQUIRED
(in 000's)

	Projection 1		Projection 2		Projection 3	
	(a) Additions	(b) Replacements	(a) Additions	(b) Replacements	(a) Additions	(b) Replacements
Primary						
1975-1980	19.02	8.17	19.02	8.17	19.02	8.17
1980-1985	19.47	10.86	20.04	10.89	20.53	10.93
1985-1990	24.42	13.85	19.68	13.69	17.76	13.68
1990-1995	24.33	17.28	12.55	16.08	6.26	15.55
1995-2000	28.72	20.92	13.17	17.86	5.32	16.83
Secondary	(a)	(b)	(a)	(b)	(a)	(b)
1975-1980	1.45	2.07	1.45	2.07	1.45	2.07
1980-1985	2.14	2.65	2.14	2.65	2.14	2.66
1985-1990	1.89	3.36	2.00	3.37	2.08	3.39
1990-1995	2.84	4.13	2.50	4.13	2.39	4.15
1995-2000	2.31	5.05	.98	4.80	.28	4.69

Table 4.5: PROJECTED TOTAL NUMBER OF TEACHERS
(in 000's)

	Projection 1	Projection 2	Projection 3
Primary			
1975	51.16	51.16	51.16
1980	70.18	70.18	70.18
1985	89.61	90.23	90.83
1990	114.03	109.91	108.59
1995	138.36	122.46	114.85
2000	167.08	135.63	120.17
Secondary			
1975	5.43	5.43	5.43
1980	6.88	6.88	6.88
1985	9.01	9.01	9.02
1990	10.90	11.01	11.10
1995	13.74	13.51	13.49
2000	16.05	14.49	13.77

Projection 1 would require a doubling of the capacity of primary school teacher training institutions.

Table 4.6 gives the estimated cost of meeting the teacher requirements associated with each of the projections. An adoption of policies aimed at bringing population growth in line with Projections 2 and 3 would lead to cumulative savings in teacher costs of between K£ 136 million and K£ 198 million by the year 2000 at 1970 prices. Of this, between K£ 120 million and K£ 178 million are savings specifically attributed to a reduction in the number of children entering primary schools. The average annual savings in primary schools costs amount to between K£ 4.8 million and K£ 7.1 million. The corresponding savings for reduced inflow into secondary schools are between K£ 646,000 and K£ 909,000.

The actual savings from reduced population growth in Kenya would exceed these sums if we were to include capital expenditure and other costs, e.g., instructional materials and dormitory maintenance, usually associated with educational programs in Kenya.

It is difficult to project the relative budget burden of the education sector from our projections without modelling the behavior of the total public expenditure in future. However, with some simplistic assumptions such as, the ratio of teachers' salary to the total recurrent expenditure for education remaining unchanged and the total expenditure on the Government growing in the future according to a trend line extrapolation (using bivariate regression), the relative fiscal burden of education under three alternative projections of population becomes as follows: with constant fertility (Projection 1) the fiscal burden steadily grows from 27.5% of the total current expenditure in 1975 to 31% in 1995 and 33% in 2000. Under Projection 2 the relative size of the education sector remains more or less constant, around 28%. Projection 3, on the other hand, produces a slight decrease in the relative share of education expenditures to about 26% by 1995. One should note here that our projection of the public expenditure in the education sector corresponds to almost the minimum coverage (based on what has been achieved now in the primary education and a slight extension in the secondary education). If the coverage has to be increased, say from 17% of secondary school age cohort (as we have assumed based on trend) to 30%, the total cost will go up substantially.

3. Health (Tables 4.7-4.13)

At the most general level, the Government of Kenya aspires to achieve the social target set by the World Health Organization, that is, "the attainment by all citizens of the world by the year 2000, of a level of health that will permit them to lead a socially and economically productive life." More specifically, "the objectives for development are to control and prevent and ultimately to eliminate communicable diseases, deficiency conditions, environmental health hazards and those hazards associated with childbirth and child-rearing." 1/

Information on health status in Kenya is limited. Until 1973, the reporting system included information on communicable diseases, collected weekly, and information on noncommunicable diseases, collected

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1/ Development Plan, 1974-1978, Part I, p. 449.

Table 4.6: PROJECTED COST OF TEACHER INPUT BY LEVEL OF EDUCATION
(K£ million in 1970 prices)

Year/Level	Projection 1	Projection 2	Projection 3
Primary Level			
1975-80	190.04	190.04	190.04
1980-85	247.50	248.75	250.04
1985-90	315.35	307.99	306.01
1990-95	388.16	352.60	336.05
1995-2000	469.37	391.20	349.76
Secondary Level			
1975-80	53.72	53.72	53.72
1980-85	70.96	70.95	71.04
1985-90	84.11	85.19	86.02
1990-95	107.16	104.64	104.21
1995-2000	122.66	107.93	100.89
Total Cost			
1975-80	243.76	243.76	243.76
1980-85	318.46	319.70	321.08
1985-90	399.46	393.18	392.03
1990-95	495.32	457.24	440.26
1995-2000	592.03	499.13	453.65

monthly or annually. A new information system on vital and health statistics has been in the process of development since 1974. This system, which covers all government, municipal, mission, and private health institutions (excluding only private practice clinics), was field tested during 1975 and 1976 in three areas--Kitui (Eastern Province) and Kwale (Coast Province) districts, and Mombasa Municipality--which contain about 7% of the total population. During 1977, the system was extended to the remaining districts of Coast and Eastern provinces, and it will eventually cover the rest of the country.

Table 4.7 compares data from the old and new information systems for selected infectious diseases. The fact that the new system covers only 7% of the total population demonstrates the magnitude of underreporting under the old information system, which occurred partly because the system did not cover health centers, dispensaries, and nongovernment institutions.

Data are available on inpatient admissions and deaths during 1975 for Kitui, Kwale, and Mombasa districts. 1/ These data indicate that the total of 31,447 admissions represents 34.25 per 1,000 population. This is to be compared with a figure of 17 inpatients per 1,000 population per year reported for Kenya for 1963-64, 2/ and 150 admissions per 1,000 population per year for the United States. Disorders of pregnancy, childbirth, and puerperium accounted for 10,835 admissions, or 34.5% of the total.

Before 1970, the local authorities (county councils) were responsible for the development and management of rural health services affecting 90% of the population. As demands for services outgrew the resources available, the Government took over health services and assigned administrative responsibility to the Ministry of Health. Government health services are now delivered by national, provincial, district, and subdistrict hospitals and by health centers, subcenters and dispensaries. In addition, nearly 30% of all hospital beds are located in church-run hospitals. The supply of beds increased by a total of 3,674, or at an annual rate of 4.1%, over the five-year planning period 1973-78. 3/ It is estimated that 4,004 additional beds are required by 1980 to attain a bed/ population ratio of at least 1.4 per 1,000 population in all districts of the country. Over half this total are required in Nyanza Province, where three out of four districts are dramatically below this ratio (1.4 per 1,000 population).

As part of the development of rural health services, the Rural Health Unit (RHU), designed to serve 50,000-70,000 people, consists of one RHU headquarters and a number of dispensaries. When the number of dispensaries exceeds four, one of them is eligible for designation as a health subcenter. The country has been divided into 253 Rural Health Units. Table 4.8

1/ See Health Information Bulletin, Vol. 1, No. 4 (March 1977) Communicable Diseases Control, Ministry of Health, Government of Kenya, Table 14, pp. 13-14.

2/ See John Bryant, M.D., Health and the Developing World, Cornell University Press, (1979), Table 7, p. 42.

3/ Republic of Kenya, Development Plan, 1979 to 1983. P. 132.

Table 4.7: A COMPARISON OF 1975 OUTPATIENT DATA FROM OLD AND NEW INFORMATION SYSTEMS, FOR SELECTED INFECTIOUS DISEASES

	Old System* Totals refer to entire country	New System Totals refer to three districts with 7% of population
Acute poliomyelitis	165	198
Infectious hepatitis	743	1,545
Kala-azar	110	1,074
Leprosy	276	722
Tetanus	544	144
Tuberculosis	4,676	1,464
Malaria (clinical)	355,682	316,829
Diarrheal diseases	17,969	143,163
Chickenpox	6,740	10,120
Measles	20,201	15,494
Meningitis	228	150
Mumps	4,084	5,590
Bilharzia (schistosomiasis)	8,904	20,752
Whooping-cough	6,442	9,070
Pneumonia	33,872	24,372

* Old system did not cover health centers, dispensaries, or nongovernment institutions.

Source: Social Perspectives, Vol. 1, No. 2 (August 1976) Table I.

shows the distribution of districts by average population per RHU in 1978 and 1983 as estimated by the Ministry of Health. The number of districts with an average population per RHU in excess of 70,000 will increase from 8 to 16. It should be noted that approximately 60% of the total Kenyan population live in these 16 districts.

The Rural Health Development Project was designed to improve the efficiency of the health delivery system. Its main efforts have been the construction and equipment of six Rural Health Training Centers for the post-basic training of Rural Health Unit teams. This practical training for graduates, prior to posting in rural areas, emphasizes teamwork, outreach, and community involvement. The project is also intended to upgrade and improve the existing rural health facilities. Less than 50% of health facilities are provided with piped water, while 70% of all water supplies are untreated. Less than 15% of all facilities have electricity, and over 60% of institutions lack proper facilities for water and waste disposal. 1/ To some extent these problems are related to maintenance (for example, water pumps in disrepair), and it has been proposed that each Rural Health Unit should be assigned a maintenance and engine attendant.

A final measure of access is provided in Table 4.9 by the percentage distribution of households by distance to a health center, by province, taken from the IRS 2. 2/ If we use the percentage of households over four km from a health center as a measure of lack of access, there is a national average of 57.7%, with provinces varying from 50.8% in Central Province to 70% in Eastern Province. If a standard of eight km is used, 7.5% (Central) to 43.5% (Eastern) of the provincial population lack access to health services.

A major constraint limiting the rate at which the Government is able to expand the availability of health services is the shortage of qualified health personnel. Not only are there significant shortages, but given the rates at which health workers are being trained, these shortages will not disappear in the near future.

1/ Government of Kenya, Ministry of Health, "Rural Health Services" (Nairobi, 1978), p. 6. (Mimeographed.)

2/ Note that North-Eastern Province is not included in the Integrated Rural Survey.

Table 4.8: RURAL HEALTH UNITS (RHU) BY PROVINCE AND DISTRIBUTION OF DISTRICTS BY AVERAGE POPULATION PER RHU

Province	No. of Rural Health Units	No. of Districts	Distribution of Districts by Average Population in 1,000's per RHU									
			1978					1983				
			< 20	20-40	40-50	50-70	> 70	< 20	20-40	40-50	50-70	> 70
Central	36	5				4	1				3	2
Coast	21	5	2		1	2		2			1	2
Eastern	43	6	2	1			3	2		1		3
Nyanza	52	4			1	2	1				2	2
Rift Valley	64	13		7	1	3	2		7	-	2	4
Western	25	3	_	_	_	2	1	_	_	_	_	3
TOTAL	241	36	4	8	3	13	8	4	7	1	8	16

Source: Government of Kenya, Ministry of Health, "Rural Health Services." Nairobi, 1978. (Mimeographed.)

Table 4.9: PERCENTAGE DISTRIBUTION OF HOUSEHOLDS BY DISTANCE TO A HEALTH CENTER, BY PROVINCE

Distance	Central	Coast	Eastern	Nyanza	Rift Valley	Western	Total
0-1 km	.7	1.6	4.6	9.0	3.7	7.1	4.8
1-2 km	13.4	3.2	7.3	9.1	12.7	14.0	10.7
2-4 km	35.1	33.1	18.1	30.0	25.3	21.7	26.9
4-8 km	43.3	29.7	26.5	33.7	31.2	28.8	34.2
8+ km	7.5	32.6	43.5	18.2	27.1	18.5	23.5

Source: Integrated Rural Survey 2, unpublished.

An effort has been made to prepare workers for the demands of public health field work. The rural health system has been built around the use of paramedical rather than physician manpower; and rural health training centers have been developed to provide practical training for the clinical officers, community nurses, and health assistants who will staff the Rural Health Units.

In 1978 there was one physician for every 25,000 people (the figure in the United States was one for every 553); one clinical officer for every 13,800; one registered nurse for every 11,200; and one enrolled nurse for every 3,500. On the other hand, it has been estimated that Kenya has one traditional medical practitioner for every 250-400 people, and that 80% of births are supervised by a traditional nurse-midwife. Clearly these traditional practitioners are important resources. Moreover, it is not at all sure that the health needs of the population can be satisfied exclusively through a system of health centers with the current mix of health manpower. The Government has wisely chosen not to rely on physicians as the primary providers. However, the clinical officer is still a highly trained practitioner relative both to the nature of the major medical problems and the overall scarcity of resources.

In determining the resource cost of meeting basic needs for health services, we begin with the observation that at present large percentages of both development and recurrent expenditures are being applied to the curative health care system rather than to preventive and promotive health strategies. The curative health care system comprises hospitals, RHUs (health centers, health subcenters, and dispensaries) and health personnel.

For the purpose of estimating resource costs, we make the following assumptions regarding national targets:

For the purpose of estimating resource costs, we make the following assumptions regarding national targets:

- The ratio of total hospital beds per 1,000 population estimated in 1975 (base year) is maintained throughout the projection period. 1/

- The estimated ratio of one Rural Health Unit (a health center and its network of dispensaries) per 60,000 people in 1975 is maintained. It should be noted that the 253 RHUs now established are not fully developed, and much of the effort during the next plan period will be devoted to upgrading and improving existing facilities.

- The base year ratio of one clinical officer for about 10,000 people is also held constant; and other types of health manpower should be maintained at approximately the proportions observed in 1975. The clinical officer is thus a de facto composite unit of health manpower.

We are now in a position to estimate the investment cost of increasing the numbers of hospital beds, RHUS and health personnel to meet the needs of a growing population. With the assumptions noted before about the coverage of health services, investment costs are estimated based on interpretation of recent experience. 2/ Table 4.10 summarizes these costs for three alternative population projections during the period 1975-2000. Total costs vary from KE 112 million for the lowest population projection to KE 170 million for the highest.

These investment costs are limited to the expansion of the present curative health system, and do not provide for a greater emphasis on preventive and promotive health strategies. The Government is conscious of the present dominance of curative health, and expressed a desire in the Third Development Plan to gradually increase recurrent expenditures for basic rural health services from 10% to at least 20% of the recurrent health budget. Such an increase in emphasis might correspond to a target of one RHU to every 50,000 people (instead of a 1:60,000 ratio, as we assumed). It would call for an additional 100 RHUs by the year 2000, at an estimated investment cost of KE 15.20 million.

1/ The ratio is 1.4 beds per 1,000 and is based on total number hospital beds including non-government. If we only take government hospitals, the ratio was .86 per 1,000 in 1975.

2/ Estimates of investment costs are largely based on the experience of the last development plan (1974-78), and are recorded in Table 4.10. It should be noted that these costs represent the additional resources needed to expand the health infrastructure to meet population growth and do not include the recurring and replacement costs of the health sector. Later we estimate total cost of meeting basic needs in health.

Table 4.10: INVESTMENT COST OF PROVIDING HEALTH SERVICES BY 2000
(in 1970 prices)

Population	Additional Hospital Beds a/ 1.4/1,000	Rural Health b/ Units 1/60,000	Health Personnel c/ Units	Additional Total Costs
Projection 1 35.10 million	30,200 beds KE 82.35 million	332 RHU's KE 50.34 million	21,700 health personnel units KE 37.61 million	KE 170.30 million
Projection 2 30.81 million	23,360 beds KE 63.70 million	260 RHU's KE 39.30 million	16,800 health personnel units KE 29.09 million	KE 132.09 million
Projection 3 28.56 million	19,490 beds KE 54.15 million	223 RHU's KE 33.81 million	14,010 health personnel units KE 24.27 million	KE 112.23 million

a/ The Development Plan 1974-78, Part I, indicates that 1,120 beds in new district hospitals are to be constructed at an estimated cost of KE 3.3 million while another 770 beds will be added through extensions and improvements in service capacity at an estimated capital cost of KE 2.9 million. The estimate of KE 2,727 per bed represents costs in 1970 prices.

b/ The Rural Health Chapter of the Fourth Development Plan indicates that a new health center will have construction costs of KE 55,000, equipment costs of KE 5,500 and transport costs of KE 6,300 for a total of KE 66,900. A new dispensary is estimated to cost KE 21,200. A Rural Health Unit is assumed to consist of one health center and a number of dispensaries. Assuming four dispensaries, the total cost of a new Rural Health Unit is estimated to be KE 151,624 in 1970 prices.

c/ Health personnel consists of Medical Officers, Registered and Enrolled nurses. Based on a Population Council Study, we have assumed that the cost of training a Medical Officer is E 12,000, and cost for training Registered and Enrolled nurses are E 946 and E 461, respectively, all in 1970 prices.

In further estimating the effects on the health sector of a slower population growth rate than at present, we have considered two scenarios. The first is based on the same assumption as in Table 4.10 that the level of service delivery in 1975 would remain unchanged throughout the projected period; the second assumes that there would be improvement of access to services, to the extent that there would be a twofold increase of the ratio of service unit to user population by the end of the century. For simplicity, we have only projected a few basic items of service units namely three categories of health personnel and hospital beds.

Table 4.11 contains the number of service units required to maintain the level of health service delivery at the 1975 level for the period 1975-2000, for each of three projections of population size. The requirements for each of the services for the period ending 1985 are slightly higher for the estimated population in Projection 3 than in Projections 1 and 2, owing to the effect of differing life-expectancy assumptions. The effects of reduced births due to lower fertility on population size at the early periods were not sufficiently large to offset increases due to larger life span.

The results in Table 4.11 indicate that, at the current level of population growth, by the year 2000, Kenya will require an additional 2,280 doctors over what it had in 1975. A reduction in fertility as specified in Projections 2 and 3 would reduce the number of additional doctors needed to maintain the current level of services by 510 and 810, respectively.

Kenya produces about 150 registered nurses and 400 enrolled nurses per year. It is quite obvious from Projection 3 that although the Government would have to double its capacity for production of such medical personnel, a continuation of current population growth would require a trebling of the current output.

The total number of health personnel and beds required to achieve improvement in population access to health services are given in Table 4.12. Implementation of this program will require that by year 2000, given the three population estimates, the health sector should have a full complement of about 7,490 doctors, 21,210 nurses, and 25,710 enrolled nurses. These numbers are, respectively, approximately five times, three and a half times, and four times the number of these services at present.

In order to estimate the total cost of health services from our projections, we have to consider recurrent expenditures, in addition to investment costs. Based on available expenditure data, we estimated the total cost earlier. Table 4.13, presenting these costs as five yearly totals, shows that the total cost difference between Projections 1 and 3 comes to the tune of £ 66 million during the projection period (1975-2000), if service coverage remains the same as in the base year (Scenario I). For an improved coverage, the difference rises to £ 104.5 million.

In estimating the budget burden of the health sector we have to make an assumption about the relative role of the government in the sector. Currently, 30% of the health services are provided by non-government sources. If the government share remains the same as now, approximately 70% of the costs in Table 4.13 will become the responsibility of the government. It is, however, more likely that the future extension of the health services will have to be mostly done by the public sector; the budget burden of the government will accordingly increase.

Table 4.11: TOTAL HEALTH SERVICE UNITS REQUIRED
(in 000's)

Scenario I

Year	Projection 1	Projection 2	Projection 3
Doctors			
1975	1,460	1,460	1,460
1980	1,780	1,780	1,780
1985	2,130	2,080	2,060
1990	2,540	2,400	2,340
1995	3,070	2,780	2,650
2000	3,740	3,230	2,930
Registered Nurses			
1975	5,970	5,970	5,970
1980	7,280	7,280	7,280
1985	8,680	8,480	8,410
1990	10,380	9,810	9,540
1995	12,520	11,360	10,810
2000	15,280	13,170	11,980
Enrolled Nurses			
1975	6,480	6,480	6,480
1980	7,910	7,910	7,910
1985	9,430	9,220	9,140
1990	11,270	10,660	10,360
1995	13,600	12,340	11,750
2000	16,600	14,310	13,010
Beds			
1975	19,350	19,350	19,350
1980	23,620	23,620	23,620
1985	28,160	27,510	27,280
1990	33,650	31,810	30,940
1995	40,600	36,850	35,070
2000	49,550	42,710	38,840

Table 4.12: TOTAL HEALTH SERVICE UNITS REQUIRED
(in 000's)

Scenario II

Year	Projection 1	Projection 2	Projection 3
Doctors			
1975	1,460	1,460	1,460
1980	2,140	2,140	2,140
1985	2,980	2,910	2,880
1990	4,070	3,840	3,740
1995	5,520	5,010	4,770
2000	7,490	6,450	5,870
Registered Nurses			
1975	5,970	5,970	5,970
1980	7,850	7,850	7,850
1985	10,030	9,800	9,720
1990	12,790	12,090	11,760
1995	16,410	14,890	14,170
2000	21,210	18,280	16,620
Enrolled Nurses			
1975	6,480	6,480	6,480
1980	8,800	8,800	8,800
1985	11,500	11,240	11,140
1990	14,990	14,170	13,780
1995	19,570	17,760	16,910
2000	25,710	22,160	20,150
Beds			
1975	19,350	19,350	19,350
1980	27,420	27,420	27,420
1985	37,200	36,360	36,050
1990	49,890	47,160	45,870
1995	66,730	60,560	57,630
2000	89,400	77,060	70,070

Table 4.13: COSTS OF HEALTH UNDER ALTERNATIVE ASSUMPTIONS
(K£ millions)

Years	Scenario I Population Projections			Scenario II Population Projections		
	I	II	III	I	II	III
1975-80	75.78	75.78	75.78	87.50	87.50	87.50
1980-85	90.15	87.85	87.01	115.12	112.21	111.15
1985-90	107.75	101.50	98.52	150.71	141.94	137.75
1990-95	130.12	117.60	111.66	197.88	178.69	169.57
1995-2000	158.97	136.32	123.33	261.24	223.63	202.00
Total	562.77	519.05	496.30	812.45	743.97	707.97

Notes:

Projection I assumes constant fertility.

Projection II corresponds to population Projection 2 of Table 1.30.

Projection III corresponds to population Projection 4 of Table 1.30.

4. Rural Water Supplies (Tables 4.14-4.19)

The national goal of the Government of Kenya is to bring to the entire population the benefits of safe water sufficient for domestic and livestock consumption requirements by the year 2000. 1/ In recognition of resource realities, this objective has been further defined in terms of maximum distance from quality water for the different ecological zones. The primary water problem in Kenya appears to be one of storage and distribution rather than water availability.

Table 4.14, taken from the Development Plans, 1974-78 and 1979-83, provides estimates of the population served by an organized water supply in 1972 and 1977. By 1977, approximately 1.5 million people or 13% of the rural population had access to an improved water supply. 2/ The Government's target for the 1974-78 period was to bring water supply service to two million additional people in rural areas, so that by 1978 approximately three million people would be served. There is obviously a huge shortfall in obtaining this target of the last plan (as evident from the actual figures of coverage in 1977 in Table 4.14). The updated targets in the new plan (1979-83) is to bring water supply service to over four million people by 1983.

The access objectives are presently defined in terms of distance for each of the ecological zones. About 9% of total land area is classified as high potential, a further 9% is of medium potential, while 74% is of low potential (the remaining land is not classified in terms of agricultural potential). For high-potential areas (more than 1,000 mm annual rainfall), the objective is to provide a water source within walking distance of less than one km. For medium-potential areas (500-1,000 mm annual rainfall), walking distance would be less than two km; and for low-potential areas (with less than 500 mm annual rainfall) walking distance would be less than five km. 3/ Table 4.15, based on data from IRS 2, presents, by province, the percentage distribution of households by distance from water source. At present, 74% of rural households surveyed have a water source within one km, with a low of 41% in Coast Province and a high of 88% in Central and Western provinces. These figures do not necessarily describe access to safe water.

1/ This goal appears to be unrealistic because of its huge financial implication. Even if funds were available for a rapid expansion of water supplies, low manpower availability would prove a serious constraint. Moreover, as we have noted later, physical access to safe water does not necessarily lead to its full utilization. For the latter, the potential users have to be informed and educated. That requires time and adds to the total cost of water program.

2/ Much of the data available is contained in a recent report VIAK (EA) LTD (1977) Evaluation of the Rural Water Supply Program.

3/ These distance standards were provided during an interview during March 1978 with the Ministry of Water Development. The corresponding standards reported in the Development Plan, 1974-78, were two km, five km and an appropriate larger radius in areas of high potential, medium potential and low potential (and sparse population), respectively.

Table 4.14: POPULATION SERVED BY IMPROVED WATER SUPPLY, 1972 AND 1977

Province	1972[a/] URBAN	1972[a/] RURAL Total	High Potential	Medium Potential	Low Potential	1977[b/] URBAN	1977[b/] RURAL*
Central (including Nairobi)	746,000	219,500	193,500	18,000	8,000	990,000	320,000
Nyanza	53,200	127,500	15,000	87,500	25,000	270,000	240,000
Eastern	43,000	170,000	38,500	19,500	112,000	195,000	240,000
North-Eastern	10,000	21,000	-	-	21,000	15,000	6,000
Rift Valley	154,400	227,000	137,000	46,500	43,500	315,000	250,000
Coast (including Mombasa)	316,000	91,500	27,500	28,000	36,000	680,000	200,000
Western	14,500	76,000	73,500	2,500	-	210,000	220,000
TOTAL	1,337,100	932,500	485,000	202,000	245,500	2,674,000	1,476,000

Source: a/ Development Plan 1974-78, Part I, Table 15.3, p. 327.

b/ Development Plan 1979-83, Part I, Table 5.35, p. 193.

* Breakdown of rural water supply by high, medium and low potential areas is not available.

Table 4.15: PERCENTAGE DISTRIBUTION OF HOUSEHOLDS BY DISTANCE TO WATER SOURCE, AND PROVINCE, 1976

Distance	Central	Coast	Eastern	Nyanza	Rift Valley	Western	Total
On Holding	67.47	28.42	27.30	41.31	62.07	65.54	50.66
0-1 km	20.69	12.76	37.70	26.79	15.10	22.92	23.75
1-2 km	10.33	29.78	15.20	19.95	9.60	9.08	14.22
2-4 km	1.52	16.22	11.92	10.28	7.98	1.71	7.61
4-8 km	-	8.28	6.92	1.67	4.30	.75	3.12
8+ km	-	4.56	.96	-	.95	-	.65
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Average distance for those without water on holding	.93	2.72	1.77	1.43	2.14	1.01	1.67

Source: IRS 2.

The Ministry of Water Development (MWD) standard is defined in terms of the number of potential consumers within the limits of supply of completed RWS projects. But within the limits of supply of a water scheme, some potential consumers do not use the supply, either because they are not able to afford an individual connection or because a traditional source is more convenient. In fact, it has been estimated that only 55% of potential consumers are actually using the supplies. This proportion will in general be higher on schemes in high-potential areas. 1/ Finally, only 47% of the actual consumers are being provided with reliable water supply. 2/

In the long run, the objective is to assure appropriate design and sound operation and maintenance procedures of all rural water supply schemes. However, given the magnitude of the task and the severity of resource constraints, selection procedures have important implications for costs per person served, level of scheme utilization, degree to which the basic needs of the poor are satisfied, pattern of development, and political and social tensions. "In these circumstances, determining priorities is essentially a political process, in the sense that it requires a sagacious balancing of often conflicting forces." 3/ MWD has developed procedures for allocating water development resources to districts, based on the percentage of the population unserved. The district development committees devise water schemes with priorities assigned on the basis of need, but technical and financial feasibility may result in some modification of priorities.

It should be noted that, although MWD has the major shares, it is not the only agency developing rural water supply. Table 4.16 records the relative roles of the various agencies currently providing improved water to rural population. The table shows that, in 1976, MWD accounted for more than 45% of the coverage. In future, the share of MWD is expected to go up, because of increased responsibility assigned to it for water development in rural areas during the current plan (1979-1983) period.

In major urban areas, with the exception of Mombasa, the town authority is responsible for water supply development, and the problem is primarily one of ensuring adequacy of supplies for the rapidly rising population. The objectives of the current plan period call for an additional 1.4 million urban residents to be supplied from safe and permanent sources. In most urban areas, the objective is to continue to augment the existing systems; however, a 1972 survey established that the bulk supply to Mombasa and the coastal strip through existing pipelines was incapable either of satisfying the existing demand or of meeting the normal requirements of a rapidly expanding population. A major scheme currently underway is expected to meet demand through 1984. The Mombasa and Coastal Water Supply Project

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1/ VIAK (EA) LTD (1977) Evaluation of the Rural Water Supply Program.

2/ Ibid., p. 11. 1/15. A scheme is considered reliable if water is available for at least 8 hours a day. The Ministry of Water Development considers a scheme to be unreliable if interruptions in supply of greater than 48 hour duration occur regularly.

3/ VIAK (EA) LTD (1977) Evaluation of the Rural Water Supply Program, p. II. 2/1.

Table 4.16: PERCENTAGE SHARE OF AGENCIES PROVIDING IMPROVED WATER TO RURAL POPULATION (1976)

Agency	% Potential Consumers
Ministry of Water Development (MWD)	45.3
Ministry of Lands and Settlements	8.7
UNICEF	16.7
County councils	6.7
Self-help	20.0
Other agencies	2.7
TOTAL	100.1

Source: VIAK (EA) LTD (1977) Evaluation of the Rural Water Supply Program: Table 1.2.2, Page 1.2/9.

received KE 11.95 million of the 1977-78 water development budget of KE 33.51 million. This compares with a government contribution of KE 2.53 million to other urban water supplies and KE 4.02 million to the RWS programs.

Recent experience provides a baseline for estimating resource costs of rural water supply. Table 4.17 shows population in the year 2000 for population projections. Table 4.18 summarizes the investment cost of rural water supply schemes at 1970 prices. Table 4.19 combines this information into estimates of investment costs for meeting basic rural water supply needs over the 1975-2000 period for three alternative population projections (in 1970 prices). For the modal population projection, the investment required is KE 104.13 million; this figure can be compared with present capital assets of approximately KE 11 million. The additional cost implied by the first set of population projections is KE 23.29 million.

Once a scheme is installed, operations and maintenance costs continue throughout the life of the scheme. These costs are a function of the total value of assets. It has been suggested that the ratio of recurrent expenditures and the capital assets should be somewhere between 3% and 5%. Thus, we are talking about a major commitment of resources to operate and maintain this amount of social capital. It is expected that the expense would be recovered through user charges.

It is more difficult to estimate the resource cost of expanding water supplies to meet the needs of an additional 8-11 million people predicted to be living in urban areas. For 1974-78, approximately 50% of development expenditures, totaling KE 63 million was scheduled for: Nairobi water supply; Mombasa and Coast water supply; municipal water supplies; and minor urban water supplies. By contrast, only KE 10.5 million, or 17% was scheduled for water supplies for rural areas. Additional resources were also committed to the development of urban water supplies from nongovernment funds. For 1979-83, urban water supplies have been given a relatively lower share (24% compared to 50% in the last plan), but the share of the rural water supplies remains comparable (20%). 1/ Thus, it is not unreasonable to expect that costs of meeting basic water supply needs in urban areas will be even greater than the KE 104 million estimated investment in rural water supplies.

5. Housing (Tables 4.20-4.24)

The Government of Kenya has devoted increasing attention to the need to ensure that the population is provided with decent shelter. The Government set up a Ministry of Housing, which subsequently established the National Housing Corporation, to develop and implement a housing policy in both urban and rural areas by providing finance to local authorities

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1/ Self-help water supplies which is a government effort to improve water supplies in the rural area rose from KE 270,000 to KE 12.7 million and was not considered in this 20%.

Table 4.17: DISTRIBUTION OF KENYAN POPULATION: 2000
(millions)

Population projection 1/	Total Kenya	Urban centers	Rural centers	Rural			Total potential
				High potential	Medium potential	Low potential	
#1	35.10	11.48	2.49	11.41	6.88	4.10	22.39
#2	30.81	10.07	2.18	10.00	6.04	3.60	19.64
#3	28.56	9.33	2.03	9.29	5.59	3.34	18.22

Source: This table was constructed by using the proportional distribution of population for the year 2000 contained in "Republic of Kenya, Ministry of Water Development, Rural Water Supply Program IV, Interim Loan Application, Appendix 2: Rural Water Supply Sector, Long-Term Projections, Section 3.2.1".

1/ #1 is based on a constant total fertility rate of 8.0; #2 and #3 correspond to population Projections 2 and 4 of Table 1.30 respectively.

Table 4.18: INVESTMENT COSTS OF RURAL WATER SUPPLY SCHEMES AT 1970 PRICES (KSh)

	Water available per head litres	Cost per head		Cost per M^3 capacity
		Range	Average	
High-potential Area *	56	80-218	145	2,595
Medium to high-potential area **	24	76-151	96	3,974
Small schemes **	25	13-425	99	3,919

* Based on six schemes

** Based on five schemes

Source: VIAK (EA) LTD (1977) Evaluation of the Rural Water Supply Program.

Table 4.19: ESTIMATED INVESTMENT COSTS OF RURAL WATER SUPPLY SCHEMES 1975-2000

	Investment Costs Per Person at 1970 Prices (KSH)	Projection 1		Projection 2		Projection 3	
		Number Served 1975-2000 (million people)	Total Inv. Costs at 1970 Prices KE Million	Number Served 1975-2000 (million people)	Total Inv. Costs at 1970 Prices KE Million	Number Served 1975-2000 (million people)	Total Inv. Costs at 1970 Prices KE Million
High Potential	145	10.6	76.64	8.4	60.90	7.4	53.44
Medium Potential	96	6.8	33.03	5.5	26.40	4.7	22.31
Low Potential	99	4.3	21.34	3.4	16.83	3.0	14.85
			131.01		104.13		90.60

for housing schemes. The Government's long-term objective is to build as rapidly as possible a national stock of minimum standard housing. 1/

Table 4.20 presents a picture of rural housing by province. There is considerable variation in quality. Although standards of rural housing could be improved, resource limitations have resulted in the concentration of Government efforts on the problems of urban housing.

The basic need of the urban population for shelter is met from three sources: the private sector, the public sector, and the private "informal" or "popular" sector. As Table 4.21 indicates, approximately one-third of Nairobi's population live in housing supplied by the private, formal subsector. Included in this total is housing that serves the middle and upper-income groups, employer-provided housing for staff and servants, and old tenements originally built for Asian extended families. Another 30% of Nairobi's population lives in public sector housing, including both rented and tenant-purchased estates (27%), and site and service schemes (3%). During recent years the Government has redirected its housing efforts from conventionally built units toward such schemes, under which an applicant is provided with a plot and such basic services as access to a road, water supply, sewers, electricity, storm water drainage, and a simple "wet-core" (lavatory, shower, and kitchen plumbing) for the construction of a permanent dwelling. In addition, the site and services program provides security of tenure and a materials loan. The overall housing costs are lower than for conventional dwelling units because of the owner-builder process and a slight lowering of standards; moreover, the house can be built in stages.

The informal or popular housing sector consists of uncontrolled and squatter housing, and is essentially a response to the shortage of housing in the other two sectors. From Table 4.21, we see that 37% of the population is dependent upon such illegal housing. It has been suggested that comparable or greater proportions of the population are dependent on uncontrolled settlements in other major urban areas.

A study of the relationship of public housing units and public and semi-public housing units in 22 urban areas to households, as of December 1975, suggests that the proportion of population served by public sector housing has fallen since 1970. 2/

1/ Development Plan, 1974-78, Part I, p. 473.

2/ "In order to know how much public involvement is needed, it is probably best to consider those places where hardly any uncontrolled settlement has taken place, such as Nakuru and Eldoret. In Nakuru and in Eldoret, the complete public housing units are catering for 49% and 44% of all urban households, respectively. Taking, say, 47% as a possible desirable Government commitment...then in term of numbers only the Government has currently provided 17% (57,578 out of 337,862), thus falling approximately 100,000 units short in the 22 municipalities and two councils." "The Housing Stock in the Major Towns of Kenya: Public and Semi-Public Housing Stock in 22 Municipalities and Town Councils as per 31st December, 1975," Housing Planning and Economics Sections, Ministry of Housing and Social Services, April, 1977.

Table 4.20: RURAL HOUSING PERCENTAGE DISTRIBUTION OF MAIN DWELLING UNITS BY NUMBER OF ROOMS AND PROVINCE

	Central	Coast	Eastern	Nyanza	Rift Valley	Western	Total
One room	13.98	13.20	25.91	23.02	28.59	29.69	23.30
Two rooms	30.40	31.97	39.11	39.29	44.23	33.66	37.36
Three rooms	27.37	25.89	17.61	20.36	14.69	13.74	19.44
Four rooms	17.66	14.85	7.99	9.24	7.09	16.28	11.49
Five rooms	5.43	5.38	4.05	2.96	3.05	3.78	3.69
Six rooms	5.17	8.70	5.33	5.14	3.35	2.84	4.71
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Average No. of rooms per dwelling unit	2.91	3.02	2.46	2.50	2.23	2.42	2.54
Mean household size	6.95	8.04	6.74	6.58	7.51	7.44	6.97
Average No. of individuals per room	2.39	2.66	2.74	2.63	3.37	3.07	2.74

Source: IRS 1.

Table 4.21: HOUSING SYSTEMS IN NAIROBI, 1970

Housing type	Sector	Description	Estimated population	% of population
Squatter	Popular	Unapproved housing on land developers have no legal right to occupy	97,200	18
Companies and Dagoretti	Popular	Unapproved housing on land developers do have legal right to occupy	102,600	19
Old tenements	Private	Primarily housing built for Asian extended families, now occupied mainly by Africans	54,000	10
Employer provided housing	Private Formal	Includes servant housing as well as development by large-scale employers	37,800	7
Private: medium and high cost	Private Formal	Approved housing serving middle and upper income groups	84,400	16
Sites and services	Public	Serviced plots	16,200	3
Rental and tenant-purchase estates	Public	Public housing for rent and purchase	145,800	27

Source: Based on R. Racki, J. Racki and P. Patel: Methodology and Analysis of the Low-Income Housing System, 1972.

The urban population of Kenya was about 1.69 million in 1976. If we take an annual growth rate of 7% as the reasonable estimate of current growth of urban population, there are approximately 118,300 new urban dwellers to be housed each year or, with an average household size of 4.3, a total of 27,511 new households. 1/ Even with an average household size as high as 5.0, 23,660 new households would require housing annually.

In 1975 Nairobi, with its population of 775,000, had a shortage of approximately 55,000 housing units. In addition, with population growing at an annual rate of 7%, there is a need for 10,800-12,600 additional units per year. By comparison, the Nairobi site and service projects provided for 6,000 self-help housing units during the 1974-78 planning period.

Mombasa and Kisumu, the second and third largest urban areas in Kenya, also have acute housing shortages. With a 1975 population of 339,000 and only 4,585 units of public housing (6% of requirements), Mombasa would need from 27,275 to 30,815 additional public housing units to reach the desired government commitment of 47%. 2/ In 1975 Kisumu, with a population of 87,407, and 2,336 public housing units, was 5,880-6,793 units short. Furthermore, with a 7% population growth rate, the demand for additional housing units in 1976 was 5,272 and 1,360, in Mombasa and Kisumu, respectively.

Given the magnitude of the task, the problem of urban housing must be approached, in part, within the framework of existing low-income squatter settlements. 3/ The Government is considering improving certain of these areas as a complementary part of its housing program. A central feature of the squatter upgrading initiative would be the granting of secure tenure rights and the opportunity for self-help by residents. Such programs would preserve and further develop on the existing housing stock and investment as well as the economic base and social fabric of selected settlements. Attention has been focused through site and service projects on the problems of urban housing. The importance of building up the institutional capacity of local authorities to effectively implement the program has been recognized. These are constructive steps toward decentralization of basic needs programs.

1/ The estimate of 7% annual growth rate is higher than what was estimated for the intercensal period, 1962-1969, in Chapter 1, but appears reasonable and consistent with an estimate for Nairobi population growth (7.5%) made by the Nairobi City Council for the period 1969-74.

2/ The range is based on household size assumptions of 4.5 and 5, respectively.

3/ Settlements in which the majority of dwellings lack adequate infrastructure and services.

While some provision for private housing market development has been made by earmarking some land for the private sector, it appears that lack of access to financial mediation is a serious constraint. The high initial deposits of 20-30% with lending rates of 11-12% demanded by financial institutions limit access to private sector housing. The National Housing Corporation might play a greater role in the development of financial mediation for low-cost housing. Such an objective could be promoted through the development of a program of mortgage insurance for loans, with much lower down-payment requirements.

Given the heterogeneity of houses in Kenya, and the lack of available statistics and information on cost of housing in rural areas, no attempt has been made here to project housing requirements for the whole of Kenya. Furthermore, while there may be hidden housing shortages in many rural areas, the lack of adequate housing is more obvious in towns, especially among the low-income population. Past attempts by the Government to provide housing have only benefited the upper- and middle-income populations. Estimates by IBRD indicate that in Nairobi alone, although there were an additional 9,000 households in 1971, only 2,300 new housing units were added.

Projections of urban population are given in Table 4.22. To calculate the number of housing units required by the projected urban population, we assumed that on average, each household is composed of 5.0 persons. 1/ Since we assumed that a housing unit is a standard house with two rooms, kitchen, and bathroom, we are in effect assuming that there are 2.5 persons per occupied room. This rate is much lower than the norm for the large proportion of urban dwellers in Kenya.

Table 4.22: PROJECTED URBAN POPULATION - KENYA
(000's)

Year	Projection 1	Projection 2	Projection 3
1975	1,581.8	1,581.8	1,581.8
1980	2,196.3	2,196.3	2,196.3
1985	2,957.2	2,908.8	2,897.0
1990	3,941.9	3,763.9	3,695.5
1995	5,231.8	4,790.0	4,608.6
2000	6,938.7	6,009.1	5,564.6

1/ We have kept the same number of persons per household in all three projections, although a fall in fertility rate would normally mean a larger number of households with less persons each. We expect that this will not affect our results and conclusions. Keeping the total number in the household at 5.0 for all the projections throughout the period implies that we do not anticipate changes in the average number of persons per room within the next 25 years.

In 1970, the rate of housing construction per 1,000 new households in the urban areas was 259. Despite considerable effort by the Government, the previous plan (1974-78) goal of completing 160,000 housing units by 1978 has not been attained. In the projections, therefore, we have assumed that, by 1990, the Government will have achieved a construction ratio of one new house to one new household formation in urban areas, taking both the private and public sources.

In estimating the total government investment in housing, we have assumed that each house would cost about KE 1,090. These costs are calculated at constant 1970 prices. The sum was arrived at by averaging the cost per square foot of local government and central government housing projects. Given that the UN 1/ assumed that the cost of a housing unit in 1964 was KE 525, we do not think that the cost input in these projections is too high.

No allowance has been made for private financing of houses, although the private sector in Kenya accounts for about 47% of all new housing. We also have not netted out the revenue that would accrue to the Government from rents. Furthermore, we must emphasize that these estimates are not intended to be exact, but are used here to illustrate quantitatively the benefits of lower fertility.

Table 4.23 contains the projected number of new housing units required to provide shelter for 70% of the new household additions in urban areas by year 1990. This percentage is equivalent to the proportion of the households who are now unable to afford a private sector house. The estimated costs of achieving this goal for each population estimate are given in Table 4.24.

To achieve a level of housing construction sufficient to provide shelter for these additional households in the urban areas of Kenya, given the population estimate of Projection 1, 30,000 new housing units per year would need to be completed by 1990. Thereafter, 54,000 new housing units per year would be required to meet the demand of newly formed households. The housing requirements associated with urban population sizes in Projections 2 and 3 would require that the Government construct approximately 29,000 and 28,000 housing units, respectively, per year by 1990, and thereafter 44,800 and 40,100 housing units, respectively. What this implies is that by reducing the rate of population growth, the Government could each year, until 1990, save on the construction of about 971 and 1,400 new housing units, for Projections 2 and 3 respectively; and thereafter as the differences in population size widens, the savings in number of houses would reach a total of between 8,739 and 13,527 new housing units per year, respectively, for Projections 2 and 3. The upper boundary represents the savings in terms of housing units associated with reduced fertility in Projection 3. Between 1975 and 2000, a vigorous policy of population control, as assumed in Projection 3, would save the Government housing costs of about KE 182.5 million total, or about KE 7.3 million per year. This sum is equivalent to the salary of 12,300 primary school teachers, or the total 1970 cost of 13,200 new hospital beds.

1/ In 1965, the UN mission on Housing in Kenya estimated that in the Nairobi slums, there were about eight persons per room. Since then, most estimates indicate a deteriorating situation. L.N. Bloomberg and C. Abrams: United Nations Mission to Kenya on Housing, Nairobi, Government Printer, 1965.

Table 4.23: NEW HOUSING UNITS REQUIRED TO MEET URBAN POPULATION GROWTH (000's)

Year	Projection 1	Projection 2	Projection 3
1980	88.75	88.75	88.75
1985	126.11	123.25	122.28
1990	177.61	165.91	160.36
1995	236.28	207.23	193.40
2000	299.52	241.18	207.13
Total	928.27	826.32	771.92

Table 4.24: TOTAL URBAN HOUSING COSTS (millions of KE at 1970 prices)

Period	Projection 1	Projection 2	Projection 3
1975-80	104.15	104.15	104.15
1980-85	147.19	143.86	142.72
1985-90	207.25	193.57	187.72
1990-95	275.66	241.75	225.60
1995-2000	349.39	281.32	241.57
Total	1,083.63	964.65	901.14

6. Population and Basic Needs Services

The previous section has reviewed the national goals, current status, levels of services, and future prospects for satisfying basic needs in education, health, water, and housing. In addition, we considered the resource costs of satisfying basic needs under alternative assumptions about population growth rates. While these estimates are extremely crude, they do represent orders of magnitude of resources required to meet basic needs.

Table 4.25 attempts to aggregate the total resources needed to meet basic needs in education, health, water and housing in Kenya under alternative population projections. These cost estimates are made under restrictive assumptions and should be regarded as only approximations.

The treatment of costs in our projections has been different for different sectors, depending on the nature of the sector. For the education sector, we first projected the most important item of recurrent expenditure, teacher salary, and from those we estimated the total recurrent expenditure of the sector. 1/ Thus, the resource requirement of the education sector only relates to the recurrent expenditures. The capital expenditures of buildings and equipment are not accounted for, because in some cases (e.g. primary schools or Harambee schools taken up by the government) these costs are met by public contributions. To the extent capital costs are not met by public contributions, the total resource requirement will actually be higher than the projections in Table 4.25. Even with these qualifications, Table 4.25 shows vast cost differences from differential population growth. The total difference between Population Projections I (constant fertility) and III (50% fall in fertility by 2000), in recurrent expenditure, comes to nearly KE 197 million in 25 years. If we take the five-year period 1995-2000, the saving from lower population growth (the difference between Projections I and III) is nearly 23 percent.

For the health sector we estimated total cost of services. Currently only about 70% of the health services are provided by the government, the rest are from church and other sources. The projection of resource requirements of the health sector is for all sources. To estimate budget burden of the Government, we have to assume about its relative share in future. If the relative share remains the same as it is now, the fiscal burden of the health sector will approximately be 70% of our projected requirement. It is, however, possible that in future the relative burden of the Government in the health sector will increase and most of the projected cost will be its responsibility. As in the education sector, the savings from lower population growth becomes substantial in the later periods. During 1995-2000, the difference between Projections I and III is about 22 percent.

We have confined ourselves to the estimation of resources only for rural water supply, because the government program is the only source to supply this basic need in rural areas. The Government of Kenya has had programs of

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1/ This was done by considering the share of teachers' salary in the total recurrent budget of the sector in 1975, and a trend of that share over time.

Table 4.25: TOTAL RESOURCES NEEDED TO MEET BASIC NEEDS BY 2000
(in million Kb and in 1970 prices)

Year	Education Population Projections			Health Population Projections			Urban Housing Population Projections			Rural Water Supplies Population Projections			Total Resources Population Projections		
	I	II	III	I	II	III	I	II	III	I	II	III	I	II	III
1975-80	243.76	243.76	243.76	75.78	75.78	75.78	104.15	104.15	104.15	22.93	22.93	22.93	446.62	446.62	446.62
1980-85	318.46	319.70	321.08	90.15	87.85	87.01	147.19	143.86	142.72	25.75	21.91	19.61	581.55	573.32	570.42
1985-90	399.46	392.18	392.03	07.75	101.50	98.52	207.25	193.57	187.10	25.61	21.02	18.15	740.07	708.27	695.80
1990-95	495.32	457.24	440.26	30.12	117.60	111.66	275.66	241.75	225.60	26.85	19.98	16.57	927.95	836.57	794.09
1995-2000	592.03	499.13	453.65	158.97	136.32	123.33	349.39	281.32	241.57	27.61	18.31	15.17	1,128.00	935.08	833.72
TOTAL	2,048.13	1,913.01	1,851.30	562.77	519.05	496.30	1,083.63	964.65	901.54	128.75	104.15	92.44	3,824.19	3,499.86	3,340.65
Actual Expenditure for the period 1970-75 a/		180.07			60.26			17.17			14.97			272.47	

a/ Source: World Bank Estimates. The figures are also in 1970 prices and include all expenditures, recurrent and development in those sectors. Since our projections correspond to certain definitions and assumptions stated in the text, they are not strictly comparable to the actual expenditures quoted here, but the latter provides a useful historical base for comparison.

only relates to the recurrent expenditures. The capital expenditures of buildings and equipment are not accounted for, because in some cases (e.g. primary schools or Harambee schools taken up by the government) these costs are met by public contributions. To the extent capital costs are not met by public contributions, the total resource requirement will actually be higher than the projections in Table 4.25. Even with these qualifications, Table 4.25 shows vast cost differences from differential population growth. The total difference between Population Projections I (constant fertility) and III (50% fall in fertility by 2000), in recurrent expenditure, comes to nearly KE 197 million in 25 years. If we take the five-year period 1995-2000, the saving from lower population growth (the difference between Projections I and III) is nearly 23 percent.

For the health sector we estimated total cost of services. Currently only about 70% of the health services are provided by the government, the rest are from church and other sources. The projection of resource requirements of the health sector is for all sources. To estimate budget burden of the Government, we have to assume about its relative share in future. If the relative share remains the same as it is now, the fiscal burden of the health sector will approximately be 70% of our projected requirement. It is, however, possible that in future the relative burden of the Government in the health sector will increase and most of the projected cost will be its responsibility. As in the education sector, the savings from lower population growth becomes substantial in the later periods. During 1995-2000, the difference between Projections I and III is about 22 percent.

We have confined ourselves to the estimation of resources only for rural water supply, because the government program is the only source to supply this basic need in rural areas. The Government of Kenya has had programs of subsidizing water supplies in the urban centers. But these cannot be regarded as the absolute requirement for basic needs, because municipal/town authorities exist in urban centers to mobilize local resources for development and maintenance of water supplies. It is for this reason, development expenditures for water development in urban centers have proportionately decreased in the current plan compared to the last, as noted earlier. However, MWD may continue to have a major financial responsibility in certain urban areas, (a) where there is no viable local authority and (b) where people are too poor to pay for it. In some sense, our estimates of resource cost for meeting basic needs in water represent only a fraction of the total. But our cost estimates can be regarded as the critical minimum for meeting basic needs of water in areas where there is no other source except the government program. As in case of other sectors, the gains from slower population growth is substantial, over 45% during the period 1995-2000.

For the housing sector, we have only considered the needs of the urban areas, because the problem is acute there and, without a public program, a large number of urban population is left in subhuman living conditions and some without any shelter. In most rural areas in Kenya, the basic need of shelter is privately met. For the housing sector, we have only considered capital costs (implicitly assuming that recurrent expenditures will be met by rent recovery). The projections in Table 4.25 indicate that cost of the sector will go up dramatically in coming years. The fiscal burden of meeting housing needs in urban areas will be less than what is projected if the government can pass on a part of the capital cost to the occupants. Also, we have projected housing costs under given assumption of urban population growth, if the actual rate exceeds that, the total cost associated with each

scenario of population growth can still be higher than what is projected. Rapid population growth escalates the total cost of this sector; the difference between population Projection I and III exceeds 31 percent by the period 1995-2000.

It is possible to present a composite picture of how much resources are required to meet basic needs under varying scenarios of population growth. These estimates are rough approximations and are based on given definitions (stated before). The total resource requirement of basic needs sectors will exceed KE 581 million (in 1970 prices) during the period 1980-85, if Kenyan fertility rate remains unchanged. We do not have historical figures for basic needs expenditures under the same definitions as our projections, but if we consider the actual total expenditures (recurrent and development) in the sectors for the period, 1970-75, we find that our estimate of resource requirement for the period, 1980-85, is more than double the figures for 1970-75 (see Table 4.25). The estimate of resource requirement for basic needs reaches KE 740 million during the period 1985-90, and goes to staggering KE 1,128 during the period 1995-2000 if fertility rate does not decline. If fertility declines, as envisaged in Projection III, the fiscal savings come about 26% during the last five years of this century. Such savings can go into the improvement of the quality of basic needs coverage, contributing to human resource development or can be invested in physical capital, improving the investment-GDP ratio of the economy.

It is not possible to estimate how much of the Government total (current and development) budget will have to be devoted for meeting basic needs, without modeling the growth of the revenue side. However, by mere extrapolating from the past trend, we find that the relative share of the basic needs expenditures (as defined in our estimation) in the total budget of the Government grows steadily from about approximately 36% (in the period 1975-80) to nearly 37% in the period 1985-1990, under the likely scenario of population growth (Projection II in Table 4.25). If there is no decline in fertility, the share becomes even higher, over 39% by the same year. After 1990, the share starts declining in both the cases of Projection II and III. If, however, population growth does not slow down (that is, Projection I), its share continues to be over 44% by the end of the century. 1/

The following considerations are also important in interpreting and evaluating total resource requirement for meeting basic needs in Kenya. First, it should be kept in mind that some investment costs and recurrent expenditures are to some extent substitutable. In some areas, the division into development and recurrent expenditures must be considered arbitrary. For example, operations and maintenance of water supply schemes are, in part, alternatives to replacement. For health services, manpower training is a development activity that appears as a recurrent expenditure. Obviously, a balance must be maintained between development and recurrent expenditures. This may require a greater reliance on user charges in some cases, and the treatment of maintenance as a capital or development expenditure in others.

Second, attention must be paid to the rate of growth of supply capacity that is feasible. To date, development funds have not been a limiting constraint in the rural water program. Rather, the growth of supply capacity has been a major consideration. To realize the national targets,

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1/ It is unlikely that public revenue from domestic sources will continue to grow accordingly to past trend in the face of unabated population growth. In that case, relative share under Projection I in Table 4.24 may be even higher than 50%.

the rate of investment in water supply schemes will have to be increased by 50% every five years. It may be neither realistic nor beneficial to increase developmental capacity so dramatically; in determining the optimal scale of development, needs after the year 2000 must also be considered.

Third, it must be recognized that other variables will affect the total resource costs. Certainly, the rural/urban population mix will affect the cost of meeting basic needs for safe water and housing. We have noted elsewhere that a large proportion of health care services are used by children under five and by mothers. Thus, the effect of reducing the population growth rate will be to reduce the proportion of the population in this group. In comparing the modal population projection with the highest population projection, the proportion of these heavy users is seen to be 2.5% less. Such a shift results in a need for 4% fewer resources per capita.

Finally, it must be noted that the resource cost estimates do not incorporate the impact of linkages, nor do they recognize the potential feedbacks from meeting basic needs. In the first instance, there is a strong belief, and some evidence, that nutrition, better water supplies, and access to curative medical care have little effect in isolation, although together they may result in a significant improvement in health status. 1/ In the second instance, it must be recognized that the resulting improvements in meetting basic needs will, in turn, increase productivity, thus lowering the net resource cost.

There is evidence to suggest that meeting basic needs may contribute to a lessening of the rate of population growth. One of the reasons for a high fertility rate is the high risk of infant and child mortality. With an infant mortality rate of 119 and a mortality rate of 24 for children less than five years old, almost 25% of live births would die before age five. There is considerable geographical variation in this figure, and in some areas there is probably a more than fifty percent chance that children will die before reaching their fifth birthday--thus there is a constant striving in order to achieve a desired family size. Increasing the confidence of parents that children will survive will reduce the felt need for such high rates of fertility.

The initial effect of meeting basic needs will likely be an increase in the rate of population growth. It is particularly important that the relationship between improvements in basic needs satisfaction and decreases in infant and child mortality be effectively communicated to the community. In fact, the integration of family planning services with health and nutritional services represents an appropriate strategy. Even greater involvement of the community in the development and operation of strategies to deal with

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1/ See Bruce F. Johnston, "Food, Health and Population in Development," Journal of Economic Literature, Vol. XV, No. 3, September 1977; and G. Brown and S. J. Burki, "Sector Policies and Linkages in Meeting Basic Needs," Policy Planning and Program Review Department, Development Policy Staff, IBRD, Basic Needs Paper No. 7, February 9, 1978.

nutritional deficiencies, immunization against infectious diseases, and malaria prophylaxis can increase awareness of the effect on infant and child mortality.

The dilemma, however, is that the high rate of population growth makes it difficult to reach the level of basic needs satisfaction that will induce a decline in fertility. Much of the evidence we have examined shows that even with significant efforts, the targets are as distant as ever, and in some cases even more remote. A conclusion to be drawn is that while serious attempts have been and are being made to satisfy basic human needs, much remains to be done even to attain the currently stated goals. Rapid population growth adds the problem of 'keeping up' with maintaining the current standards of coverage to the already hard to achieve task of 'catching up' with attaining the stated goals of human needs services.

Chapter 5: SOCIOECONOMIC DETERMINANTS OF FERTILITY

1. Introduction

The estimated birth rate in Kenya is 53 per 1,000. On average, women give birth to about 8 live children during their lives (total fertility rate). When one takes into consideration that some women in Kenya never marry, that some married women are unable to have children, and that others become sterile at a relatively early age, it is obvious that, on average, fecund women who do marry experience well over eight live births each. When this is put into perspective (Chapter 2), one gets some indication of how high fertility rates in Kenya really are.

Does this mean that Kenyan fertility rates are as high as they can possibly be? By no means. Socio-cultural factors hold fertility rates below that which is biologically possible, and some Kenyan women may be making conscious decisions about how many children they will have. A more useful question is, what factors help determine differentials in fertility rates in Kenya? 1/

This chapter reviews previous studies of fertility differentials and presents cross-tabulations on "ideal" family size by region, age group, education, land owned, and rural/urban place of residence. The reasons why various social, economic, cultural and biological factors may be related to fertility and the direction these effects may take is touched upon. Two of the most important economic costs and benefits associated with children--formal education and old age support--are looked at from the woman's viewpoint. In-depth areal and household multivariate analyses of the determinants of fertility differentials are given, using data from each of Kenya's 41 districts and from the ILO/University of Nairobi Household Survey, respectively, in order to show which biological, cultural, social, and economic factors have independent, significant effects on fertility rates. Finally, some conclusions and speculations about future trends are offered for consideration.

2. Previous Analyses of Fertility Differentials and Ideal Family Size in Kenya (Tables 5.1-5.4)

Heretofore, most studies have looked only at the effect of one or two selected factors on Kenyan fertility. There are rural and urban "knowledge, attitude, and practice" (KAP) studies made by Dow and Heisel in the mid-1960s, 2/ a long report, edited by Molnos, on the effects of socio-cultural practices in Kenya on fertility, 3/ and a number of shorter studies, based mainly on the 1969 Population Census.

1/ In this chapter, data from the 1969 Population Census and the 1974 ILO/University of Nairobi household survey have been relied upon heavily.

2/ Don Heisel, "Attitudes and Practices of Contraception in Kenya," Demography, Vol. 5, no. 2 (1968), pp. 632-41; Thomas Dow, "Attitudes Toward Family Planning in Nairobi," Demography, Vol. 4, no. 2 (1967), pp. 780-97.

3/ A. Molnos (ed.), Cultural Source Materials for Population Planning in East Africa (Nairobi, 1972).

The Molnos report provides information on some aspects of East African culture that are likely to have an effect on fertility. Thus, one is told that there are several traditional practices that limit fertility rates even in the absence of contraceptives, e.g., extended lactation is frequently combined with a post-partum taboo on sexual relations. 1/ Abstinence is observed on other occasions as well, e.g., "during mourning, after the death of a close relative, and during certain ritual periods." 2/

The KAP surveys conducted by Dow and Heisel during 1966 in the urban and rural areas of Kenya, respectively, are more empirical in their approach than the Molnos papers. They are especially informative about family size preference and the role of children. According to both KAP surveys, the preferred family size is about six children (Table 5.1). A majority of both rural and urban couples sampled in these surveys described the disadvantages and advantages of large families as economic in nature, thus indicating that the economic costs and benefits associated with children are of concern to parents. Interestingly, results from the ILO/University of Nairobi survey also revealed high family size ideals: rural respondents showed an ideal family size of about eight children, while urban respondents preferred about seven children (Table 5.2). 3/ 4/ 5/ When ideal family size is tabulated by level of wife's education (for rural and urban areas) and by amount of land owned (for rural households), it is found that ideal family size is negatively related to wife's education; that ideal family size is lower in urban than in rural areas (although there is no relationship holding wife's educational level constant); and that in rural areas ideal family size is positively related to amount of land owned (Tables 5.3 and 5.4). In short, Kenyans appear to desire many children; and, as we will see below, there is reason to suspect that fertility differentials are not random.

1/ It was believed that "a new child in the mother's body would spoil or poison her milk and thus make the child still suckling ill and virtually kill it." (Molnos, ibid., Vol. 3, p. 12).

2/ Molnos, ibid., Vol. 3, p. 12.

3/ Indications are that Kenyans have very little preference for male children over female children. When asked about the sex composition of their ideal family, in the ILO/University of Nairobi survey, almost half the female respondents expressed no preference, and of those who did give quantifiable answers, only about 10% wanted more sons than daughters. Dow also found very little difference in the desire for sons and daughters (see Table 1).

4/ These averages are based on the assumptions that the maximum ideal family size is 13, and that replies such as "Up to God" are indicative of the highest ideal family size (i.e., 13). A similar assumption has been made by Heisel. If one assumes that replies such as "Up to God" are not quantifiable statements and thus not indicative of a high ideal family size, averages are reduced by about half in rural and urban areas.

5/ The question on ideal family size was: "For a person such as yourself, what would you consider as the ideal number of children to have when you reach age 45."

Table 5.1: RESULTS OF URBAN AND RURAL FAMILY PLANNING SURVEYS IN 1966

Variable	Urban a/	Rural b/
Number of respondents	200	744
Percentage of respondents illiterate (or no education)	49	48
Percentage of respondents literate in vernacular (or graduated Standards 1-4)	32	20
Ideal family size	5.8	6.0
Boys	3.0	NI
Girls	2.8	NI
Desired completed family size (actual number of live births plus additional children desired)		
Boys	3.1	NI
Girls	3.1	NI
Disadvantages of large family		
Economic reasons (%)	87	78
Advantages of large family		
Economic (%)	51	41
Increase size of tribe or nation (%)	4	4
High mortality (%)	4	1
Personal satisfaction (%)	6	6
No advantages (%)	29	41
Family planning knowledge		
No methods known (%)	51	47

NI - not included.

a/ Dow, ibid., based on female respondents.
b/ Heisel, ibid.

Table 5.2: PERCENTAGE DISTRIBUTION OF IDEAL FAMILY SIZE BY RESIDENCE

Ideal Family Size	Urban	Rural	Total
None	0.3	0.5	0.4
1	0.0	0.1	0.1
2	0.7	0.5	0.5
3	3.7	1.6	2.0
4	16.2	8.2	9.5
5	9.8	9.5	9.5
6	29.3	19.5	21.1
7	4.4	6.6	6.3
8	7.4	13.6	12.6
9	0.3	2.0	1.8
10	6.4	11.6	10.8
11	0.0	0.4	0.3
12	5.4	3.7	4.0
13	4.6	3.4	3.8
"Up to God" or "No Preference"	11.5	18.8	17.6
Average ideal family size (excluding non-numerical answers)	6.63	7.23	7.12
Average ideal family size (including non-numerical answers) a/	7.36	8.29	8.14

a/ Replies such as "Up to God" counted as 13.

Source: ILO/University of Nairobi Household Survey, 1974.

Table 5.3: AVERAGE IDEAL FAMILY SIZE BY WIFE'S EDUCATION AND RESIDENCE

Wife's Education	Rural a/	Urban a/	Total a/
None	8.78	7.93	8.71
Illiterate (Standard 1-4)	8.05	8.06	8.05
Literate (Standards 5,6)	7.62	7.28	7.55
Primary graduate (Standard 7 to Form III)	6.77	6.98	6.85
High level (Form IV or above)	5.55 b/	5.81 b/	5.73
Mean	8.28	7.36	8.14

a/ Replies such as "Up to God" counted as 13.

b/ Less than 30 and more than 9 observations.

Source: ILO/University of Nairobi Household Survey.

Table 5.4: AVERAGE IDEAL FAMILY SIZE BY AMOUNT OF QUALITY ADJUSTED ACRES OF LAND OWNED BY RURAL HOUSEHOLDS

Land (quality adjusted acres)	Average Ideal Family Size	
	Exclude "Up to God"	Include "Up to God" d/
None	6.77	7.75
0.1 - 4.9	6.84	7.99
5.0 - 9.9	7.46	8.77
10.0 - 19.9	7.61	8.50
20.0 or above	7.84	8.72

d/ "Up to God" counted as 13.

Source: ILO/University of Nairobi Household Survey, 1974.

3. Current Fertility Levels and First Order Relationships to Socio-economic Level Variables (Tables 5.5-5.7)

The wide regional differences in fertility are striking: the total fertility rate ranges from less than five in some coastal areas, e.g., Lamu and Mombasa, to more than nine in other parts of the country, e.g., Kisii and Kakamega. Such differences are unlikely to result from measurement errors; they strongly suggest that fertility differentials are not random, but may be systematically associated with social, economic, health, and cultural factors. The available data appear to indicate that fertility is lower in urban areas than in rural areas: the total fertility rates in Nairobi and Mombasa, for example, are considerably lower than in nearby rural areas. Finally, fertility is relatively low in urban areas and in many of the districts inhabited largely by pastoral tribes. 1/

The ILO/University of Nairobi survey also indicates sizeable differences in fertility by place of residence, wife's education, and amount of land owned. Fertility is lower in urban than in rural areas (Table 5.5), confirming the observed rural/urban difference in the 1969 Population Census. Moreover, it is negatively related to wife's educational attainment after Standard 5, indicating that there is some form of fertility control among better-educated women (Table 5.6). There is a positive relationship between the amount of land owned and fertility (Table 5.7), indicating that families with large holdings are able to afford more children and/or that they find children more useful economically than do families with little or no land, and/or that the women in these households are healthier and thus more fecund. In all three cases, actual fertility differentials are similar to those observed for ideal family size (Tables 5.2, 5.3, and 5.4) in the previous section, implying that in addition to being related to socio-cultural and biological constraints, fertility is also related to socio-economic conditions, family size preferences, and conscious decisions to limit childbearing. 2/

4. Theoretical Considerations and Expected Relationships

Probably the most widely discussed and tested fertility hypothesis differentials is the so-called socio-economic theory. 3/ In a narrow interpretation of this theory, households are seen as rational entities maximizing their utility or well-being, subject to various constraints: sons and daughters are viewed as commodities, and households attempt to obtain the "optimal" combination of children and other goods. Thus, the number of children depends on constraints faced by the household (basically income and time), its relative

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1/ It is not unlikely that this is the result of the high incidence of venereal disease in these areas. See A.R.H.B. Verhagen, "Gonorrhoea," in Health and Disease in Kenya, edited, by L.C. Vogel et al. (Nairobi, 1974) pp. 375-380; D.H. McKay "Venereal Disease in Masai: A. Field Survey June and July 1950,") East African Medical Journal, Vol. 27. Also, see Chapter 7.

2/ The effect of these as well as other factors on fertility are later investigated in a multi-variate framework in order to isolate the independent effects they have on fertility.

3/ Gary Becker, "An Economic Analysis of Fertility," Demographic and Economic Change in Developed Countries (Princeton, 1960).

Table 5.5: AVERAGE NUMBER OF LIVE BIRTHS REPORTED, BY WIFE'S AGE AND RESIDENCE

Age	Urban	Rural	Total
15-19	0.68	1.01	0.95
20-24	1.86	2.31	2.22
25-29	3.58	3.82	3.79
30-34	4.14	5.05	4.94
35-39	5.15	6.58	6.36
40-44	5.95 a/	6.52	6.46
45-49	4.60 b/	6.74	6.64

a/ Less than 30 and more than 9 observations.

b/ Less than 10 and more than 4 observations.

Source: ILO/University of Nairobi Household Survey, 1974.

Table 5.6: AVERAGE NUMBER OF LIVE BIRTHS, BY WIFE'S AGE AND EDUCATION

Wife's Education	Wife's Age						
	15-19	20-24	25-29	30-34	35-39	40-44	45-49
None	1.03	2.34	3.86	4.84	6.45	6.40	6.42
Illiterate (Standard 1-4)	1.05	2.27	3.93	5.44	6.45	6.33 a/	7.86 a/
Literate (Standards 5,6)	0.90	2.25	3.69	4.98	5.84 a/	7.50 a/	7.83 b/
Primary graduate (Standard 7 to Form III)	0.77	2.04	3.71	4.72 a/	5.58 a/	X	X
High level (Form IV or above)	X	1.35 a/	2.88 b/	4.14 b/	X	X	X

a/ Less than 30 and more than 9 observations.

b/ Less than 10 and more than 4 observations.

X Less than 5 observations.

Source: ILO/University of Nairobi Household Survey, 1974.

Table 5.7: AVERAGE NUMBER OF LIVE BIRTHS FOR RURAL HOUSEHOLDS BY WIFE'S AGE AND NUMBER OF QUALITY ADJUSTED ACRES OF LAND OWNED

Wife's Age	Quality Adjusted Land Owned				
	None	0.1-4.9	5.0-9.9	10.0-19.9	20.0 or more
15-19	0.79	1.03 a/	1.37 a/	1.33 a/	1.27 a/
20-24	2.26	2.49	2.31	2.39	2.25
25-29	3.48	3.81	3.97	4.01	4.02
30-34	3.96	5.65	5.24	5.34	6.21 a/
35-39	5.94	6.49	6.78	6.88	6.69 a/
40-44	5.65	6.08 a/	6.47	6.93	7.46 a/
45-49	6.47 a/	6.65 a/	6.50	6.86 a/	7.00 a/

a/ Less than 30 and more than 9 observations.

Source: ILO/University of Nairobi Household Survey, 1974.

preference for children as compared to other goods, and the costs and benefits of children as compared to other goods. Parents are assumed to behave as if they balanced the costs and benefits of offspring and then produced the number that would maximize the family's well-being. Socio-cultural and biological factors are largely discounted.

In the socio-economic model, factors related to wealth, such as household income and amount of land owned, would be positively related to fertility. One would expect fertility rates to be lower in urban than in rural areas, because children are more costly and contribute less to family income in urban areas than they do in rural areas, and also because the urban value system is less traditional than the rural, which should mean less children. Similarly, the more opportunities there are for children to make an economic contribution from an early age, and the greater the parents' reliance on children for old-age support, the higher fertility should be. Conversely, the higher the cost of raising children, e.g., schooling, the lower fertility should be. 1/

According to the same model, rural-rural migrants should have a lower fertility rate than rural non-migrants, partly because of the disruption in family life, and partly because migrants are a self-selected group and tend to be relatively untraditional and achievement-oriented. Although for the same reasons, rural-urban migrants may have lower fertility rates than rural non-migrants, they often are observed to have higher fertility rates than urban non-migrants, because rural-urban migrants have relatively traditional values, which change slowly over time. 2/ Participation of the wife in the labor force should reduce the number of births, because it is supposedly difficult for wives to combine work and child-care; the more easily their employment can be combined with child-care--i.e., if it can be performed in and around the home, or there is inexpensive substitute care available--the less it should affect fertility. 3/

Lastly, the wife's educational level should be negatively related to fertility, and the relationship between husband's education and fertility is indeterminate a priori. 4/ Here, even more than with the factors discussed above, there is a multiplicity of effects. Better-educated women have relatively good earning opportunities, thus raising the opportunity cost of bearing and raising children; educated men and women are more likely to be willing to use modern contraceptives, and to use them effectively; they are

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1/ Eva Mueller, "Economic Motives for Family Limitation," Population Studies, Vol. 26 (November 1972).

2/ For a review of previous studies on the relationship between migrant status and fertility, see Alvan Zarate and Alicia Unger de Zarate, "On the Reconciliation of Migrant--Nonmigrant Fertility Differentials in Urban Areas," International Migration Review, Vol. 9, no. 2, Summer 1975.

3/ For a review of previous studies on the relationship between female labor force participation and fertility, see Guy Standing, Labor Force Participation and Development (Geneva, 1978).

3/ For a discussion of the complexities of the influence education may have on fertility, see Susan Cochrane, "Fertility and Education--What Do We Really Know," World Bank Staff Occasional Papers, No. 26, 1979.

likely to be relatively untraditional in terms of their values, and thus to want fewer children. All these factors should bring about a negative relationship between education and fertility. 1/ For men, the negative effect of the latter two factors (i.e., contraceptive use and nontraditional values), however, should be at least partly counterbalanced by the positive association between income-earning opportunities and education, thus leaving the relationship between husband's education and fertility indeterminate a priori.

It is obvious that the socio-economic theory of fertility as sketched above leaves out several potentially important factors. In addition to household characteristics and the demand or desire for children, on which the above discussion has concentrated, it is also necessary to consider the effect on fertility of factors related to fecundity, exposure to pregnancy, and the supply of children (e.g., sterility, separation of spouse, and polygamy), 2/ as well as cultural and community or group-level norms (e.g., tribe, extended family), 3/ which greatly constrain behavior. As pointed out earlier, there are significant numbers of women in Kenya who are not able to have as many children as they want, for example, because they become sterile. The fertility of these women is not determined by their desire for children and the maximization of the family well-being; rather, it is determined by involuntary (cultural or biological) restrictions. On the other hand, there are also many women who have more children than they want because they are unable to control their fertility very efficiently. Thus, one would expect contraceptive use to reduce fertility by reducing the number of unwanted births; the length of lactation should be negatively related to fertility, because lactation tends to delay the resumption of ovulation; 4/ polygamy and separation of spouses should be negatively related to fertility, because both should reduce the frequency of coitus; and mortality should be positively related to fertility, because each child that dies must be "replaced" by another if the family is to attain its desired size. 5/ Health levels should be positively related to fertility, because improved health levels increase fecundity levels and/or reduce the rate of spontaneous abortion; whereas for obvious reasons, rates of sterility should be negatively related to fertility. Lastly, rates of female celibacy, widowhood, and female age at marriage should be negatively related to the overall fertility rate, because these factors help determine the proportion of women who are in marital unions.

1/ Educated women are likely to be relatively healthy and thus relatively fecund, and this effect may counterbalance the negative effects discussed in the text.

2/ Richard Easterlin, "An Economic Framework for Fertility Analysis," Studies in Family Planning, Vol. 6, no. 5 (March 1975).

3/ Richard Anker, "The Effect of Group Level Variables on Fertility in a Rural Indian-Sample," Journal of Development Studies, Vol. 14, no. 1 (October 1977), and Ronald Freedman, Community-Level Data in Fertility Surveys, World Fertility Survey Occasional Paper, No. 8.

4/ Carlo A. Corsini, "Is the Fertility Reducing Effect of Lactation Really Substantial?", Seminar on Natural Fertility, INED, Paris 21-24 March 1977; J. Van Ginneken, "Prolonged Breastfeeding as a Birth Spacing Method," Studies in Family Planning, Vol 5, no. 6 (June 1974).

5/ T. Paul Schultz, "Interrelationships between Mortality and Fertility," in Population and Development, ed. by Ronald Ridker (Baltimore, 1976).

Up to this point, the discussion has been concerned largely with characteristics unique to each couple, such as education, residence, and work experience. Another set of factors, however, can be the same for whole groups of couples: tribe, size of extended family, average mortality level in the community, and average school enrollment levels in the community. The latter two factors should have negative effects on fertility for the reasons already given; but here the argument is extended to expecting the community norm to have an independent effect on fertility over and above the effect that can be attributed to the couple's own experience. The size of the extended family is expected to have a positive effect on fertility, since the wider the kinship network, the more people there are to share the possible burdens associated with raising children.

A broadly conceived socio-economic theory of fertility (which includes factors related to fecundity, the desire for children, and community considerations), has been sketched here--along with the expectations implied in this theory. It is necessary now to appraise its importance for Kenya, since it has been suggested that the theory is based on Western concepts and is, at least in part, irrelevant for Africa. 1/

As the argument goes, children are not costly in an economic sense, in traditional African societies, and may even be an economic benefit. In addition, the cost of raising children is shared by the tribe and the extended family. Taken together, these factors eliminate the need for parents to consciously limit their fertility. Thus, it is rational for parents to want as many children as possible.

There is some truth to this argument, which questions a strict demand-oriented interpretation of the socio-economic theory. Parents are not mini-computers, at all times consciously adding up the cost and benefits of children; moreover, fecundity and supply constraints may have important effects on fertility. These considerations do not, however, invalidate the possibility that couples may decide not to have the "last" child, nor do they rule out a broadly based research approach that investigates the observed relationships of socio-economic, biological, and cultural factors to fertility and which hypothesizes reasons for these relationships.

It must be remembered that there has been significant social change in Kenya, and traditional practices have been affected. Land is no longer free to those who are able to cultivate it; many people now live in urban areas, where it is difficult for children to make an economic contribution to the family from an early age, and where food and housing are quite costly; children now attend school, and parents must pay school fees as well as buy clothes and books for them; and there are rising aspirations for "modern" goods and less traditional life styles. In addition, in recent years there has been a decrease in the degree to which responsibilities are shared with

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1/ J.C. Caldwell: "The Economic Rationality of High Fertility: An Investigation Illustrated With Nigerian Survey Data", Population Studies, Vol. 31, no. 1, March 1977, p. 9.

non-relatives from the village and the tribe. 1/ In short, the number of children parents want today may be related to socio-economic and conscious decisions, whether or not this was the case in the traditional society.

5. Expectations for Children--Help in Old Age and Level of Education (Tables 5.8-5.10)

In less-developed countries it is easy to rationalize fertility on the grounds that children are economic benefits. In subsistence economies children are prepared for their adult roles from an early age through formal and informal socialization processes and "on-the-job" training. There are little or no economic costs involved in this process; on the contrary, children make a significant economic contribution to the family from a fairly early age. In short, children may represent a net economic benefit.

With the introduction of more profitable crops such as coffee and tea and modern inputs such as grade cattle, hybrid seeds and fertilizers, agricultural expertise becomes more important than labor per se. 2/ At the same time, more high-paying jobs are likely to open up in the modern sector of the economy. Formal education is needed if these changes in income carrying opportunities are to be exploited. Kenyan parents are well aware of this situation, which undoubtedly helps explain the extremely high educational aspirations they have for their children. According to the ILO/University of Nairobi Household Survey, 3/ approximately two-thirds of rural and urban women expect to send both sons and daughters to university or college. Only about 2% of female respondents did not expect to send both sons and daughters to secondary school. There is reason to believe that the reported answers are meaningful, even though the number of places available in university and the upper levels of secondary school in Kenya are restricted, and it is impossible, in the aggregate, for these expectations to be satisfied. First, enrollment rates in Kenya have grown rapidly since Independence, and educational expenditures make up almost a third of the Government's recurrent

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1/ For example, it was found that remittances and transfers between parents, children, and siblings were much more important than those between non-relatives and more distant relatives. J.C. Knowles and R. Anker, "An Analysis of Income Transfers in a Developing Country: The Case of Kenya," Population and Employment Working Paper No. 59 (Geneva, ILO, November 1977).

2/ The probability of Kenyan farmers adopting new seed varieties and using fertilizers, both of which significantly increase agricultural output, is significantly (and positively) related to the education level of the head of household. J.C. Knowles and R. Anker, "Agricultural Productivity in Kenyan Farms," (forthcoming).

3/ The question, which was asked separately for sons and daughters, was as follows: "What is the highest level of schooling you expect your sons (daughters) to complete?"

Table 5.8: PERCENTAGE DISTRIBUTION OF STATED ADVANTAGES OF EDUCATION FOR CHILDREN

Response	Urban	Rural	Total
None	2.2	2.4	2.3
Make more money	5.7	1.0	5.0
Get better job	25.2	18.1	24.1
Can leave farm	0.1	0.3	0.1
Help parents	16.8	14.3	16.4
Make marriage easier	0.1	0.0	0.1
Make better life	35.6	48.8	37.6
Other	14.2	15.0	14.4
Total	99.9	99.9	100.0

Source: ILO/University of Nairobi Household Survey, 1974.

expenditures. 1/ Second, it appears that a sizeable majority of the women surveyed perceive a high level of education as a net economic benefit. When asked about possible disadvantages of education, the overwhelming majority (about 85%) saw none. 2/ Finally, differentials in educational expectations seem reasonable a priori in that the better educated the woman, the higher are the educational expectations she has for her children (unreported tabulations).

These observations indicate that Kenyan parents consider the economic benefits to be gained from educating their children considerably greater than the admittedly high economic costs involved. Thus, while in the aggregate many children will not be as highly educated as their mothers "expect," the strong desire of parents to educate their chidren implies that the pressure to expand educational facilities in Kenya will continue in the future; and that the desire to educate children (which is becoming a social norm) may not have a negative effect on fertility.

The conclusion that educating one's children may have no major effect on fertility is much less tenable in the long run. As the modern sector job market deteriorates, the probability of a child obtaining a high-paying post decreases; as educational levels grow, it will take more and more education to obtain the same job, and children will become more alienated from rural work and life styles. In short, the economic returns to education (except for a dwindling minority of those lucky enough to obtain a modern sector job) will decrease markedly over time. This in turn should cause the net economic cost of education to become larger and larger, thus weakening the rationale for wanting many children.

Because few parents in Kenya have access to a pension scheme that will support them in old age, family members and especially children, are important in this regard. But with the significant economic and social changes in Kenya, are parents still confident that their children will provide this support; or do they feel uneasy on this score? In looking at this issue, results from two questions from the ILO/University of Nairobi Household Survey were used. Female respondents were asked the following questions: "What means of old age support do you think you and your husband might have when you get old--income from a farm, business or other property; savings, pension, help from children, or what?" (if children not mentioned): "How about children? Do you expect to rely on their financial help a good deal, a little or not at all?" The great majority of women responding (89%) expect some old age

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1/ See Chapter 4.

2/ When women were asked about the advantage of education for their children, the majority of answers were very general. About 40% reported to "make a better life," and approximately another 15% gave answers difficult to classify (Table 5.8).

support from their children, and almost 60% find such support important. 1/ Nonetheless, there is a good deal of uncertainty, with almost a third of the respondents either believing that their children will help only a little, or being unsure as to how much their children will help.

When reported support in old age by children is tabulated by the wife's residence and education (Table 5.9), and by amount of land owned by rural households (Table 5.10), some interesting relationships become apparent. First, significantly more urban women (20%) than rural women (9%) expect no old age support from their children (Table 5.9). Second, there is a strong negative relationship between education and expecting old age support, and this relationship persists in both rural and urban areas (Table 5.9). While just under 70% of illiterate women are counting on old age support from their children, less than 20% of Form IV graduate women are counting on this support. Third, there is no relationship between expected old age support and amount of land owned by a rural household (Table 5.10); this is surprising, because land should be considered a major source of support in old age. 2/

In conclusion, while most Kenyan mothers still expect or hope to rely on their children for support later in life, some women no longer do so. Indications are that the extent of this uncertainty will grow in the future, since urban and better educated wives are less likely to count on their children for old age support than are rural and less educated women.

6. Determinants of Fertility Rates, Based on 1969 Population Census Data (Table 5.11)

We have discussed hypotheses concerning the relationships one would expect between fertility and various social, economic, cultural, and biological factors. Do these hypothetical relationships correspond to reality? If so, how strong are the effects and what do they imply for future trends in Kenya's fertility rates? Here we examine some of these relationships, using data on the 41 administrative districts in Kenya. Government sources are relied on heavily, especially the 1969 Population Census and fertility estimates (see Table 5.1). Of particular interest are the estimated effects of variables, which are duplicated in the survey analysis of fertility differentials, using survey data on married women (e.g., adult educational levels, and urban or rural places of residence) and variables whose effects are difficult or impossible to examine in the survey analysis which is limited to married women (e.g., celibacy, widowhood, sterility). A direct comparison is possible between the two analyses in the case of the first set of variables; while in the case of the second set of variables, the district-level analysis serves as a complement to the survey analysis.

1/ Answers to the questions on expected old age support were divided into three categories. Similar classifications were found useful in previous studies of fertility differentials in Taiwan (Eva Mueller; "Economic Motivation for Family Limitation," Population Studies, Vol. 26, no. 3, November 1972), and India (R. Anker; "Socio-economic Determinants of Reproductive Behavior in Households of Rural Gujarat, India," University of Michigan, unpublished Ph.D. dissertation).

2/ It may be that because land usually passes through the male line, women do not view it as a source of support for themselves. Discussion of this and other issues related to the role and status of women are presented in detail in Chapter 6.

Table 5.9: PERCENTAGE DISTRIBUTION OF WIFE'S EXPECTATIONS FOR HER CHILDREN'S HELP IN OLD AGE, BY WIFE'S EDUCATION AND RESIDENCE

Wife's Education	Rural			Urban			Total		
	Important	Uncertain	Not Important	Important	Uncertain	Not Important	Important	Uncertain	Not Important
None	63.0	28.0	9.0	70.1	13.8	16.1	63.6	26.7	9.7
Illiterate (Standard 1-4)	57.2	34.6	8.2	66.7	11.1	22.2	58.4	31.5	10.1
Literate (Standard 5, 6)	56.1	35.5	8.4	53.1	36.7	10.2	55.5	35.7	8.8
Primary graduate (Standard 7 to Form III)	53.7	30.6	15.7	51.9	28.4	19.7	52.9	29.6	17.5
High Level (Form IV or above) a/	25.0	66.7	8.3	15.4	42.3	42.3	18.4	50.0	31.6
Mean	60.1	30.6	9.3	56.1	24.0	19.9	59.5	29.5	11.0

a/ Less than 30 and more than 9 observations for rural and urban.

Source: ILO/University of Nairobi Household Survey.

Table 5.10: PERCENTAGE DISTRIBUTION FOR HOUSEHOLDS OF RURAL WIFE'S EXPECTATIONS FOR HER CHILDREN'S HELP IN OLD AGE, BY AMOUNT OF QUALITY ADJUSTED ACRES OF LAND OWNED

Land Owned (Quality Adjusted Acres)	Expectations for Old Age Support from Children		
	Important	Uncertain	Not Important
None	62.8	28.1	9.1
Less than 5	54.5	36.1	9.4
5 - 9.9	60.3	30.7	9.0
10 - 19.9	64.6	27.0	8.4
20 or more	58.2	32.8	9.0

Source: ILO/University of Nairobi Household Survey, 1974.

The results of our analysis must be interpreted cautiously. Some variables are highly collinear (e.g., adult male and adult female literacy rates), making it difficult to differentiate between separate effects; there are undoubtedly substantial measurement errors in the fertility variable as well as some of the other variables.

Variable names and definitions are given below. Empirical results are shown in Table 5.11. Coefficients in this table indicate the effect a one-unit change in the independent (i.e., explanatory) variable has on the total fertility rate, everything else held equal. For example, according to equation 1, an increase of one percentage point in the adult male literacy rate "causes" the total fertility rate to rise by .1 births, controlling for the primary school enrollment rate, the number of livestock per capita, the adult female literacy rate, the urbanization rate and the rate of life expectancy at birth. The t value of the coefficient (coefficient divided by standard error of the coefficient), which is also shown in brackets in Table 5.11, helps provide an estimate of the confidence one can place in the estimated coefficient. 1/

A priori expectations are that the number of livestock units per capita (LSTOCK) and the amount of quality adjusted land owned (CLIMLAND) will be positively related to the total fertility rate. The primary school enrollment rate (ER), the adult female literacy rate (LITF), the degree of urbanization (PURBAN), the extensiveness of primary sterility (STERILE), the mean singular female age of marriage (MARF), the widowhood rate (WIDOWS), and the extensiveness of family planning (FPACTIVE) are all expected to be negatively related to fertility. The relationship between the adult male literacy rate (LITM) and fertility is indeterminant a priori. Lastly, life expectancy at birth (LE) is expected to be nonmonotonically related to fertility--positively related at lower levels of LE, as improving health levels greatly increase fecundity and reduce miscarriage rates, and negatively related at higher levels of LE, as the need for fewer births due to higher survival rates dominates the positive effect associated with increased fecundity. 2/

1/ The larger the t value, the more precise the estimate of the coefficient. When the t value exceeds approximately 1.70, 2.04, and 2.75, there is, respectively, a 90%, 95%, and 99% probability that the observed relationship is different from zero (i.e., that there is such a relationship and that it is not a statistical artifact).

2/ The hypothesized nonlinear relationship between life expectancy at birth and fertility implies that the linear LE term should be positive and the quadratic LE term should be negative. Such a relationship has been found, using international data in a recent paper (Richard Anker, "An Analysis of Fertility Differentials in Developing Countries," Review of Economics and Statistics, Vol. 15, no. 4 (Feb 1978)).

LITF	percent of adult females who are literate (i.e., completed five or more standards of school)
LITM	percent of adult males who are literate (i.e., completed five or more standards of school)
ER	primary school enrollment rate
LSTOCK	number of livestock per capita
CLIMLAND	hectares of quality adjusted agricultural land per person
PURBAN	percent of population living in an urban area (i.e., towns with 2,000 or more people)
TFR	total fertility rate in births
LE	life expectancy at birth in years
LE2	square of life expectancy at birth
MARF	mean singular female age at marriage in years
CEL	percent of women 40-49 years who never married
STERILE	percent of married women 40-49 years without any births
WIDOWS	percent of women 40-49 who are widows
FPACTIVE	percent of women 15-44 years who used a government family planning clinic in 1971

Equation 1 includes a core list of socio-economic variables. Equation 2 adds a measure of the extent to which there is sterility in each district (STERILE), while Equation 3 adds CLIMLAND--a crude measure of rural income potential--in an attempt to statistically control for rural income levels. Equation 4 adds three demographic variables (MARF, CELIBACY, and WIDOWS) which are not included in the microanalysis reported in the next section, as well as a measure of family planning acceptance. Lastly, to observe the robustness of the results with respect to the weighting procedure employed, 1/ Equation 4 is rerun, using unweighted least squares.

1/ Since districts range in size from 22,000 people to 785,000 people, and the demographic data from the 1969 Population Census are based on a representative sample, larger districts should be given greater weight. The empirical analysis discussed in this section weights the district values by the square root of the district's population in the first four equations shown in Table 5.12.

The empirical results are generally consistent with a priori expectations in terms of the signs of the estimated coefficients, although there are some exceptions and some of the results are sensitive to the weighting procedure used in equations 1-4. The results in which one can place the most confidence, because they tend to be statistically significant and are fairly robust, are the following: urbanization rates are negatively related to fertility; adult literacy rates are positively related to fertility; and, poor health (as reflected by STERILE) is negatively related to fertility.

There is evidence in the data that there is a positive relationship between the level of educational attainment and fertility in Kenya, and thus between income levels and fertility if one accepts the proposition that income levels are highly related to education levels, as seems reasonable for Kenya. Thus, the higher the adult male literacy rate, the higher the fertility rate is observed to be, ceteris paribus. 1/ 2/ The significant negative relationship between urbanization rates and fertility shown in Table 5.11 indicates that the negative relationship between urbanization rate and fertility observed earlier is not the result of related factors such as the higher literacy rates and higher health levels in urban areas. 3/

The last significant relationship to be discussed is that between sterility and fertility. Here the results indicate that a fairly large group of Kenyan women have fecundity problems, and that this creates an

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1/ The adult male and adult female literacy rates are very highly correlated, just as one would expect (correlation coefficient is .91). Interestingly, the estimated coefficient of LITF is sensitive to whether or not LITM is specified, (positive and significant when LITM is not specified), while the estimated coefficient of LITM is not sensitive to whether or not LITF is specified.

Another indication that adult literacy rates are positively related to fertility is that when the average adult educational level is used instead of LITM and LITF, its coefficient is always positive and significant at the .01 level.

2/ Since the adult female literacy rate has virtually no effect on fertility, ceteris paribus, the results imply that the negative effect on fertility associated with changes in tastes and increases in the opportunity cost of income foregone is much weaker in Kenya than the positive effect of higher educational levels associated with higher income levels and improved health levels.

3/ Part of the large rural-urban fertility differential is undoubtedly explained by the concentration of non-African peoples (about 15% of the urban population) in urban areas. Unfortunately it is not practical to specify a measure of the percent of the population which is non-African, because this variable is almost perfectly correlated with the rate of urbanization (i.e., non-Africans live almost exclusively in urban areas). In any case, this factor could only account for a portion of PURBAN's coefficient, since non-Africans form only a small portion of the urban population.

Table 5.11: ORDINARY LEAST SQUARES RESULTS FOR DISTRICT LEVEL ANALYSIS OF THE TOTAL FERTILITY RATE FOR 1969
(t values in brackets)

Variables	Weighted				Unweighted
	(1)	(2)	(3)	(4)	(5)
Constant	2.9179	1.1763	1.1765	-2.0526	1.5438
ER	-.0186**	-.0155*	-.0164*	-.0215**	-.0133
	(2.01)	(1.77)	(1.88)	(2.15)	(1.00)
LSTOCK	-.0033	.0095	.0450	.0077	.0166
	(0.03)	(0.11)	(0.49)	(0.08)	(0.19)
LITM	.1005***	.0748**	.0747**	.0910**	.0575
	(3.42)	(2.52)	(2.54)	(2.73)	(1.63)
LITF	.0026	.0069	.0110	-.0091	.0072
	(0.05)	(0.17)	(0.27)	(0.17)	(0.12)
PURBAN	-.0493***	-.0377***	-.0393***	-.0491***	-.0475***
	(5.68)	(3.97)	(4.13)	(3.91)	(3.59)
LE	.3973*	.2735	.2711	.4012*	.2533
	(2.03)	(1.43)	(1.43)	(1.85)	(1.05)
LE2	-.004277**	-.003012	-002957	-.004395*	-.002916
	(2.10)	(1.52)	(1.50)	(1.91)	(1.16)
STERILE	X	-.0794**	-.0746**	-.0758**	-.0592*
		(2.35)	(2.21)	(2.15)	(1.92)
CLIMLAND	X	X	-.0489	-.0506	-.0442
			(1.23)	(1.05)	(1.02)
MARF	X	X	X	-.0130	.0143
				(0.07)	(0.08)
CEL	X	X	X	.1162	.0554
				(0.86)	(0.45)
WIDOWS	X	X	X	.0232	-.0020
				(0.53)	(0.04)
FPACTIVE	X	X	X	.0509	.0588
				(0.84)	(0.86)
R2	.69	.74	.75	.77	.63
$\bar{R}2$	.63	.67	.68	.65	.48
F	10.54***	11.17***	10.26***	6.81***	4.04***
N	41	41	41	41	41
LE turning point	46.4	45.4	45.8	45.6	43.4
LE joint F	2.12	1.40	1.27	1.71	1.15

a/ Weighted by square root of population in each district.
*** Significant at the 1% level.
** Significant at the 5% level.
* Significant at the 10% level.

important constraint on fertility levels, which is apparent in all four equations in which STERILE is included in Table 5.11. In Equation 1, when the extensiveness of primary sterility in a district is not specified, early increases in life expectancy at birth (to about 46 years--approximately the average level for Kenya in the 1960s) are associated with rising levels of fertility. When one takes into consideration the degree to which there is primary sterility (Equations 2-5), LE has an insignificant effect. 1/ 2/

Results for the other variables specified--family planning acceptance rates (FPACTIVE), livestock per capita (LSTOCK), income levels in rural areas (CLIMLAND), primary school enrollment rates (ER), female age at marriage (MARF), female celibacy rates (CEL), and widowhood rates (WIDOWS)--are not uniformly significant, implying that these factors do not have a significant independent effect on fertility rates or that they are poorly measured.

Results for MARF, CEL, and WIDOWS show that factors related to whether or not women are in a marital union do not have a significant effect on fertility differentials. Part of the reason for this somewhat surprising result is that celibacy and widowhood rates are fairly low, and there is not much regional variation; thus, it is difficult for these factors to have much effect on differences in fertility rates. The insignificant effect of female age at marriage is more difficult to explain, since one would expect a shortening of the average marriage duration to reduce fertility. One possible explanation is that MARF is not very meaningful, in view of the premarital fertility rates, especially in urban areas. According to the 1969 Census data, MARF is almost the same in rural and urban areas; and no allowance is made for the large numbers of single women giving birth and

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1/ Interestingly, specification of the STERILE variable causes major changes in the coefficients of PURBAN, LITM, LE and LE2 (Equation 1 compared to Equation 2), from -.0493 to -.0377, .1005 to .0748, .3973 to .2735 and -.004277 to -.003012 respectively; their t values also decrease from 5.68 to 3.97, 3.42 to 2.52, 2.03 to 1.43 and 2.10 to 1.52 respectively. Thus, as observed in Equation 1, part of the effect of LITM, PURBAN, LE and LE2 is due to their proxying for supply constraints on fertility as embodied in the STERILE variable.

2/ There is a problem in the measurement of sterility based on 1969 Population Census data, since information on parity is missing for some women. The present analysis assumes that these "non-responses" indicate that these women had zero parity. While this assumption is not completely correct, it is believed to be more appropriate than assuming that these women had average parity. To test whether the analysis reported in Table 5.11 is sensitive to the assumption regarding women who did not have parity reported, sub-fecundity was redefined as the percent of ever-married women 40-49 years who were reported to be of parity zero or parity one. When this alternative definition of subfecundity is used, results are similar to those in Table 5.11.

practicing family planning. 1/ A possible statistical explanation is that the factors that determine MARF are already included in the analysis. In any case, the district level empirical analysis indicates that the analysis of fertility differentials reported in the next section is not necessarily biased simply because it does not consider the effects on fertility of CEL, MARF, and WIDOWS.

The analysis at the district level does provide a number of interesting results. Rates of urbanization and primary sterility have significant negative relationships to fertility, while educational levels of adult males have a significant positive relationship. Results for life expectancy at birth (nonmonotonic--positive at first, then negative at higher levels), and primary school enrollment rates (negative) are inconclusive. Other variables not found to be significantly related to fertility are: livestock per capita (proxy for child labor opportunities); educational level of adult females; climate adjusted land per capita (a proxy for rural income potential); female age at marriage; female celibacy rate; widowhood rate; and rate of family planning acceptance. The areal results seem to indicate that Kenyan fertility rates are unlikely to fall in the near future regardless of the pace of socio-economic development.

7. Determinants of Fertility Based on Survey Data (Table 5.12)

A multivariate analysis of fertility differentials, utilizing household data from the 1974 ILO/University of Nairobi Household Survey has a number of important advantages over the district level analysis reported in the last section. First, variables are not so highly related in the household data as in the areal data. Second, in the household survey, information is generally specific to the household itself. This has two major advantages: it reduces the likelihood of finding spurious relationships, and it reduces measurement error (e.g., fertility and land owned). Third, the household data are much more detailed. This allows observation of the effect of factors such as separation of husband and wife, polygamy, size of extended family, and lactation practices, and whether factors related to fertility are similar or different in important population subgroups (e.g., rural-urban, age cohort, tribe).

In the empirical analysis reported below, two basic sets of variables are used. One set (Equation 1) includes a fairly small "core set" of independent variables (wife's age, wife's education, husband's education, amount of land owned, and place of residence). This "core set" of variables is roughly equivalent to a "reduced form" equation, in that these variables should be the "basic" factors explaining fertility. The additional variables (mortality, children's education, household income, migrant status, wife's labor force participation, livestock owned, size of extended family, family planning, polygamy, separation of spouses, lactation practices, and wife's health), which are also included in the "full specification" (Equation 2), can be thought of more in terms of "intermediate" variables--i.e., variables partially determined by the core variables, and through which the core variables operate.

1/ According to family planning clinic data, approximately 20% of clinic visitors are single women: this is quite a large figure (Ministry of Health, ibid., p. 6).

A priori expectations are that household income per adult (INCOME), husband's educational attainment (EDH1, EDH2, EDH3, EDH4), 1/ 2/, amount of land owned (LAND), value of livestock owned (FARMCAP), size of extended family (SIBLINGS), mortality rate (AVEDIE3, DEATH), breastfeeding for less than average time (LACTLOES, LACTLO) and good health of the wife (GOODHLTH) will be positively related to fertility. Wife's educational attainment (EDW1, EDW2, EDW3, EDW4), urban residence (URBAN), wife's working, especially away from home (LFAWAY, LFHOME), education for the children (EDEXPECT, AVEER), family planning acceptance (FP), immigrant status (MIGRANT), polygamy (OTHERWIF), husband living away (HUSAWAY), poor health of the wife (POORHLTH), and breastfeeding for longer than average time (LACTHI, LACTHIES) are expected to be negatively related to fertility. Lastly, age of wife and fertility are expected to be nonmonotonically related; age-specific marital fertility rates are expected to decrease with age. 3/

Abbreviations and definitions for variables used in the micro analysis are provided below.

NBIRTH	number of live births
AGE	age of women in years
AGESQ	age of women squared
EDW1	binary variable indicating woman has completed some school, but is probably not functionally literate (1 if completed Standards 1-4, 0 if otherwise)
EDW2	binary variable indicating woman is probably functionally literate, but not very well educated (1 if completed Standards 5-7 but not primary school graduate, 0 if otherwise)
EDW3	binary variable indicating woman is relatively well educated (1 if completed at least primary school but less than Form IV, 0 if otherwise)

1/ Although theoretically the relationship between husband's educational attainment and fertility is indeterminant a priori, there was found to be a strong positive relationship in the areal analysis in the last section.

2/ To approximate the nonlinear relationship between wife's age and fertility, linear and quadratic terms are used. Expectations are that the linear term will be positive and the quadratic term negative.

3/ Education of the wife and husband are measured by a series of binary variables, so that the possible existence of nonlinear relationships between education and fertility can be observed, since the attainment of different educational levels (literacy, secondary, "0" levels) should have different impacts on fertility.

EDW4	binary variable indicating woman is very well educated (if completed at least Form IV, or otherwise)
EDH1	binary variable indicating husband has completed some school, but is probably not functionally literate (1 if completed Standards 1-4, 0 otherwise)
EDH2	binary variable indicating husband is probably functionally literate, but is not very well educated (1 if completed Standards 5-7 but not primary school graduate, 0 if otherwise)
EDH3	binary variable indicating husband is relatively well educated (1 if completed at least primary school but less than Form IV, 0 if otherwise)
EDH4	binary variable indicating husband is very well educated (1 if completed at least Form IV, 0 if otherwise)
INCOME	household income per adult in thousands of Kenyan shillings
LAND	number of quality adjusted acres of land owned by rural households
URBAN	binary variable indicating urban residence of woman (1 if urban, 0 if rural)
DEATH	inverse of child survival rate--number of births divided by number of surviving children
LFAWAY	binary variable indicating woman has worked away from house since being married (1 if worked away from home, 0 if not)
LFHOME	binary variable indicating woman has only worked at or near home since being married (1 if worked near home, 0 if not)
FP	binary variable indicating woman reported visiting a government family planning clinic in 1973 or 1974 (1 if yes, 0 if no)
EDEXPECT	average number of years of schooling a mother expects her children to attain
AVEER	average enrollment rate for children 15-19 years in sub-location where woman resides

MIGRANT	binary variable indicating migrant status of woman (1 if migrant, 0 if not)
FARMCAP	value of livestock owned, in thousands of Kenyan shillings
SIBLINGS	number of brothers and sisters of husband and wife
AVEDIE3	average probability of children dying before reaching age three years, in sub-location where woman resides
OTHERWIF	binary variable indicating woman has been in polygamous marriage (1 if polygamous, 0 if monogamous)
HUSAWAY	binary variable indicating husband living away from wife (1 if away, 0 if not)
GOODHLTH	binary variable indicating woman characterized her health as "good" or "excellent" during previous 12 months (1 if yes, 0 if no)
POORHLTH	binary variable indicating woman characterized her health as "poor" or "terrible" during previous 12 months (1 if yes, 0 if no)
LACTLOES	binary variable indicating woman normally breastfeeds for short period of time (1 if less than 6 months, 0 if otherwise)
LACTLO	binary variable indicating woman normally breastfeeds less than average, but not for a short period (1 if 6 to 11 months, 0 if otherwise)
LACTHI	binary variable indicating woman normally breastfeeds more than average but not for a long period (1 if 13 to 18 months, 0 if otherwise)
LACTHIES	binary variable indicating woman normally breastfeeds for long period of time (1 if more than 18 months, 0 if otherwise)

Table 5.12 presents the results for the various population subgroups analyzed. Coefficients in this table indicate the effect a one unit change in the explanatory variable has on the average number of live births, ceteris paribus. In the case of a binary (i.e., dummy) variable, which takes on the value "zero" if one does not have the characteristic in question and the value "one" if one does, the coefficient indicates the effect of being in that category compared to being in the excluded class (i.e., those with zero for the entire series of dummy variables). Thus, according to Equation 1 in Table 5.12, women who have completed Form IV (EDW4) have about 1.2

Table 5.12: ORDINARY LEAST SQUARES RESULTS FOR HOUSEHOLD LEVEL ANALYSIS OF THE NUMBER OF LIVE BIRTHS PER WOMAN (t values in brackets)

Variables	(1)	(2)
AGE	.6481 (16.19)***	.6651 (12.83)***
AGESQ	-.006855 (10.79)***	-.007230 (8.99)***
EDW1	.0514 (0.40)	.0018 (0.00)
EDW2	-.2092 (1.44)	-.2509 (1.49)
EDW3	-.4461 (2.51)**	-.4861 (2.34)**
EDW4	-1.2081 (3.28)***	-1.1209 (2.59)**
EDH1	.3916 (3.19)**	.0448 (0.22)
EDH2	.3191 (2.31)**	-.1406 (0.87)
EDH3	.5375 (3.56)***	.0966 (0.55)
EDH4	.7528 (3.03)***	.2797 (0.94)
LAND	.0122 (4.67)***	.0144 (4.68)***
URBAN	-.4296 (3.21)***	-.2521 (1.28)
INCOME		-.0185 (0.94)
DEATH	X	.5032 (2.75)***
LFAWAY	X	-.2586 (1.06)
LFHOME	X	.1548 (1.16)
AVEER	X	.0145 (4.04)***
FARMCAP	X	-.0000 (0.49)
EDEXPECT	X	.0922 (3.32)***
MIGRANT	X	.0574 (0.37)
AVEDIE3	X	.5056 (0.39)
SIBLINGS	X	.0168 (1.56)
FP	X	.2208 (1.36)
OTHERWIF	X	-.5379 (3.89)***
HUSAWAY	X	-.3627 (1.82)*
LACTLOES	X	-.7574 (3.39)***
LACTLO	X	-.0653 (0.44)
LACTHI	X	-.1167 (0.87)
LACTHIES	X	-.1520 (1.02)
GOODHLTH	X	.0911 (0.77)
POORHLTH	X	.0992 (0.66)
Constant	-8.7860	-11.3853
R^2	.51	.55
$\bar{R}^2$	.50	.53
F	159.66**	44.38***
DF	1875	1138

*** Significant at the 1 percent level.

** Significant at the 5 percent level.

* Significant at the 10 percent level.

less births on average than women without any formal education, if they both live in the same place (rural or urban), are of the same age, have husbands with the same education, have the same household income, and own the same amount of land. In the case of a cardinal variable, for example INCOME, the estimated coefficient represents the effect of an increase in income per adult of one unit (KSh 1,000)--here a reduction in the average number of live births of about .02 births, ceteris paribus, according to Equation 2 in Table 5.12.

Results are fairly consistent with theoretical expectations, although there are notable exceptions, and many of the variables analyzed do not have a significant effect on fertility. Of the basic or core set of variables, all are significantly related to fertility: wife's education (negative), husband's education (positive), urban residence (negative), and amount of land owned (positive), ceteris paribus. 1/

The significant positive relationship between husband's education and fertility in Equation 1 is similar to that observed in the previous section areal district level data. 2/ Since the amount of land owned by a rural household is also positively related to fertility in the present analysis, the results indicate that the better off the household is economically, the higher fertility tends to be. 3/ It is difficult to know, however, whether this relationship is due to the desire of more well-to-do households for more children because they are better able to afford them, or to other associated factors such as health, the ability to use family labor on family farms or the ability to pass on land to a greater number of children. Nonetheless, the evidence would seem to indicate that fertility levels will continue to rise in the immediate future as a result of the rising income levels that accompany economic development.

1/ When husband's education and wife's education are specified as linear variables in Equations 1 and 2, they are both significant at the .01 level in Equation 1; in Equation 2, EDW is still significant at the .01 level, while EDH becomes insignificant (unreported regressions).

2/ The change in the coefficients and significance of husband's education between Equations 1 and 2 is mainly due to the different sample used in Equation 2 because of missing information, and only partly due to the specification of an expanded set of variables. For example, using the formulation in Equation 1 for the reduced sample of 1,170 households, EDH1, EDH2, EDH3 and EDH4 have coefficients and t values (in brackets) of .1709 (1.17), .1199 (0.74), .2577 (1.48), .3677 (1.48) respectively.

3/ Although household income is specified in Equation 2 and is insignificant, this finding is not necessarily inconsistent with a positive relationship between income and fertility. First, in spite of the time and effort given to measuring it on the present survey, income is subject to measurement error. Second, yearly income levels in rural areas are subject to great variability. As a result, factors associated with permanent income potential, such as education and amount of land owned, may be more meaningful than income reported for any one year in explaining a fertility which occurs over a number of time periods.

Partly counterbalancing the rise in fertility associated with economic development is the strong, significant negative relationship between wife's education and fertility after approximately Standard 5, i.e., literacy, is attained. (Increases in educational attainment up to approximately Standard 5 do not have a significant effect on fertility.) These results are different from those reported in the areal analysis , where adult female literacy rates were not significantly related to fertility. Given the very high interrelationship between male and female literacy rates in the areal data and the strong, significant, and internally consistent results in the present analysis for wife's education (e.g., the more education after Standard 5, the lower fertility), one would have to put more faith in the household level results and conclude that fertility and wife's education are negatively related in Kenya at present. 1/

Rising urbanization rates should also tend to reduce fertility rates over time. The areal analysis in the previous section showed a significant negative relationship between the level of urbanization in a district and its total fertility rate. The present household level analysis also indicates that urban residents have slightly lower fertility than rural residents, ceteris paribus, thus confirming the existence of a negative relationship.

Equation 2, which includes numerous additional explanatory variables, indicates that breastfeeding for a short period of time (negative), educational expectations and actual levels in the sub-location (positive), polygamy (negative), and husband living away from home (negative) have significant effects on fertility, ceteris paribus. A series of other variables are found to have no significant effect on fertility: mortality levels in the household 2/ or in the sub-location; wife's labor force participation; value of livestock owned; migrant status; visits to family planning clinics; breastfeeding for an extended period; and stated health of mother. Thus, there is no evidence in the microanalysis reported above that migrants have lower fertility than non-migrants; 2/ that mortality levels in the community or in the household affect fertility; 3/ that wife's work conflicts with

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1/ As is common, the interrelationship between husband's and wife's education is weaker in the household data (r = .67 for numbers of years completed) than it is in the areal data (r = .91 for literacy rates). This allows an easier separation of the independent effects of husband's and wife's education in the household data than in the areal data.

2/ There is evidence that female migrants to urban areas (almost exclusively rural-born women) have significantly higher fertility than women born in urban areas (unreported regressions for urban women). These unreported results provide no indication, however, that migrant women reduce their fertility after they migrate to an urban area.

3/ Although the mortality experience of the household (DEATH) has a significant coefficient in Equation 2, one cannot place much confidence in this relationship, because the underreporting of mortality produces a built-in positive relationship between reported fertility and reported mortality.

bearing and raising children; that the presence of farm animals and the resultant opportunity for children to make an economic contribution to the family from a relatively young age increases fertility; or that extended periods of breastfeeding, or the use of contraceptives per se, reduces fertility. The result for size of the extended family is inconclusive and deserves further study. 1/

The significant negative effects of polygamy and husband living away from home indicate that fertility rates are held down by these factors. These results are not surprising; and are proably due to less frequent coitus. However, the significant positive result for children's education and the significant negative result for breastfeeding a short period of time are unexpected. It appears that mothers view education as a good investment, and that the more educated children they have and expect to have, the more children they want. We have seen, however, that this situation is likely to change in the future as the net return to parents for education costs becomes increasingly negative. It also appears that breastfeeding for less than six months (which is atypical behavior) helps "identify" relatively "modern" women who have fewer children. This conclusion is supported by separate analyses of fertility differentials for rural and urban women where labor force participation away from home is significantly (negative) related to fertility in rural areas but not in urban areas. Rather, it appears that lower (yet still high) fertility levels are evolving among a small group of "elite" women in Kenya.

Results for the additional variables used in Equation 2 do not change the conclusion derived from Equation 1 that there will not be any major reduction in fertility rates in the near future. While decreasing rates of polygamy should tend to increase fertility, increasing female employment away from home and female status should tend to have the opposite effect--just as the significant positive and negative effects of urbanization, land ownership, husband's education, and wife's education tend to balance each other out. 2/ These results are important because they are the first indications that the recent rise in fertility may be ending; but it must be added that these results do not indicate that a major decline in fertility is about to take place.

1/ While the coefficient for SIBLINGS in Table 2, 13 is just barely significant (L=1.56), it is significant when the sample is restricted to rural women (unreported regressions).

2/ It is difficult to know what the effects of HUSAWAY, AVEER, and EDEXPECT imply in terms of changes in fertility rates in the near future, since one does not know whether HUSAWAY will rise or fall in the future, and one knows that the net returns to education are decreasing rapidly.

However, when one considers that the high economic value of children helps support high fertility rates in Kenya (this is reflective in the present results) and that this situation should change in the future, results from the microanalysis reported above imply that fertility rates in Kenya may even begin to fall in the near future.

The present analyses would seem to indicate that government policies aimed at reducing fertility rates should be directed toward improving the role and status of women, especially as it relates to a modern life style and the net economic cost of children.

Chapter 6: SOCIAL STATUS OF WOMEN AND FERTILITY

1. Introduction

The key to the understanding of the high fertility phenomenon in Kenya is the status and role of women. In this chapter, we shall examine the status of women in Kenya and analyze its relationship to fertility rates.

Status generally refers to the position a person or group holds within the structure of a society - in its education and occupational strata, in the political system, and within the family. Implicit in this concept is a hierarchical arrangement of positions, each involving a set of rights and obligations. In a discussion of woman's status, one must look at the nature of the positions a woman occupies as wife, child, student, family member, and citizen, as well as "the rights and duties she is expected to exercise in her active role as occupant of these positions." 1/

We shall, therefore, first examine the various dimensions of the status of women; their roles in agriculture and within the family; their rights regarding property; their relative position in education and employment and their social organizations. The rest of the chapter addresses the issue how women's status affects fertility, and discusses policy implications.

2. Women's Role in Agriculture

No society in the world gives women equal status with men. In a review of several studies, Rosaldo and Lampere conclude, "Everywhere, we find that women are excluded from certain crucial economic or political activities, that their roles as wives and mothers are associated with fewer powers and prerogatives than are the roles of men. It seems fair to say, then, that all contemporary societies are to some extent male dominated, and although the degree and expression of female subordination vary greatly, sexual asymmetry is presently a universal fact of human social life." 2/ Kenya is no exception to this rule.

In the traditional societies of all Kenyan ethnic groups, the division of labor between the sexes was indicative of the social relationship between men and women. Women were responsible for land exploitation, that is, for production of food crops; they possessed agricultural skills and controlled the surplus. In addition, they were responsible for household tasks, especially the children's welfare and upbringing. Men, on the other hand, were responsible for "heavy" duties such as felling trees, clearing land, and hunting.

1/ U.N. Department of Economic and Social Affairs, Status of Women and Family Planning, NY 1975.

2/ Rosaldo, Michele and Louise Lampere, Women, Culture and Society. (San Francisco: Stanford University Press, 1974.)

In the last seventy years, traditional societies have undergone considerable change, and a shift in the division of labor between the sexes has created a feeling of insecurity among women. Colonial rule in Kenya and especially the Crown Lands Ordinance of 1915 had a profound impact on family life. There was an immediate and drastic alteration in male/female roles when the men were conscripted for labor on foreign-owned farms; traditional male functions of clearing, hunting, and defense were, to a greater or lesser degree, taken over by women, in addition to their own traditional tasks.

Monsted has shown that there are two well-defined trends in the division of labor between the sexes in Kenya. Women are taking on more and more responsibilities in agriculture; moreover, as a result of the modernization process, certain household services are increasingly commercialized and turned over from women to men. 1/ For example, the changeover from hoe to plough has meant the displacement of female labor, since ploughing is regarded as a commercial service, whereas hoeing is a household service. Maize grinding outside the home is now undertaken by men, although traditionally it was done by women. The introduction of cash crops like coffee and tea has modified the distribution of agricultural work by placing the task of growing cash crops on men. Men are perceived as managers of cash crops, responsible for all decisions relating to cultivation and sale even when they are temporarily away from home.

There have been few time-allocation studies in Kenya designed to show how much of the agricultural workload is borne by each sex; however, both Monsted 2/ and Hanger and Morris 3/ have shown that, in peasant farming, women work with all the crops and at every level of the cultivation process. In Kakamega, where no cash crops are grown, husbands rarely contribute labor to agricultural production: only 15% of the husbands interviewed did any farm work. In South Nyanza, more traditional husbands do not help with farm work; however, among younger families, husbands do assist on the farm when they are resident, if the children are not old enough to work. A study of the Mwea area also shows the increasing workload of women in agriculture. 4/ On commercial farms in the Trans Nzoia and Kericho areas, in 65% and 95%, respectively, of all cases studied, wives were responsible for farm work and the husbands' functions were mainly supervisory. 5/

1/ Mette Monsted, "The Changing Division of Labor Within Rural Families in Kenya," Project Paper on Rural Families in Kenya. Mimeo. Oct. 1976.

2/ M. Monsted, op. cit. For similar views about other areas, see S. Abbott: "The Modern Environment of all Kenyan Women," in Kenyan Education Review, 2:2 (1975).

3/ Jane Hanger and John Morris, "Women and the Household Economy", in R. Chambers and John Morris, ed., An Irrigated Rice Settlement in Kenya (IFO, Afrika-Studien, no. 83, Munchen, 1973).

4/ Ibid.

5/ M. Monsted, op. cit.

There is no doubt that the process of economic development has increased the workload for women. The migration of males from rural to urban areas and their control over the more prestigious, materially rewarding new jobs has meant that women have shouldered the burden of food production without access to modern technology. 1/

3. Women's Rights Within the Family

In the literature, it has been customary to point to the hard life of the Kenyan woman, necessitated by the changing socio-economic conditions under which she lives, as indicative of her inferior status within the society. The male monopoly of economic resources, especially those derived from her labor, and the heavy workload necessitated by male migration into the towns, have been used as arguments for this view. The division of labor between the sexes and woman's relatively weak bargaining position are sustained by the age gap and the educational disparities between husband and wife. There are more critical aspects of family life, however, that serve to maintain a woman's subordinate position in the institutional structure.

The principle of sex equality within marriage is not provided for by Kenyan customary laws. 2/ A woman is regarded by her father as a means of enlarging the sphere of his influence, and by the husband as a means of ensuring the continuation of the lineage, and a source of prestige and wealth. The bride's consent in marriage is not normally sought. 3/ Wives, especially when they are the third or fourth in a polygamous household, are normally young, while because of the legal duty to pay bridewealth men usually marry late.

In the past, payment of bridewealth helped to compensate for the labor gap created by the permanent departure of a daughter. This institution was useful when households were patrilocal. 4/ But given present family patterns, especially in urban areas and high-population density areas, where there is a change towards neolocal matrimonial homes, such payments are less justified.

1/ E. Boserup, Women's Role in Economic Development (London: Allen and Unwin, 1971).

2/ S. B. Gutto: The Status of Women in Kenya: A Study of Paternalism, Inequality and Underprivilege. Discussion Paper no. 235. I.D.S., Nairobi, April 1976.

3/ S. B. Gutto, op. cit. Also V. W. Muchai, Matrimonial Property in Kenya: A Study of Proprietary Rights of Women, LLB. dissertation, University of Nairobi, June 1976.

4/ S. B. Gutto, op. cit. Also R. Maina, V. W. Muchai and S. B. Gutto: "Law and the Status of Women in Kenya" in Law and the Status of Women (N.Y.: United Nations, 1978).

Kenyan law sanctions polygamy. 1/ The socio-economic function of the institution is that it enhances a man's prestige and provides him with extra labor to till his land. 2/ Women themselves appear to support it, on the grounds that as long as economic power lies largely with men, polygamy is necessary to provide for otherwise helpless women. 3/ Under the system, each wife and her offspring form separate households. The woman is forced to regard her children as a source of help and security which she could not get from her husband.

4. Women's Rights to Property

Traditionally, the focus of Kenyan social relations and power, whether political or economic, has been the control of land. Through a system of kinship ties, holdings were transmitted from one generation to another. Women did not normally inherit land; rather, they were granted the right to use land belonging to their husbands and fathers. This system has sometimes been interpreted to mean that women lacked security of tenure and could be easily disenfranchised. 4/ Others have argued that this is not necessarily so, since a woman was usually allowed to exercise her rights until death or disability prevented it. Male inheritance was an essential means of ensuring that the land remains intact within the original kinship framework, since wives and husbands might not necessarily belong to the same group. This interpretation was valid as long as land was not subject to commercialization. With the trend towards individual ownership of land, however, and the introduction of land registration, which subordinates the right of use to that of the registrant, women are no longer assured of the use of land they have spent a lifetime developing, unless they have in fact registered it in their own names. A further complication is that even when a woman provides the labor, she cannot control the surplus, which belongs to the registered owner of the land she has cultivated.

The current rule regarding property rights in the event of dissolution of marriage or death of husband reinforces women's feelings of insecurity. In Kenya, the rights of disposal of property brought into marriage are normally vested in the man. There is no rule relating to the sharing of common property

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1/ For a discussion, see (a) J.B. Ojwang, "Polygamy as a Legal and Social Institution in Kenya." East African Law Journal, X (1974). (b) N.A. Ollenu: Comments with Special Reference to Customary Law. East Africa Law Journal, Vol. V (1969).

2/ S. E. Migot-Adholla: Some Sociological Aspects of Family Law in Kenya, Paper prepared for the Kenyan National Council of Women Conference. February 1974.

3/ S.B. Gutto, op. cit.

4/ A. Germaine and A. C. Smock: "The Status of Women in Kenya and Ghana and its Relationship to Fertility," Mimeo, 1976.

in the event of divorce, perhaps because the incidence of divorce was so low until recent times; but generally speaking, it is recognized that the wife is entitled to her personal effects on dissolution of marriage. Among some groups--e.g., the Kikuyu--property acquired before marriage, and some share of property acquired with joint effort, are hers on dissolution of marriage; whereas among others--e.g.,the Luo, Kisii, and Masai--the wife's property belongs to her husband, and she may be forced to return to her family with nothing.

On widowhood, a Kenyan rural woman has three choices: entering into a levirate union; remaining at her husband's home without entering into a levirate union; or remarrying outside her husband's immediate kinship group or returning to her father's house. In the latter two cases, the property rules for divorced women apply. If she chooses a levirate marriage, she retains her interest in her husband's property. Recently, the practice of levirate union has come under fire from Christian churches, and is being abandoned in some places. As a result, a widow no longer can be assured of the right to use her late husband's land.

One obstacle to changing the legal and actual conditions of women within marriage has been the existence of several sets of family laws. 1/ Attempts to pass uniform marriage laws have thus far met with strong opposition in the National Assembly. 2/ A uniform law of succession was passed in 1972, but it is not clear that it benefits the average Kenyan rural woman, since it sanctions the customary laws relating to inheritance in case of intestacy; most rural Kenyans die without having made wills, and few widows either know their rights of appeal or are able to afford legal fees.

It is obvious from this short description of the Kenyan woman's position vis-a-vis the men within her family that subordination is the rule, since both legal and economic status are derived from men.

5. Status of Women in Education (Table 6.1-6.6)

Kenya has made remarkable progress since Independence in providing educational services to its people. But despite tremendous expansion in the overall output of the educational sector, disparities still exist between the sexes in access to educational services. In 1969, over 90% of women over 40 and 25% of women over 25 had no formal education at all. Furthermore, although both sexes were equally deprived in the upper age groups, women were worse off than men in the younger groups (Table 6.1). The IRS 1 shows that in rural Kenya 85.5% of women aged 30-49 had never been to school, compared with 54.4% of the men (Table 6.2).

1/ The diversity of family laws is due to religion and tribal differences.

2/ These attempts are to codify existing laws, presumably to provide structural and legitimate channels through which women could exercise their rights. It recommends that a polygamous marriage have the approval of the first wife. Marriages must be registered, and divorce affected through the courts, so that property and child custody questions can be dealt with.

Table 6.1: KENYA: EDUCATIONAL PROFILE OF TWO AGE COHORTS 1969 CENSUS

Educational Level	Over 50 years old		20-24 years old	
	Male	Female	Male	Female
No education	85.8	96.4	31.3	61.6
Some primary education	12.3	2.8	50.2	43.1
Some secondary education	1.3	.5	17.1	4.1
Form V+	.6	.4	1.3	.6

Source: Population Census 1969, Vol. 3, Central Bureau of Statistics, 1971.

Table 6.2: PERCENTAGE DISTRIBUTION OF SMALL FARM POPULATION BY EDUCATIONAL ATTAINMENT, SEX AND AGE GROUP

	AGE GROUP				
	19 Years or Less	20-29 Years	30-49 Years	50 Years Plus	Total
In School					
Male	67.5	12.0	0.1	0.0	38.5
Female	58.3	3.2	0.0	0.0	27.2
Standard 4					
Male	2.3	15.1	24.1	13.1	9.2
Female	2.2	13.8	11.3	0.9	6.1
Standard 7 or 8					
Male	1.2	27.2	15.9	1.1	7.3
Female	0.1	3.3	0.3	0.0	0.1
Other					
Male	0.0	0.0	0.0	0.0	0.0
Female	0.1	0.0	0.1	0.0	0.1
Never Attended					
Male	28.9	33.6	54.4	85.5	42.2
Female	37.4	64.8	85.5	85.3	62.1
Total					
Male	100.0	100.0	100.0	100.0	100.0
Female	100.0	100.0	100.0	100.0	100.0

* Excludes large farms and pastoral areas.

Source: IRS 1.

Table 6.3 clearly shows that there has been a gradual improvement in enrollment in both primary and secondary level education since 1969. Furthermore, the growth rate of enrollment of girls in secondary schools has been more rapid than that of boys (Table 6.4), possibly reflecting both an increase in new entrants and a higher continuation rate of those admitted than in the previous period. Despite this, however, when one controls for age (Table 6.5), the disparity between the sexes is seen to persist even today. Besides, while girls formed 45.4% of the 6-year-old group entering the school system in 1963, by 1970 and 1974 the percentage of girls in this cohort had been reduced to 32.8% and 26.3%, respectively (Table 6.6), a decline that may reflect higher female wastage at all levels of the educational system.

On the whole, however, the disparity between the sexes in education is partly historical and partly economic. Men had a headstart in education during the colonial years, and the lead is still continuing. Moreover, it appears that until recently, rural parents have been unwilling to invest in their daughters' education, because they consider such an investment wasteful or frivolous. 1/ On the whole, in terms of earning potential, girls show a lower return on education than boys. 2/ Moreover, given the nature of Kenyan society, once a parent has been paid the bridewealth, he relinquishes all rights to his daughter, and her future earnings benefit only her husband's family. For rural families, sending daughters to school implies a greater opportunity cost in terms of foregone contribution to the farm and home. Studies indicate that parents have lower occupational aspirations for their daughters than for their sons, even in the higher socio-economic groups, and even when the daughters' performance in school is superior to that of sons. 3/

The Government has perhaps contributed to the perpetuation of educational disparities between the sexes, especially at the secondary level. In contrast with the coeducational character of primary schools, most aided secondary schools are single-sex. The distribution of places in aided secondary schools, which provide lower-cost, higher-quality schooling than unaided schools, shapes the educational opportunities at this level. In 1968 there were 143 aided schools for boys, 61 for girls, and 28 mixed institutions. By 1977, these numbers had risen to 200 aided boys' schools, 107 girls' schools, and 65 mixed schools. 4/ The number of streams in aided schools also favors the boys. (In 1977, there were 377 streams in secondary schools for boys, 184 in girls' schools, and 96 in mixed schools.)

1/ A. Maleche, "A New Status for Women in Kenya," East African Journal, June 1972.

2/ Central Bureau of Statistics, "The Status of Women in Kenya," Social Perspectives, Vol. 3, no. 2 (April 1978).

3/ A. Krystall, "The Education of Women Since Independence," unpublished paper.

4/ CBS: "Women in Kenya," Social Perspectives, Vol. 3, no. 2 (April 1978).

Table 6.3: FEMALE ENROLLMENT AS PROPORTION OF TOTAL ENROLLMENT IN PRIMARY AND SECONDARY SCHOOLS, 1969-1975

Year	Primary Level	Secondary Level	Forms V-VI
1969	41	28	29
1970	41	30	22
1971	44	30	23
1972	43	31	24
1973	44	33	24
1974	43	34	
1975	46	36	

Source: Ministry of Education: Annual Report, 1975.

Table 6.4: ANNUAL GROWTH RATE: SECONDARY SCHOOL ENROLLMENT IN KENYA

YEAR	ALL FORMS		
	BOYS	GIRLS	ALL PUPILS
1964-67	32.27	24.57	30.16
1967-70	10.11	17.22	11.90
1970-75	9.73	15.52	11.62
Entire Period	15.92	18.45	16.75
	FORM I		
1964-67	32.30	26.13	30.57
1967-70	5.38	15.96	30.57
1970-75	9.72	15.25	11.70
Entire Period	14.69	18.41	15.98

SOURCE: Ministry of Education, Annual Report 1975, Table 20.

Table 6.5: PERCENTAGE FEMALE ENROLLMENT, 1972-73, IN KENYA

Educational Level	% of Total Enrollment
Primary (all levels)	42.5
Standard	
1	45.4
2	44.9
3	44.6
4	44.4
5	44.4
6	42.0
7	37.0
Secondary (all levels)	31.3
Form	
I	33.7
II	32.6
III	30.0
IV	27.4
V	24.8
VI	22.9
University total	16.0

Source: Ministry of Education, Annual Report, 1974-75.

Table 6.6: KENYA: PERCENTAGE FEMALE ENROLLMENT BY EACH SCHOOL POPULATION COHORT - CLASS ENTERING 1963 AND LEAVING IN 1973

Year	School Grade	Girls as % of Total Enrollment
1963	Standard 1	39.9
1967	" 5	38.2
1969	" 7	32.2
1970	Form I	32.8
1973	" IV	29.6
1974	" V	26.3
1975	" VI	23.4

Source: Computed from Ministry of Education, Annual Reports - 1963-1975.

We can see that distribution confers a 2:1 advantage to boys. Even so, these statistics do not reflect the extent of the sex bias in the educational system, which further curtails the range of options accessible to Kenyan women who pursue secondary and vocational training. For example, women are effectively excluded from government technical and vocational secondary schools because such schools normally have boarding facilities.

The major conclusion to be drawn is that although the rapid expansion of educational facilities in Kenya has brought about an increment in the number of girls at all levels of education, women are still not receiving equal treatment in educational services. The enrollment of women at the first level of education has been offset by lack of adequate access at the next stage. The Kenyan Government is aware of this, and is attempting to institute changes in the form of more coeducational facilities and more places for girls in secondary schools. There is also a movement to increase training facilities for women in specifically female-oriented occupational programs, which should have the effect of increasing the number of women in these occupations. The Government hopes that its policy of universal primary education will in time lead to an increase in the number of women in secondary schools. This can only happen if a policy of coeducational secondary education is vigorously pursued. Given the Government's intention of restricting the expansion of secondary education, an abolition of the present single-sex secondary school system would be one way to give those women who now have access to primary education an equal chance of access to the secondary level.

6. Status of Women in Employment (Tables 6.7-6.8)

In terms of quantitative comparative data, Kenyan women are underrepresented in the formal labor market. This is not surprising, given that formal labor market activity and the associated rewards (wages) are dependent on level of education, type of education, the individual's labor market experience, and the general prevailing economic conditions.

Table 6.7 summarizes the participation of women in enumerated wage employment between 1963 and 1974. It appears that during the period when there was considerable expansion of educational opportunities for women, there was not a comparable increase in their share of formal sector employment. Rather, the percentage of women in the formal labor market has remained constant over time. The slight decline in agricultural employment has been matched by some increase in employment of women in the service sector. On the whole, employment in manufacturing has been fairly static. In 1970, the ILO reported that the adult women's employment rate in the urban areas was higher than that of the men; 1/ but a study based on a 1974 survey reveals a high female unemployment rate for all ages in both urban and rural areas (Table 6.8). 2/

1/ ILO, Employment, Income and Equality in Kenya, ILO, Geneva, 1971.

2/ Anker, R. and Knowles, J.C. "A Micro Analysis of Female Labor Price Participation in Kenya," WEP 2-21/WP.62 (Geneva, ILO, January 1978), p. 4.

Table 6.7: KENYA: PERCENTAGE OF WOMEN IN THE FORMAL SECTOR WAGE EMPLOYMENT BY ECONOMIC SECTOR, 1963-1974

Sector	1963	1964	1965	1966	1967 1/	1968 1/	1969 1/	1970	1974
Agriculture	19	18	18	18	18	19	15	16	18
Manufacture	6	7	6	6	6	6	5	6	7.2
Commerce	10	10	10	10	10	11	9	10	10.3
Transport	5	5	5	5	5	6	3	5	5
Services	16	16	16	16	16	16	22	20	18.9
All Sectors 2/	15	14	14	14	13	14	14	14	8

1/ Includes public sector.
2/ Includes sectors not covered in which very few women employed.

Source: 1963-70 from ILO Employment Survey.

1974 from Employment and Earnings, Ministry of Finance and Planning, Statistics Division, 1975.

Table 6.8: REPORTED FEMALE UNEMPLOYMENT RATES BASED ON JOB INFORMATION BY RESIDENCE AND AGE OF WOMEN FOR PREVIOUS 12 MONTHS

Age Group	Urban Unemployment Rate	Rural Unemployment Rate
15-19	50.0	21.9
20-24	37.2	30.1
25-29	35.7	15.2
30-39	19.1	10.4
40-49	20.6	9.3
50-59	0	3.4
60+	33.1	12.0

Source: R. Anker and J. C. Knowles: "A Micro Analysis of Female Labor Force Participation in Kenya." ILO. WEP 2-21/WP 62 (Geneva, ILO. January 1978), p. 4.

The IRS 2 indicates that in rural Kenya, less than 5% of the female small farm population were in wage employment compared with 29% of the male population. Although this represents a doubling of the proportion of female wage earners over what it was in the 1974-75 Survey, when the rate was 2%, there is no doubt that in rural Kenya, women are less likely to engage in trade or to be self-employed in non-agricultural rural enterprise. 1/

Generally speaking, women are underrepresented in the formal sector of the Kenyan economy because they lack education. Moreover, Kenyan women have had to bear the brunt of the agricultural workload as a result of male migration to the city. Unless and until women are educated on an equal footing with men--which implies not only access to facilities, but a radical shift in traditional attitudes toward the rights of women, based on a change in the socio-economic framework at the family level--they will not be able to compete for modern sector employment or contribute their skills to national development.

7. Activities of Women's Organizations

In addition to women's kinship and church organizations, which operate on a small scale, there are two important nationwide organizations of women in Kenya. These are the National Organization of Kenyan Women and the Maendeleo Ya Wanawake (Women for Development). The National Organization, an umbrella group to which various women's organizations are affiliated, has strong political overtones; the current president of the organization is an appointed member of Parliament. The most important and influential organization, however, in terms of its impact on rural women, is the Maendeleo Ya Wanawake. This organization had been in existence since 1952 and draws its membership from rural areas. It has 5,000 affiliated groups and a membership of over 100,000. Generally stated, its objective is to help rural women participate in and benefit from the development process by becoming self-sufficient.

To achieve its aims, Maendeleo teaches rural women the rudiments of home economics and family health. A marketing scheme helps its members sell their handicrafts and their products in urban areas. Unfortunately, Maendeleo accepts goods on consignment only, which slows income flow to its member-suppliers. The organization has plans for cooperative rural housing efforts and the establishment of training centers for women, but little progress has been made along these lines. Although Maendeleo could be a useful vehicle for reaching rural women, it currently lacks both sufficient capital and trained managerial staff to achieve its objectives.

8. Relationship Between Women's Social Status and Fertility

Although attention has been focused on the effect of such factors as urbanization, industrialization, and education on birth rate, it was not until recently that the effect of status and role of women on fertility received attention.

1/ CBS, Women in Kenya, Nairobi 1978.

The relationship of women's status to fertility is neither direct nor simple. As indicated in the previous section, status of women can be approached in terms of legal rights, rights within the family and society, access to education, or employment opportunities. These factors are interrelated, and there is no one-to-one correspondence between them and fertility. For example, education has direct effect on the type of employment opportunities available to a woman; it affects the age at which she marries, and the nature of the relationship between husband and wife. Since fertility decisions are made within the family, variables that may be said to have a direct effect on fertility include age of marriage (influenced by status) and husband/wife relationship.

"Girls were wealth. Daughters brought home bridewealth which the sons used to marry the daughters of other clans. They also extended the kinship networks. Their children were allies. Therefore she should grow roots, for if she were to remain the only link between the two clans, on her death this link would be severed." 1/ This statement illustrates the social situation under which Kenyan daughters are brought up. There is strong pressure on women to marry, to produce children, and to extend the kinship network. In 1969, 40% of women aged 15-19 in Kenya were married. 2/ The mean age at first marriage was 19.5 for girls, as compared with 25.7 years for men. Mean age at first marriage varies across ethnic groups for both sexes with men being between three to eleven years older than women when they first get married. 3/ Motivation is channeled in the direction of marriage by creating an intense desire for familial roles, by extolling the rewards accruing from the wife-mother status, and by severe community censure of spinsterhood. In many ethnic groups a single woman may be granted land-use rights by her family, but may not inherit the land; this creates a feeling of insecurity in most women, reinforcing the strong desire for marriage, because their rights are contingent on the needs and requirements of the men whose land they use. This ultimate dependence underlies a woman's relationship with her husband and his male relatives, placing her in a near-zero power position vis-a-vis the family group into which she marries. 4/

1/ T.B. Kabwagyere, "Determinants of Fertility: A Discussion of Change in the Family Among the Akamba of Kenya," in J.C. Caldwell, ed. The Persistence of High Fertility, Population Prospects of the Third World, (Camberra: Australian National University, 1977).

2/ U.N. Department of Economic and Social Affairs, Status of Women and Family Planning (New York, 1975), Table 6, Annex 2.

3/ CBS, Women in Kenya, 1978, p. 51.

4/ Susan Abbott, "The Modern Environment of All Kenyan Women," Kenya Educational Review, 2:2 (December 1975).

Education and formal labor market or wage employment experience for women are perceived as a mark of independence and therefore a threat to male control within marriage. The mere fact that a girl is highly educated or well employed often jeopardizes her chance of a good match. A 1971 survey indicated that a girl who was unmarried at age 25 had only 1 in 100 chances of ever marrying; and that male students at the University of Nairobi preferred to marry girls with less educational qualifications than themselves. 1/ It is therefore not surprising that few women wish to remain unmarried, and few parents wish to allow their daughters to continue their education after a certain age. In the rural areas, there is strong pressure on girls to marry at the prescribed minimum age, i.e., at the onset of puberty.

Although there have been no studies on the relation between age of marriage and fertility levels in Kenya, studies from other countries indicate that there is a link between them. A 1972 survey in the United Kingdom show that "those who marry before the age of 20 still have, at least on the average, one child more than those who marry aged 25-29," 2/ and an analysis by Cho and Retherford shows that as much as two-thirds of the decline in crude birth rate during the 1960s in West Malaysia can be accounted for by changes in marital structure (age of marriage), as compared to the contributions of changes in marital fertility and age structure. 3/

Lapham's decomposition of factors contributing to decline in crude birth rate in Tunisia suggests that two-thirds of the decline was due to changes in the age structure and status of women, including a sharp reduction in the proportion of married women in the 15-19 age group. 4/ A 1975 study in Morocco indicated that fertility declined following "shifts in female nuptiality from the average age of 17 to nearly 19 between 1960-1970." 5/ These studies suggest that early age at marriage in Kenya could have a positive effect on fertility.

1/ U. U. Uche (ed.), "Law and Population Growth in Kenya," in Law and Population Change in Africa (Nairobi: African Lit. Bureau).

2/ J. Basfield, "Age at Marriage and Family Size: Social Causation and Social Selection Hypothesis," Journal of Biomedical Science, Vol. 4, no. 1, Jan. 1972.

3/ Lee=Jay Cho and Robert D. Retherford: "Comparative analysis of recent fertility trends in East Asia."(reprinted from International Union for the Scientific Study of Population, International Population Conference, Liege 1973).

4/ J. Lapham, "Family Planning and Fertility in Tunisia," Demography, 7:2, 1970.

5/ C. Paulet, "Estimation of Standard of Moroccan Fecundity and Mortality, 1960-1970." (Paper presented at the second Maghreb Demographic Conference. Oran, Algeria 1975).

There has been no major study relating the effect of Kenyan women's status within the family to their fertility; but research results from other less-developed countries indicate that family status has a major impact on women's decisions regarding desired family size, knowledge of birth control, and access to contraceptive methods. When women are denied equal opportunities for acquisition of resources, their status within the home is invariably low. 1/ The greater the resources (in terms of education and employment outside the home) that a woman brings into marriage, the larger her share in family decisions. A study made in India has established a correlation between woman's self-perception concerning her status and her decision-making role at home, and her role in family planning and education. 2/ Oppong has found that in Ghana, women with educational levels most closely approximating those of their husbands are most likely to enjoy a syncretic power relationship. 3/

The decision-making process and the pattern of communication within the family have been found to affect fertility. In a study of family planning in Hong Kong, Mitchell demonstrated that the greater the influence the wife had over family matters, the more likely she was to practice family planning; 4/ furthermore, when husbands and wives differed in their desire for fertility, the dominant partner (invariably the husband) had the most influence on decisions to adopt family planning. Weller found that knowledge of birth control methods was not necessarily related to the decision-making process within the family, but that effective use was greatest among couples with less dominant husbands. 5/ According to Rosen and Simmons, the more husbands and wives regard themselves as equals, the lower their fertility. 6/ Goldberg has suggested, on evidence from Mexico City and Ankara, Turkey, that couples in which the husband makes most of the decisions about social contracts, household budgets, and other family matters have more live births, expect more children, and are less likely to use contraceptives. 7/

1/ U.N. Department of Economic and Social Affairs. op. cit. p. 58.

2/ U.N. Department of Economic and Social Affairs, op. cit. p. 58.

3/ C. Oppong, "Conjugal Power and Resources: An Urban African Example," Journal of Marriage and the Family, 32:4 (November 1970), 676-80.

4/ R.E. Mitchell, "Husband-Wife Relationship and Family Planning Practice in Urban Hong Kong," Journal of Marriage and the Family, 34:1 (February 1972), 139-146.

5/ R. Weller, "The Employment of Wives, Dominance and Fertility," Journal of Marriage and Family, 30:3 (August 1968), 437-42.

6/ Rosen, B. and A. Simmons, "Industrialization, Family and Fertility: A Structural-Psychological Analysis of the Brazilian Case," Demography, 8:11 (February 1971), 49-69.

7/ D. Goldberg, "Modernism: The Extensiveness of Women's Roles and Attitudes," World Fertility Survey Occasional Papers No. 14 (Dec. 1974).

The fact that many women in Kenya come into marriage with lower educational qualifications than their husbands' may affect how they view their own position vis-a-vis their husbands, and therefore their ability to state their fertility preferences. Discussions with family planning motivators in the Machakos Hospital indicate that the most important single reason that women drop out of Family Planning Programs is inability to communicate their feelings to their husbands concerning desired family size.

The nature of the legal rights and obligations of husband and wife toward each other and toward their children also affect decisions about family size. Proving this for Kenya is not easy, since no specific research on this point exists; but we can speculate on the effect of lack of rights of inheritance and division of labor within the family. Available information indicates that the heavy workload of Kenyan rural women within marriage may be a contributory factor to high fertility: in a study of the Akamba, three-quarters of the respondents gave this reason for having children. 1/ Mette Monsted's study of rural Kenya also points up the importance of children's labor input to the women in rural areas of Western, Nyanza, and Rift Valley provinces.

The current laws regarding property rights in the event of widowhood or dissolution of marriage also have a positive effect on fertility, in that they make the woman ultimately dependent on her children. Furthermore, since property at death is distributed by household (each wife constituting one household), there is increased pressure to ensure that one has enough children to provide for old age. The pressure to produce more children is also intensified by the existence of landless peasants whose wives cannot hope to have the use of land in the event of old age or widowhood. This situation is even more widespread since the introduction of land registration, which subordinated the right of use to that of the registrant.

9. Policy Implications

Despite economic progress, the high fertility of Kenyan women has persisted for two reasons: the respect and high socio-psychological reward women derive from being married and mothers; and, more important, the fact that most Kenyan women have no choice but to become ultimately dependent on their children. These factors are linked with the status and social roles of women. Policies designed to raise the status of women by improving their access to education and employment would also contribute to the lowering of fertility levels.

1/ T. B. Kabwegyere: Determinants of Fertility: A discussion of change in the family among the Akamba of Kenya, in J. C. Caldwell, ed. The Persistence of High Fertility, Part I, Camberra, 1972.

Research results from other countries indicate that a rise in marriage age lowers fertility. Most women in Kenya marry early because society demands it of them. It would be useful to counteract this by offering educational and occupational opportunities that would perhaps make early marriage and motherhood less attractive. An important issue is how to release heads of families, especially in the rural areas, from the necessity of marrying off their children. The Kenyan rural father has a strong vested interest in his daughter's marriage, especially when it constitutes an independent source of income. It is most unlikely that such rewards would be given up unless they were to be replaced by an equally powerful and socio-economically supportive set of benefits and advantages. This is already evidenced by the practice of some educated women, who pay their fathers bridewealth if their prospective husbands are not in a position to meet this obligation. 1/

The type of social redirection that is needed in Kenya may require the manipulation of the societal framework in such a way that parents "indulge themselves by consuming the economic and social goods that their children may offer rather than pushing their (female) offspring to devote their principal energies to a new generation." 2/ The perceived social and economic benefits derived from marriage have yet to be outweighed by the economic benefits that could accrue from more education and therefore eventual participation in formal sector employment. However, as Maleche has shown, this process may have started. 3/ The rising level of expectations and aspirations seems to be creating a situation in which some families have begun to depend on the additional source of income that a well-educated daughter can provide through a good job.

In the short run, various options are available to Government. Evidence presented in this section suggests that the status of women within the home can be enhanced by promoting more women participation in secondary education. In addition, a policy aimed at giving rural women continuous access to the land they have developed would free them from dependency. This could be done through changes in the inheritance laws. More importantly, vigorous efforts should be made by the Ministry of Cooperative Development to promote women's agricultural cooperatives in the rural areas, thus building on the considerable agricultural skills possessed by women. Attempt should be made to reach women through agricultural extension services, to help them develop the expertise that would enable them to build up capital and invest in farm ownership in their own right.

1/ A. Maleche, op. cit.

2/ Judith Blake, Parental Control, Delayed Marriage and Population Policy: Proceedings of World Population Conference, 1965, Vol. II (N.Y.: UN, 1967.

3/ A. Maleche, op. cit.

Chapter 7: MATERNAL AND CHILD HEALTH FAMILY PLANNING PROGRAM--CURRENT STATUS AND FUTURE DIRECTIONS

1. Background

Kenya was the first African country south of the Sahara to adopt an official national family planning program (FP). This took place in 1967, but voluntary efforts in family planning had begun earlier. In 1955, FP Associations in Nairobi and Mombasa initiated efforts to make people of all income levels aware of family planning and to provide them with modern contraceptive methods. In 1961, the Nairobi and Mombasa FP Associations combined forces as the Family Planning Association of Kenya (FPAK). A year later, FPAK became the first tropical African affiliated member of the International Planned Parenthood Federation (IPPF), and, by 1968, it was operating some 40 clinics, most of them in Ministry of Health (MOH) facilities. Two major local authorities--the Nairobi City Council and the Mombasa City Council--also offered FP services. By far the biggest effort took place in Nairobi. 1/

In 1963, after a demographic survey revealed that Kenya's population growth rate was over 3% per annum, the Government of Kenya officially recognized the importance of FP, and in 1966 it announced the adoption of family planning as part of its development policy. Responsibility for implementing the program was assigned to MOH. In late 1966, MOH announced its intention of making FP an integral part of maternal and child health (MCH) services, and began to train its medical officers in FP techniques. The aim of the FP program was to make information, education, and services freely available upon request in Government hospital and health centers.

The national program was officially launched in 1967, under the following guidelines: (a) MCH and FP services were to be integrated; (b) acceptance of these services was to be wholly voluntary, and individual customs and values were to be fully respected; and (c) emphasis was to be placed on family size and the spacing of children. During the first five years of the program (FY 1968-72), an FP unit was set up in the MOH to implement the program.

2. The Third Five-Year Plan and National MCH-FP Program

Following the 1969 census results, which confirmed earlier survey findings about high fertility in Kenya, a senior Kenyan administrator was appointed to head the MCH-FP unit and to draft a five-year program, FY 1975-79. The program was intended to serve as the basis for the expansion and integration of services, and to provide operational targets against which to measure progress. The major identified constraints were: (a) the acute shortage of trained paramedical manpower; (b) the lack of an improved institutional framework and managerial capability to administer the program; and (c) the inadequate coverage and distribution of rural health facilities.

The Five-Year Plan proposed to alleviate the situation by: (a) reducing the shortage of enrolled-level nursing personnel (including community nurses, who dispense MCH-FP services); (b) providing the institutional infrastructure and management support needed for an enlarged program of activities;

1/ Forty service delivery points have since been functioning in Nairobi and in recent years have recruited some 15 to 20% of all FP acceptors in Kenya.

and (c) improving the availability and standard of MCH-FP where the services had already gained some acceptance, while gradually extending part-time mobile services to the rest of the country. Daily services were to be established at some 400 existing service delivery points, and part-time services rendered by 17 mobile teams at some 190 additional clinics not staffed with full-time trained FP personnel.

The specific goals of the program were to reduce the high annual rate of natural increase of population estimated at 3.3% in FY1975 and 3.0% in FY1979, by recruiting 640,000 new FP acceptors and thereby helping to avert some 150,000 births. A related health objective was to reduce the projected number of preventable disease cases from about 16 million to 11 million by 1984. 1/ The program was to reach these goals through an increased and better-trained supply of health workers, the construction of rural health centers for practical clinical training, and a systematic attack on those diseases most responsive to the efforts of rural health services.

The total cost of the MCH-FP program in 1974-78 was estimated at $38.8 million. This was financed by various contributions: the Kenyan Government, $11.3 million; UNFPA, $3.3 million; SIDA, $5.4 million; USAID, $3.5 million; DANIDA, $0.6 million; FRG, $1.8 million; ODM, $0.9 million; and IDA, $12 million. The IDA credit, the first for a population project in sub-Saharan Africa, has assisted in financing those components that were not being supported by other donors, primarily the capital cost components of the program and some technical assistance. The project is supporting the construction of five of the program's eight community nurse training schools, 27 of the 30 rural health centers, the National Family Welfare Center and adjoining FP clinic, and the Health Education Unit.

3. Government Policy During the Fourth Plan, 1979-83

Prospects for improving and expanding the population program has become considerably brighter now. In introducing the Fourth Development Plan, President Moi identified the heavy burden of rapid population growth as one of the highest priority problems to be solved. The Fourth Plan draws attention to the consequences of Kenya's high population growth rate in a long-term perspective and provides a strong statement of the Government's intention to achieve a decline in population growth rate. The Government proposes to strengthen the ongoing MCH-FP program and to undertake a major new broad-based interagency I&E program to involve and inform families.

According to the Plan child spacing and reduction of infant and maternal mortality will continue to be the major objectives of the program. The plan specifically proposes that during FY1979-83 the number of program acceptors recruited annually will be more than double present levels and the number of continuing users of contraceptives will increase substantially.

1/ As outlined in the Health Development Plan, FY1974-78, this target was to be achieved by reducing maternal diseases by 46%; communicable diseases by 26%; health problems resulting from environmental problems by 18%; malnutrition diseases by more than 50%; and infant mortality by 30%.

The Government hopes that its policies and programs will lead to a reduction in the rate of population growth, so that by the "end of the century the structure of the population will be more balanced than it is now and the standard of living will be improving more rapidly." (The Development Plan, 1979-83, p. 62). Although the Government has come out much more strongly in favor of a policy and programs of reducing population growth rate in the current plan than the last one, actual demographic goals or operational targets remain to be clearly defined and pursued. On the whole, it can however be said that the general political/administration mood of the country is better prepared now than ever before for a strong population program.

The MCH-FP: A Review

4. Operational Targets (Tables 7.1 and 7.2)

A review of the first four years of the MCH-FP program indicates satisfactory progress in reaching certain operational targets, namely, the program has achieved nearly 90% of its service delivery targets, establishing about 300 service delivery points to provide family planning and maternal and childcare services. The target for enrolled nurses, midwives, and other staff has been reached.

The program has also extended and improved information and education activities by training and posting more than 300 Family Health Field Educators (FHFE) to motivate and recruit family planning acceptors. About 90% of the field staff positions have been filled. 1/ The program has succeeded in establishing the infrastructure for a family planning delivery system; however, the record for reaching the targets for family planning acceptors and for demographic impact is far from satisfactory. The program only succeeded in recruiting about 55% of the acceptors targeted for the year 1976, and preliminary estimates for 1977 indicate that there were only about 72,000 acceptors, as against the original target of 127,500.

In part, these shortfalls can be explained by the assumptions made in setting the targets. When the project was started, the goals for acceptors and demographic impact were estimated on the basis of non-Kenyan data, because there were no available data on the Kenyan experience. Thus, the targets were purely notional projections, using data from other countries. At the time it was recognized that the targets were tentative and would need updating when Kenyan data became available. 2/

1/ Ministry of Health, National Family Welfare Center, Annual Report 1976.

2/ The number of acceptors in the original targets were actually generated by linear functions derived from Taiwan data. The parameters in that function are markedly different from the estimates computed from the service records that are now available on Kenyan family planning clients. In the original target, termination rates were computed on the basis of assumed normal duration of the contraceptives used. These rates are higher than the termination rates derived from the actual service records of acceptors. It should be noted here that the original targets were set for only one method, namely, the Pill (which accounts for nearly 80% of the contraceptives dispensed). The monthly termination rates are computed from the service records (.0683) for the first year (1975). In the original estimates, however, the termination rates were expected to reduce substantially in the later phase of the five-year plan period: to .0472 in 1976; .0386 in 1977; and finally, to .0283 by the end of the five-year period. Such an assumption about gradual improvement has not been borne out by the experience of the program. The monthly termination rates computed from different acceptor cohorts during the period January 1974 to June 1975 do not indicate any improvement in the continuation rate over time.

The targets for the program have been revised (see Table 7.1): total numbers of family planning acceptors and estimated 'births prevented' by the year 1979 are to be substantially lower--from 635,000 acceptors and 146,000 births prevented, down to 456,000 and 84,000, respectively. Experience has shown that even these reduced goals were elusive: for 1977 the target was 90,658, whereas the actual number of acceptors was only 72,000.

The increasing shortfall in the achievement of FP targets is not solely explained by ambitious hopes: this can be seen from the trend of increase of acceptors (first visitors) and revisitors over time. Table 7.2 shows that between 1969 and 1970 the number of first visitors increased by 18%, which matches the rate of increase for the following year. After that, the rate decelerated until 1976, when it again reached 13%; recently, in 1977, it rose to 19%.

Two observations can be made from the trend. First, the rate of increase of acceptors slowed down until about 1975, and then it picked up again, 1/ but not enough to approach the figures targeted. Second, the number of revisitors has not appreciably increased over time since 1975, even though the number of first visitors has increased since 1976. The absence of an appreciable increase in the number of revisitors (even when the number of first visitors is significantly increasing) indicates that the program is not succeeding as well in retaining acceptors as it did in recruiting them.

At least in the beginning phase, the program seems to have done fairly well in terms of recruiting acceptors or attracting more women to the family planning delivery system, but it has not succeeded either in increasing the pace of recruitment as targeted or in retaining acceptors in the system. A preliminary estimate shows that the average number of revisits per client is only about 3.5; in other words, the average new client comes back to the clinic less than four times and then drops out of the system.

The low retention rate is reflected also in the low prevalance rates of contraceptive practice. Only a small proportion of women of reproductive age have been found to use contraceptives. The MOH estimates that in 1975 only 2.5% of married women age 15-49 years attended a family planning clinic and accepted contraceptives. 2/ The same document from MOH

1/ This sudden rate of increase in 1976 seems to coincide with the introduction of Family Health Field Educators (motivators). This appears to be an operationally significant hypothesis for study; the results of a MOH in-house study of the role of field motivators are inconclusive.

2/ Ministry of Health, National Family Welfare Center, Evaluation of Family Planning, Annual Report 1975 (September 1976), mimeo, page 17.

Table 7.1: REVISION OF FP AND DEMOGRAPHIC TARGETS

	Original Targets a/ (By Fiscal Year)		Revised Targets b/ (By Calendar Year)	
	Total Number of Acceptors	Total Number of Births Prevented	Total Number of Acceptors	Total Number of Births Prevented
1975	55,500	3,500	51,643	3,028
1976	91,500	10,948	60,621	7,948
1977	127,500	22,027	90,658	14,722
1978	168,500	40,667	114,400	23,771
1979	192,500	68,635	138,235	34,292
Total	635,000	145,777	455,557	83,761

a/ IBRD Kenya Population Sector Survey Report, 1974.

b/ MOH, Revision of Demographic and Acceptor Targets (mimeo), 1976.

Table 7.2: NUMBER OF FIRST VISITORS AND REVISITORS ATTENDING THE MCH/FP CLINICS IN KENYA, 1968 TO 1977

Year	First Visitors	% Increase in First Visitors	Revisitors
1968	11,711	-	17,891
1969	29,761	154	72,879
1970	35,136	18	113,695
1971	41,100	17	138,656
1972	45,205	10	172,279
1973	50,054	11	211,307
1974	51,446	3	236,370
1975	53,472	4	244,244
1976	61,227	15	271,532
1977	72,647	19	283,679

Source: Ministry of Health 1977 Annual Report for the National Family Welfare Center, 1978 (Mimeo).

also estimates that of those women who visited a family planning clinic for the first time in 1973, approximately 35% discontinued their visits within a year, and 70% within two years. 1/

Further evidence of practice and acceptance rates comes from a contraceptive practice survey of 1974, which asked whether the respondents visited family planning clinics. Only about 6% of the sample women reported that they had visited a family planning clinic during the two-year period 1973-74.

5. Problems and Constraints (Table 7.3)

What factors explain the poor contraceptive coverage achieved so far by the program? On the supply side, the main issue is access to and quality of services. FP acceptance is affected by the availability and quality of services delivered and the distance traveled to service facilities. Over 80% of rural Kenyan women give birth at home; to reach the nearest health facility, they must travel on average more than three miles. Data relating FP acceptance to distance from service facilities indicate that easier access to services would have some immediate impact on FP acceptance. About 70% of FP acceptors come from within four miles of the nearest clinic, whereas only about 50% of the rural population live that close. About 15% of the acceptors come from seven or more miles, whereas over 25% of the rural population live at least that far from a clinic. 2/ The service delivery points are not uniformly distributed among provinces, and it is no wonder that performance in FP acceptors varies widely between provinces.

In 1977, there were about 500 clinics offering FP services. Most of these clinics are located in Central Province (20%), followed by Rift Valley Province (18%), Eastern and Nyanza (15%), and others (10-12%). The majority (78%) of clinics operate from one to five times per week, while the rest operate one to three times per month. The average target population per MCH-FP clinic varies from 3,000 in Coast and Central Provinces to around 5,000 in Western, Eastern, and Rift Valley Provinces, with North-Eastern Province facilities covering on an average of 10,000 women (Table 7.3). Because rural health facilities are overburdened with curative services, preventive and promotive services are underdeveloped, and outreach programs are insufficiently coordinated, a large number of women of reproductive age remain outside the health delivery system. While the Family Health Field Educators have reached some of these women, they can cover only a small percentage with their present staff. Extending and improving access could very well increase the number of acceptors and long-term users of FP services.

The problem of developing an effective management information system and the logistic problem of ensuring delivery of contraceptive supplies at the clinic level have been emphasized. There have been cases of delays, and some clinics have been left without supplies. 3/ There is also confusion caused by the great number of donors giving different brands of pills. These could be

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1/ Ministry of Health, ibid.
2/ IRS 1.
3/ The mission was told, for example, that IUDS were in short supply during 1977/78.

Table 7.3: DISTRIBUTION OF MCH-FP CLINICS AND AVERAGE TARGET POPULATION PER CLINIC

Province	Number of MCH-FP Clinics	Average Target Population per MCH-FP Clinic
Nairobi	48	2,416
Central	97	3,306
Coast	58	3,206
Eastern	73	4,986
North-Eastern	4	10,000
Rift Valley	89	4,775
Nyanza	75	5,693
Western	55	4,909
Kenya	499	4,304

Source: National Family Welfare Center, 1976.

sorted out at the appropriate levels of management if an adequate information system could provide timely feedback. Such problems call for a more decentralized administrative system, under which a variety of local problems could be sorted out at a level lower than that of the central government, as, for example, provincial headquarters. 1/

The personnel situation poses an important management problem. Many posts remain unfilled for long periods. An example is provided by the Evaluation and Research (ER) Division of NFWC, where the ER adviser has been working as head of the division as well. While this system worked at the beginning of the program, when no one was available to organize the Division, it is now adversely affecting the ability of the division to cope with its increasingly complex task of evaluation and research. The post of Senior Statistical Officer is also vacant in this particular division. Similar situations exist in other divisions: e.g., the need to have a full-time head for the Information and Education (I&E) Division has been repeatedly identified by supervision and review missions from the World Bank. The lack of staff has also been recognized, but the process for creating positions has been inefficient, if not totally ineffective. In this connection, it has been emphasized that administrative staff should be recruited and placed at the provincial and district levels to supervise the large numbers of newly recruited Family Health Field Educators.

The other problem with regard to personnel is lack of training. Although much has been done in this area, more needs to be accomplished. Currently, training is being given by different divisions, e.g. Clinical, Information and Education, and Research and Evaluation. Training should be consolidated for better coordination, and a Training Division created. Different kinds of training needs have been identified, including refresher training for those who are on the job and the inclusion of a family planning curriculum in the training of health personnel who do not work directly for MCH-FP.

6. Information Needs and Action Research

No evaluative assessment of the FP program can be made, because of a lack of data. There has not been much action (operational) research to indicate the strengths and weaknesses of the existing program or to help plan further extensions of the program. (One should mention, to the credit of the program, that the computerized master file on family planning clients is a potentially rich source of information.)

The collection of client data is confined to family planning only. One of the basic premises of the Kenyan program is the link between maternal

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1/ A good beginning has been made in the form of intersectoral review of service delivery points. These are seminars where the management staff of National Family Welfare Center (NFWC) go to the field to learn about the problems and issues facing the local staff. This has proven very useful but has so far been done for only two provinces, and has proven inconvenient in that staff have been obliged to travel to the provincial headquarters. These seminars would be better held periodically, at the district level, organized in such a way as to supplement an institutional system of information flow from the clinic levels to the district, provincial, and national levels.

child health and family planning; however, no information is available as to whether this link has proved a helpful factor in the program. How many MCH clients have been persuaded to use family planning services? We have no clues. In fact, no analysis of MCH data has been attempted so far because there is no corresponding master file on MCH clients. Although with the existing staffing problems an attempt to construct such a file on MCH clients would not be advisable, more analyses on MCH data collected from the returns submitted by clinics should be possible. In the future, the program should make a strong effort to evaluate the possible impact of combined MCH - family planning services on the acceptance and continued practice of family planning.

The use of the master file of FP client data has been limited so far. The use of service statistics has been confined to the function of monitoring, without evaluation or analysis to permit insights about client needs as they relate to future extension of the program. Heretofore, client data have been presented in the form of quarterly and annual reports that include the status of total family planning clients at a point in time by categorizing them as "active," or "nonactive" (not reporting for more than three months). Such a classification of clients helps only in understanding how many clients are using the family planning delivery system at a given point in time, but says nothing about the average length of time that a client remains within the system.

The current system of coupons helps in recruiting clients and maintaining service records that provide useful information on clients coming into the system; but no effort is made to follow up clients: general information on what happens to clients who do not return to clinics at a stipulated time is sketchy. An in-house study by the Evaluation Research Division of NFWC shows that the most frequent reason cited for discontinuation is the desire to have another child (28%). A substantial number of clients (17%) mention contraceptive side effects as a reason for dropping out. 1/ Spouse objection is also cited.

Efforts to institutionalize the regular follow-up work of the Family Health Field Educators have not met with much success because of resistance to public identification of clients as past users of family planning services, as well as the problem of wrong or incomplete address information. On the management side, the problem of follow-up is a matter of maintaining proper records and contacting those clients who do not come back to the clinic on time. More importantly, the problem is rooted in lack of knowledge as to what happens to a client after she has been to the clinic. Is her dropout motivated by personal reasons or influenced by others? So far, there is not enough information to judge what makes the dropout rate so high in Kenya.

7. The Demand Factors

The reasons for high dropout rates and low prevalence rates of contraceptive practice may actually be found in the almost universal desire of Kenyan parents for a large family. The most important issue on the demand side is to find the links between socioeconomic development and the demand for and utilization of family planning services. From these linkages one can

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1/ See also J. Mugo Gachui, "Family Planning in Kenya and the Problem of Dropouts," Institute of Development Studies, University of Nairobi, Discussion Paper No. 220.

see that in future, the demand for family planning services will probably go up as more women become better educated. The demand for family planning services is stronger in urban centers than in rural areas: this is evident from the ILO/University of Nairobi survey of 1974. Better education in general and access to information affect the demand for family planning.

In this regard, the most important contribution of the program can come from its information/education component. Unfortunately, this part of the program has been characterized as the weakest. 1/ The Knowledge, Attitude and Practice (KAP) surveys in Kenya have indicated that the majority of the target population is ignorant of contraceptive matters: a recent survey by the Family Health Field Educators showed that seven out of ten persons surveyed could not name one modern contraceptive method. The problem is compounded by the fact that even acceptors may lack enough information about contraception and reproductive physiology to use certain methods effectively.

While there is public interest in learning more about family planning and other matters related to it, the information system is not operating effectively at present. An operational plan for Information and Education was prepared by a member of the Bank's population mission in collaboration with MOH staff, but never implemented. This plan calls for not only considerable emphasis on the effective use of resources directly under the control of MOH--clinics, maternity wards, field staff, mobile health education vans, and MOH-sponsored radio programs--but also some use of home visiting and MOH-sponsored exhibitions and shows. The plan also envisages close cooperation with other Ministries of the GOK and non-government organizations in working with groups for family planning motivation. Thus, the plan calls for a level of program commitment that would involve substantial extension of MOH-IEC activities and the participation of other organizations. The possible role of the Ministry of Information and Broadcasting should be reviewed carefully, and other critical supportive services should be identified. Policy decisions to provide more education for women or to raise their social status (e.g., through better income distribution and formal sector job opportunities), would perhaps create more demand for FP services.

The factors that explain high fertility (Chapter 5 and 6) also explain low acceptance of family planning. While trying to manipulate socio-economic determinants of fertility to raise both consciousness of and demand for family planning services, it should be possible to work toward the given preferences of reproducing couples. In other words, if there were a better information system and more education for women, there would be a natural effect of increased demand for family planning services, although the breakthrough must come by means of policies and programs that affect the important determinants of fertility behavior and attitudes.

1/ External Review Mission, 1977.

Future Directions

8. The Task Ahead (Tables 7.4-7.7)

Table 7.4 below shows three alternative projections of population. Of these three projections, the first is actually based on the assumption of an unchanged fertility situation that produces an average growth rate of 3.82 per year throughout the period, 1970-2000. The mission estimated the family planning service coverage needed to reach these two other alternative projections, which roughly corresponds to Projections 2 and 4 in Table 1.30 of Chapter 1. 1/ We should note here that Projection 2 in Table 7.4 (corresponding to population Projection 2 in Chapter 1) is the most feasible and has a built-in assumption of a mild fall of fertility (about 30%) by the year 2000. This projection is roughly equivalent to a family planning coverage (Type A) that might be possible considering the current status and trend of the growth of FP services, but would require intensified efforts, as outlined later.

An alternative projection of family planning coverage (Type B), assumes a target rate of fertility decline of nearly 50% by the end of the century. This projection presupposes an immediate increase of FP coverage of substantive magnitude and pursuance of an effective and broad-based population policy (outlined in Chapter 8) to achieve fertility reduction. The projection is clearly very ambitious, requiring an accelerated increase in family planning, starting from its initial period, but gaining momentum after 1990. We consider Type B coverage technically feasible, but unlikely considering the reality of the situation, unless the Government immediately makes drastic changes in its policies in the directions suggested in the next chapter, in addition to all the measures of program development outlined here. As we shall see later, even Type A envisages a steady expansion of the programs at a pace much higher than has hitherto been experienced in Kenya. In that sense, Type A appears feasible only on the assumption that a strong family planning program will be pursued by the Government. 2/

From these projections, we worked out the number of clients that would have to be served by FP services under alternative rates of coverage (see Table 7.5). For Type A coverage, the average number of new clients to be recruited per year between 1996 and the year 2000 is 490,000, as against 910,000 for the same period in the case of Type B coverage. One can see that the difference between these two yearly estimates is not substantial up to 1990, because the decline in fertility in Projection B in Table 7.4 is based on the realistic assumption that a significantly steeper decline of fertility is only

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1/ The projections in Chapter 1 are estimated on the basis of assumed fertility and (consistent) mortality rates, and projections in this chapter are based on alternative states of family planning coverages that are needed to produce the projected population figures, working on the premise that a constant fertility rate is associated with no family planning.

2/ At best, a variant of Type A, recruiting more family planning clients in the later period beginning 1990, can be expected if the resources of program development outlined in this chapter are adopted and further intensified over time.

Table 7.4: TOTAL PROJECTED POPULATION 1970-2000 AND GROWTH RATES UNDER ALTERNATIVE ASSUMPTIONS OF FP COVERAGE (000's)

Years	No Family Planning		Type A Coverage		Type B Coverage	
	Total Fertility	Population	Total Fertility	Population	Total Fertility	Population
1975	8.0	13.5	8.0	13.5	8.0	13.5
1980	8.0	16.4	7.8	16.3	7.8	16.3
1985	8.0	19.7	7.6	19.4	7.5	19.4
1990	8.0	23.7	7.1	22.9	6.8	22.7
1995	8.0	28.7	6.3	26.7	5.7	26.0
2000	8.0	35.1	5.4	30.8	3.9	28.7
Growth Rate (1970-2000)		3.82		3.30		3.02

Table 7.5: CLIENTS UNDER TWO ALTERNATIVE STATES OF COVERAGE (000's)

Years	New Clients		Total Clients Served during the Previous Five Years		Active Clients [a] At End of Year	
	Type A	Type B	Type A	Type B	Type A	Type B
1975	52.1	52.1				
1980	102.1	106.0	863.1	878.4	142.3	146.7
1985	200.0	270.0	1,841.6	2,162.3	362.6	460.4
1990	300.0	429.7	3,876.5	5,174.3	822.4	1,061.0
1995	400.0	684.0	7,210.6	10,206.9	1,518.1	2,275.2
2000	560.0	1,088.0	12,041.7	20,099.9	2,644.2	4,661.4

a/ These are estimated using the continuation rates experienced in the Kenyan program. It is, however, assumed that the rates would improve over time. For example, it is assumed that the drop out rate after the first visit (15% in 1975) will become zero by 2000; the program continuation rate, that is the probability of new clients will continue up to one year, will improve from 67% in 1975 to 90% in 2000.

possible after 1985; also, it is assumed that the family planning coverage in Projection B cannot unduly exceed what is projected for A up to 1990. It is only after 1990 that substantially more coverage and a more rapid rate of fertility decline can take place. The difference in fertility is indicated by the range of roughly 5.4 to 3.9 (for total fertility rate) in 2000, as against a difference between 7.1 to 6.8 in 1990.

Table 7.5 shows that during the period 1990-1995 the difference between Type A and B coverages of family planning would be about 1.1 million new clients. By the year 2000 the difference goes up to 2.1 million new clients in five years. As for the difference in active clients, by 1995 the difference between the two coverages of family planning comes to about 760,000, but by the year 2000 it goes to about two million active clients. We also note the difference in terms of couple/years protection between the two forms of coverage (A and B, see Table 7.6). From these tables, it is clear that even with a realistic projection of extended family planning coverage, a much greater increase in number of FP acceptors would have to be achieved, at least in the later stages, than a trend line would indicate. We find that even reaching the Type A coverage could involve a huge increase in terms of resources and efforts. Type B coverage assumes a much steeper rise in number of new clients, beginning from the initial period (which, as noted earlier, is feasible but unlikely). If the state of FP coverage is like Type B, however, the accumulated effect on fertility would be substantial (see Tables 7.4 and 7.6).

Table 7.7 records the total costs of FP programs under different states of coverage.

9. Extension of the MCH-Family Planning Program (Tables 7.8-7.13)

There are no data to indicate what sort of clients have been coming to the clinics and which ones are most receptive to family planning. As we have noted, however, the client data file longitudinally recording the incidents of each visit and revisit of every client constitutes a potentially valuable reservoir of information as to the nature and extent of use of the system over time. It might be possible to do (a) a cohort analysis on follow-ups of a few selected groups of first visitors, to see what changes occur in their status over time (e.g., drop-out, change of method, unavailable); and (b) to correlate length of stay in the system with socioeconomic characteristics of the clients (What kinds of clients have remained longest in the system?). Such analyses would help in identifying the most receptive ground for expansion of the program.

In Tables 7.8 through 7.10, we see some tabulations of the age structure, number of living children, and education of the clients who came to the clinics between 1974 and 1977. They show that selected characteristics of clients--age, living children, and education distribution--remain more or less unchanged at the aggregate level. Over 70% of clients were below the age of thirty, and slightly over 40% had two or less living children. Since most of these women will have additional children (as shown by the aggregated total fertility rate), contraceptive use is primarily for spacing purposes. About a quarter of the clients already had six or more children; most of this group may be using contraceptives to contain family size.

Table 7.6: PROTECTION AND BIRTHS AVERTED UNDER TWO ALTERNATIVE STATES OF COVERAGE

Period	Couple/Years of Protection (000's)[a/]		Births Averted (000's)	
	Type A Coverage	Type B Coverage	Type A Coverage	Type B Coverage
1975-1980	409.2	415.6	105.5	106.7
1980-1985	1,002.0	1,161.1	247.1	277.7
1985-1990	2,488.6	3,241.1	625.4	814.2
1990-1995	5,260.8	7,252.6	1,356.6	1,839.9
1995-2000	9,579.6	15,803.4	2,479.0	4,023.2

a/ In estimating effective protection it is assumed that contraceptive success rate will improve from 80% in the initial period to 95% by the end of the century.

Table 7.7: TOTAL FAMILY PLANNING COSTS
(KE million in 1970 prices)

Period	Type A Coverage			Type B Coverage		
	Investment Costs	Operating Costs	Total Costs	Investment Costs	Operating Costs	Total Costs
1975-1980	26.6	8.8	35.4	28.3	9.0	37.3
1980-1985	78.1	18.8	96.9	110.3	22.1	132.4
1985-1990	143.7	39.6	183.3	202.0	52.9	254.9
1990-1995	227.3	73.7	301.0	372.3	104.4	476.7
1995-2000	353.1	123.1	476.2	726.3	205.6	931.8

Table 7.8: AGE AT FIRST VISIT, OF ACCEPTORS ATTENDING THE MCH-FP CLINICS, 1974 to 1977

Age	1974	1975	1976	1977
Under 20	10	12	12	12
20 - 24	34	35	36	35
25 - 29	25	25	26	27
30 - 34	15	14	15	14
35 - 39	8	8	8	8
40 - 44	3	3	3	3
45 +	0.3	0.5	0.5	1
Not Stated	4	3	-	-

Source: Ministry of Health, 1977 Annual Paper for the National Family Welfare Center, 1978 (mimeo), p. 29.

Table 7.9: LIVING CHILDREN OF ACCEPTORS ATTENDING MCH-FP CLINICS, AT FIRST VISIT, 1974 TO 1977

Number of Living Children	1974 %	1975 %	1976 %	1977 /1 %
None	4	3	3	4
1	18	19	19	20
2	18	19	19	19
3	14	14	15	15
4	12	12	13	12
5	11	10	10	9
6 +	23	21	21	21
Not Stated	1	1	-	-

/1 Based upon 1st, 2nd and 3rd quarter data.

Source: Ministry of Health, 1977 Annual Report for the National Family Welfare Center, 1978 (mimeo), p. 30.

Table 7.10: EDUCATION OF ACCEPTORS ATTENDING THE FAMILY PLANNING CLINICS AT FIRST VISIT DURING 1974 TO 1977

Education Level	1974 %	1975 %	1976 %
"No Formal Education"	26	26	25
Standard 1 to 3	7	8	7
Standard 4 to 7	46	45	46
Form I to III	10	11	13
Form IV to VI	6	7	8
Higher	0.3	0.4	0.3
Not Stated	4		

Source: Ministry of Health, 1976 Annual Report for the National Family Welfare Center, Nairobi, Kenya 1978 (mimeo).

Table 7.10 shows that most of the clients coming to MCH-FP clinics have a higher level of educational attainment than Kenyan women in general--nearly 50% of the clients have passed Standards 4 to 7. The figure for clients with education of from 1 to 6 years went up slightly between 1974 and 1976, from about 17% to 22%.

The ILO/University of Nairobi Household Survey of 1974 throws some light on what kind of people have been using FP services. It indicates that young, urban, and better-educated women are more likely to visit the clinic than older, rural, and less-educated women (see Tables 7.11, 7.12, and 7.13). These differences are significant. For example, only 6% of the women in the sample who had no formal education reported visiting a clinic in 1973 or 1974, whereas about 35% of the women who had graduated from Form IV reported doing so. In addition, better educated women are much more likely to revisit.

We have already noted the prospects of extending the coverage of family planning services through supplying better management, more trained personnel, and wider access within the overall strategy of the current MCH-FP Program. It is, however, important to emphasize that even to reach the projected client coverage of Type A (Tables 7.4 and 7.5), a substantial improvement and extension of the existing program will be necessary. This will involve not only intensification of current activities but also initiation of new activities and strategies.

First on the list or recommendations is a much more extended information education communication (IEC) program within and beyond the existing organization for family planning services. This would include non-formal educational activities for adults and youths (as a part of adult literacy campaigns or youth recreation programs), mass-media programs, and introduction of family life education into formal curricula in the secondary schools and colleges. The experience of other countries indicates that, although not immediately contributing to an increase in FP practice, an intensified IEC helps to create awareness about family size limitation.

For IEC to be effective, target groups must be identified and culturally acceptable messages developed. In Kenya, like most other LDCs, husbands play a dominant role in household decision-making; if the family planning message is directed toward males (heretofore it has not been), encouraging results may be obtained. FP messages must be appropriately designed to suit cultural and tribal norms and beliefs; little research has been done so far on these operationally significant issues. The results of some important experiments in FP information-education-communication elsewhere are relevant here--namely, Kaoshiung experiment (Taiwan) and Sungdong Gu experiment (South Korea), where the effects of mass-media propagation of the FP message were estimated; these experiments indicate that although IEC alone does not persuade prospective clients to adopt family planning, it helps in removing misconceptions and in reinforcing the personal contact of FP workers and prospective clients.

The second important element for extension is the use of new cadres of extension workers. As mentioned above, IEC alone in the form of mass media or even nonformal education, does not lead to the adoption of family planning--for personal contact, outreach workers are required. The Kenyan experience of using a new cadre of field staff (Family Health Field Educators) has been in line with the results of other experiments--namely, workers with

Table 7.11: PERCENT OF WIVES VISITING FAMILY PLANNING CLINICS IN 1973 OR 1974, BY AGE AND RESIDENCE

Wife's Age	Rural	Urban	Total
15-19	11.6	8.9	11.1
20-24	12.2	22.7	14.4
25-29	11.5	19.1	12.6
30-34	12.8	24.3	14.2
35-39	7.9	10.0	8.2
40-44	4.1	9.1	4.6
45-49	8.4	X	8.0
15-29	11.8	19.0	13.1
30-49	8.7	14.4	9.4
Mean	10.4	17.5	11.5

X Less than 5 observations.

Source: ILO/University of Nairobi - Household Survey, 1974.

Table 7.12: PERCENT OF WIVES VISITING FAMILY PLANNING CLINICS IN 1973 OR 1974, BY EDUCATION AND RESIDENCE

Wife's Education	Rural	Urban	Total
None	5.9	5.3	5.8
Illiterate (Standards 1-4)	13.3	15.0	13.5
Literate (Standards 5, 6)	19.5	16.1	18.9
Primary Graduate (Standard 7 to Form III)	20.5	25.6	22.5
High Level (Form IV or above)	23.1	41.4	35.7
Mean	10.4	17.5	11.5

Source: ILO/University of Nairobi - Household Survey, 1974.

Table 7.13: PERCENT OF WIVES VISITING FAMILY PLANNING CLINICS IN 1973 OR 1974 WHO VISITED IN BOTH 1973 AND 1974 BY EDUCATION AND RESIDENCE

Wife's Education	Rural	Urban	Total
None	33.3	X	31.8
Illiterate (Standards 1-4)	36.0	X	34.6
Literate (Standards 5, 6)	42.9	20.0	39.4
Primary Graduate (Standard 7 to Form III)	70.0	58.3	65.6
High Level (Form IV or above)	X	60.0	50.0
Mean	44.2	45.8	44.5

X Less than 5 observations.

Source: ILO/University of Nairobi - Household Survey, 1974.

relatively little training can be effective in doing the routine jobs necessary for expansion of FP services. The critical question in this regard, however, is to know what kinds of workers are most effective in an outreach program. Should they be of similar or superior socioeconomic status to their prospective clients? In the Kenyan context, it appears that worker/client cultural (e.g. tribal) similarity is important enough that a case can be made for recruitment of local people as agents for extension work in given areas. A cadre of paraprofessionals--secondary school graduates given some initial training and continued on-the-job instruction--should be useful in substantially extending the program.

Another important condition for rapid expansion of the MCH-FP program is the support of related organizations for family planning. In this regard, Kenyan women's organizations could be of great assistance. The two most important voluntary organizations--which are already involved with FP but could take a much more active part--are the Family Planning Association of Kenya (FPAK) and Maendeleo Ya Wanawake (Women for Development). The role of FPAK has so far been confined to IEC and service delivery in Nairobi only; it can and should be extended to many other cities and rural areas, with active financial support from the Government. The importance of the voluntary organizations lies in the fact that they are not viewed as outsiders by prospective clients. Maendeleo Ya Wanawake has recruited membership widely; its support among rural women is still limited, but growing, and it could play an increasingly important role by organizing informational seminars and workshops.

It is also important to explore the idea of extending organizational support for FP from health care to a broader base of development programs, e.g., the whole spectrum of rural development. Rural institutions can be involved in providing services according to local needs and preference. Unfortunately, the record of local government participation in Kenya is not good: bodies such as the District Councils never developed into strong institutions, and, as a result, development administration has remained centralized and provides little scope for local involvement in family planning programs, at least in the short run. Moreover, existing rural development programs are largely single-purpose (e.g., agriculturally focused) and dominated by public officials, which makes it difficult to enlist participation by community leaders. Keeping the long-run perspective in view, however, it is desirable to encourage MOH to expand its contacts at the district level, using the framework of District Development Committees. In this connection, the role of Health Development Committees, which have been constituted for the purpose of maintaining Rural Health Centers, could be useful in involving both government and nongovernment functionaries at the local level.

In the long run, the determinants of fertility will have to be addressed; as more education and better status for women result and better living conditions are brought about through economic development, attitudes regarding contraceptive use will become more favorable, reflecting a reduction in the desired family size. Only then can family planning coverage be expected to increase. If the government intensifies its efforts, Projection A should be attainable. With a comprehensive population policy (as outlined in the next chapter), and all-out implementation of an effective health-based family planning program, even Projection B--optimum coverage--could become a reality.

CHAPTER 8: TOWARDS A COMPREHENSIVE POPULATION POLICY

1. Introduction

As noted in the previous chapter, Kenya was the first sub-Saharan country to officially adopt a policy of fertility reduction through family planning. The commitment of the political leadership to the program, however, has been weak, and its objectives are not vigorously pursued. No specific demographic target is seriously aimed at; family planning services are provided in a package with maternal and child health care, with emphasis on the latter. However, as noted in the last chapter, the overall policy chapter of the Fourth Development Plan, 1979-83, underlines the Government's serious intention of pursuing a policy of reducing population growth rate. Although the commitment of the political leadership to such a policy appears to be stronger than ever before, much remains to be done to translate the stated broad policy into an action plan.

The Kenyan people almost universally favor large families, and many have a "large-country perception," i.e., a belief that Kenya can support a larger population; for this and other reasons, fertility control is a politically sensitive issue. Administrators and planners show a better understanding of the situation, but express skepticism about the chances of reducing population growth through family planning alone. Their perception seems to be correct; as our analyses in Chapters 5 and 6 indicate, no significant fertility reduction in Kenya is possible unless there are changes in fertility-related attitudes and a stronger role for women in the family decision-making process. Population policy in Kenya must go "beyond family planning" in order to set a declining trend in fertility.

As noted in Chapter 1, the prospects of significant reduction in population growth rate in the near future are dim. Mortality appears to be declining, but there is no indication that fertility has declined significantly in any major section of the population--on the contrary, there is considerable evidence that it has increased in some parts of the country. The net effect of a declining death rate and an increasing fertility rate is a slowly increasing rate of natural growth. In future, if health levels improve and venereal diseases are controlled, fertility will probably increase among coastal and pastoral peoples whose fertility is at present relatively low, thus nullifying the small decline that may be expected in the urban population.

2. Planning for a Growing Population

Kenyan planners must accept that, in spite of all efforts, in the near future the population will grow at a rapid rate, and that their task is to meet the basic needs of the growing numbers. This means that the problems associated with rapid population growth cannot be avoided by a policy designed to reduce fertility, whose results are slow in coming in all cases, but will be especially slow in the Kenyan context. Chapters 2, 3 and 4 of this report have addressed the consequences of population growth and highlighted the extent and nature of this task. A comprehensive population development policy must accommodate and adjust for rapid growth of population, and not depend on or hope for short-term fertility reduction.

Official basic needs planning for 1979-83 calls for improvement in employment, income, and availability of basic needs services like education, health, nutrition, housing, and water. The immediate consequence of rapid

population growth will be a substantial budget burden on the Government to provide these services; however, a great part of the basic needs objectives could be met by adjusting delivery system strategies, for example as follows:

The essential adjustments in the delivery system strategies in Kenya are:

A. Low Cost Service: A strategy of low cost per capita calls for a choice of appropriate standards and technologies. We illustrate the point by references to housing and health.

Given the magnitude of the task, the problem of urban housing must be approached, in part, within the framework of existing low-income squatter settlements. A central feature of the squatter upgrading initiative would be the granting of secure tenure rights and the opportunity for self-help by residents. For health, it is clear that health needs of the population cannot be satisfied exclusively through a system of health centers with the current mix of health manpower. It has been estimated that Kenya has one traditional medical practitioner for every 250-400 people, and that 80% of births are supervised by a traditional nurse-midwife. Clearly these traditional practitioners are important resources and should be utilized in a comprehensive, but relatively less resource-intensive plan to provide health care to rural people.

B. Private Sector Services: The approach to meeting basic needs in Kenya should also involve the development of private delivery systems wherever possible. We can illustrate the relevance of this point with regard to the health sector.

It is not essential that health strategy should be limited to the development of a public delivery system. As an alternative, an attempt could be made to develop community level organizations for the distribution of medications, with intake into the formal health center system where necessary. It is not unreasonable to expect that the cost of medication could be at least partially recovered. A respected member of the community could be provided with minimal training to play the role of dispenser; in some instances, traditional practitioners (herbalists or midwives) might be recruited. While such a program involves certain risks, they could be partly controlled by initially limiting the coverage to bare essentials, e.g., malaria prevention. Furthermore, such risks must be viewed relative to the need and the limited resources available.

As an example of such a strategy, the National Christian Council of Kenya is developing a community-based health project in western Kenya using the infrastructure of the parish. The community began, with the help of a consultant from outside, by examining the nature of common medical complaints and what the community could do to respond to them. A Health Committee was established, and a Secretary chosen. The Secretary essentially became the community healer and health manager. Drugs were purchased for common complaints, and a "medication clinic" now holds hours two or three times each week. The costs of the medications are recovered from their sale.

C. Increased Role of Local Government Institutions: The capacity of local governmental units to administer basic needs programs should be developed. An example of this is in site and service housing schemes, where

the administrative capacity of local authorities is being developed. For water supply, the long-run objective is to assure appropriate design and sound operation and maintenance procedures of all rural water supply schemes. However, given the magnitude of the task and the severity of resource constraints, selection procedures have important implications for costs per person served, level of scheme utilization, degree to which the basic needs of the poor are satisfied, pattern of development, and political and social tensions. The present role of the District Development Committees (DDC) to devise water schemes with priorities assigned on the basis of need should be further strengthened. Only technical and financial feasibility may result in some modification of priorities decided by the DDCs.

D. Flexibility: A fourth ingredient is that strategy must be flexible enough to meet individual circumstances. This ingredient is closely related to the previous three. An example of relating strategies to circumstances is recognizing that certain programs may have a potential impact in a given situation because of already existing programs, and capitalizing on linkages among programs. At the same time the poorest areas should not be ignored, but instead should become the focus of more comprehensive strategies.

As in the delivery system strategies, adjustments are needed in the agriculture sector, which remains the basis of the Kenyan economy. Agricultural development policies must be evaluated in the light of population pressures that affect the structure of production, employment, land use, and inputs in the agriculture sector. Future development policy packages should give much more attention to the issues of restructuring large-scale agriculture into smallholder farms so as to generate rural economic activity and increase productivity. These policies, as analyzed in the earlier part of the report, are designed to cope with the task of meeting the needs of one massive population growth in Kenya that is bound to come.

The basic needs policies are worthwhile in their own right but it is important to evaluate their demographic impact. Luckily, development policies are not expected to have any lasting positive effect on fertility, although some of them may have such an effect in the short run. We shall elaborate on this aspect of the impact of development policies on fertility as we outline the ingredients of a comprehensive population policy.

3. Policies for Fertility Reduction: Objectives and Options

Having granted that in the short run Kenyan planners must address the consequences of population growth, what can be recommended for reducing fertility? What are the reasonable objectives of fertility regulation policies and what options are available to obtain those? There can be three broad objectives:

(1) To provide comprehensive family planning services to meet untapped demand;

(2) To provide incentives or disincentives which encourage family limitation without disaffecting people about family planning and without impeding freedom of choice and provision of basic needs for all.

(3) Emphasize development programs which are valuable in their own right and which will accelerate the smaller family size norms.

The first and most desired option is to strengthen substantially the regular family planning program. This can be done within the framework of the current program (e.g., by increasing its efficiency), or by extending the program (e.g., introducing new methods or engaging a new cadre of outreach workers). We have reviewed the status of the current family planning programs in Chapter 7 and noted the measures required to strengthen the program. We have also concluded that some demand for family planning does exist.

Where FP services have been introduced, they have been utilized--even if not as fully as desired. A sensible starting point for any strategy of fertility reduction is the fullest possible exploitation of the existing demand. Evidently the extension of FP services to areas not previously reached is essential; but also the level of utilization must be improved in areas already covered; however, really large-scale reduction of fertility through family planning programs alone is unlikely. Substantial changes in attitude toward family size must occur before a significant reduction can become possible.

The second option would involve the use of some form of pressure or sanction for inducing eligible couples to reduce fertility.

4. Incentives and Disincentives

Family planning pressures and sanctions which are actually disincentives or incentives either attempt to induce couples to restrict fertility or compensate them for foregone fertility. Obviously, any such program would have to be combined with access to cheap, safe, and efficient methods of contraception, or the chances of its success will be slim. Incentives for FP can take different forms, e.g., cash payments for the use of contraceptives or for limiting family size. Cash incentives for contraception have been tried in many family planning programs: in some cases, acceptors have been rewarded; in others, both acceptors and those who refer them, including FP workers, have been compensated. 1/ Some couples do not use contraceptives because of the inconvenience associated with it, e.g., regular visits to clinics. In such cases, incentives become a way of attracting prospective clients to the program and helping them to make more use of its services. Recently however, there has been some criticism of cash incentives on the grounds that they may precipitate hasty acceptance of an irreversible method (i.e., sterilization). It will be important to avoid these adverse side effects.

1/ The FP program in Taiwan has experimented with incentives in the form of annual bank deposits redeemable for post-primary education certificates if parents have had three or less children. Another program in Taiwan offers free MCH services for the first two children, but none if the woman has three or more births. These experiments were quite well received and although these were too short-lived to indicate their ultimate impact on fertility, they did result in a substantial rise in attracting parents to avail of these incentives. For the present, a general incentive program of the type used in Taiwan does not appear to be suitable for Kenya without first having an intensive family planning information-education program, but could be considered in future.

Incentives may be provided with the purpose of changing the preference for family size itself--a kind of compensation for foregone fertility. There can be a strong justification for such direct compensation since the private (perceived) net benefit is often higher than the social net benefit of having an additional child. In this case, compensation actually constitutes an attempt to reduce the difference.

A scheme of incentives for non-pregnancy is especially suitable for a well-defined group of people for whom the scheme can be efficiently administered. Since a sizeable segment of the Kenyan population works on tea estates and coffee farms, some results in creating demand for contraception might be achieved in these loci by introducing incentive programs for limiting family size (say, to 4 children). The Government should seriously consider this, after a careful review of administrative and organizational issues. 1/

Another important method of pressure and sanction involves disincentives for having a large number of children. 2/ Such disincentives can include elimination of income tax relief in cases of three or more children, paid maternity leave up to the first two pregnancies only, progressive increases in childbirth costs after the first two deliveries, and loss of

priority for public housing to large families. Thus, the disincentive programs take the form of reducing social and economic opportunities to high fertility couples by withholding certain normal rights or privileges; they can work as a rationing device in a situation of excess demand for services.

Methods of direct coercion have also been used. Such measures aim to make all childbearing beyond a certain level impossible, and include, e.g., raising the legal age of marriage or denying marriage licenses, and sterilizing couples after a certain number of births. In practice, coercion has rarely proved successful (e.g., minimum age at marriage), and in a recent experience in India strong measures by FP and other officials were followed by a marked political setback. Coercive measures present serious moral issues, and none would be practical in Kenya. Even disincentives can be opposed on moral grounds, since they penalize large families in various ways and add to inequities of benefit distribution. The outcome of these disincentives can be loss of welfare to those children born to large families.

Administrative considerations may make a disincentive program undesirable; in Kenya, as in most LDCs, large numbers of people live in rural areas and their access to benefits and services from the Government are

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1/ In India such a scheme is being tried out with a limited population living on tea estates. Payments are made into a savings account for the participating woman as long as she does not become pregnant. At the end of the reproductive age, she receives the deposit plus interest if she has borne only two children; if she has borne three or four, she loses part of her payment; and if five, she loses it all. This particular experiment has been tried in Tamil Nadu, and similar schemes have been used on tea estates in Assam and West Bengal.

2/ To date, Singapore is the only country that has attempted a large-scale disincentive program.

limited; withdrawal of these services and benefits, therefore, has no strong force. Of the benefits to rural people, education and health services and agricultural credit are the important items, but the availability of these to an average person in the rural areas is still somewhat limited. However, in the future, some of these are going to expand substantially and a discriminating policy to encourage fertility regulation may become feasible. Income tax relief would also be irrelevant, because the large sector of small farmers and agricultural workers do not pay income tax. The small farmers in Kenya are affected by the Government policy about producer prices, but using this leverage for fertility objectives would be extremely unpopular and difficult to implement. Some of these disincentive measures perhaps could be managed in urban areas (e.g., right to public housing), but these areas already have substantially lower fertility (see Chapter 1). In the rural areas, the only measure that might be considered feasible currently is a substantial increase of school fees after the third child and heavy charges for maternal and child health services after the third pregnancy. Besides the administrative problems of implementing such a discriminative policy of distributing services, it would be objectionable on equity grounds and politically sensitive.

5. Socioeconomic Development for Fertility Decline

The third option is, of course, offered by a policy of selective socioeconomic development, which would have a negative impact on fertility. Much of the impact of socioeconomic development is expected through an increase of effectiveness of the existing family planning program.

Although there has been no case of a substantial fall in overall fertility in any sub-Saharan country in recent years, fertility differentials within countries and within the sub-Saharan region are striking. Based on our analyses, several policies can be suggested for Kenya. It should be stressed that the chances of these policies succeeding in bringing about a drastic reduction are not good in the short run. One can feel fairly confident about the long-run effects, but no knowledge about the nature of time lag exists. For this reason, any policies adopted in the hope of promoting a decline in population pressures should also have independent justification and social value, whatever the effect on fertility.

The improvement of education levels among women emerges as a possible area for effective policy action. Household analyses indicate that a negative relationship between wife's education and fertility apparently occurs only among those who have completed Standard 5 or above: up to the primary level, there is an apparent positive effect of female education on fertility. This result from multiple regression indicates the effect of education controlling for other variables. When the relationship between female education and fertility is studied without controlling for other factors, the association is stronger and indicates the threshold situation as found in the household analyses. Data from 1962 and 1969 censuses show that the fertility of women who had at least some secondary education was substantially below the national average, while women with only primary schooling had markedly higher fertility than those who were uneducated. From these indications it might appear that the expansion of primary education for girls (universal secondary education being only a very distant goal for some time to come) would raise rather than lower fertility--but such a conclusion could be misleading.

The pattern of relationships between female education and fertility emerging from the household analysis in Chapter 5 may not hold in future. The threshold of fertility decline, which is now evident at the secondary level of education, may move downward as primary education spreads throughout the population. Such a trend toward lower threshold is especially likely if what is now associated with secondary level education becomes available even with primary level education (e.g., awareness about or access to FP information and services). This process may already have started. As we noted in Chapter 7, women who have completed at least three years of primary school are heavily overrepresented and uneducated women heavily underrepresented among family planning acceptors. The bivariate results regarding the relationship of female education to fertility in Chapter 5 seem to indicate that with better level of living associated with primary education, better health and higher fecundity may have resulted; but that education may have already led to deliberate efforts to limit family size. In other words, from the evidence about contraceptive practice, it appears that some women with primary education are using contraceptives and thereby reducing their fertility from their potential (which is higher because of better health and higher level of living associated with primary education), although not as effectively as the women with secondary education or more. In that case, the threshold can go down if fertility attitudes and effectiveness of contraception with primary education in future become the same as with secondary education in the past. On balance, it can be said that implementing the policy of providing more educational opportunities for women is crucial to attaining a substantial decline in fertility, at least in the long run.

An associated but general policy recommendation is that Government development programs be directed toward improving the role and status of women, especially in relation to quality of life and the net economic cost of children. One obvious policy is to open and expand wage employment in the modern sector for women. Household analyses show a strong negative relationship between wife's labor force participation away from home and fertility. Based on this finding, one could argue that more wage employment for women will help reduce fertility. The policy of selective employment for women in the wage sector seems to have limited scope, however, at least in the short run. The high level of unemployment and underemployment among school leavers is already a serious problem, almost precluding the possibility of substituting female for male in wage employment. Moreover, the majority of women are already fully engaged in agricultural work, in addition to their normal domestic and child-rearing responsibilities. Large-scale movements of women from the traditional rural sector to the modern sector are, therefore, neither feasible nor desirable without overall growth of employment and structural adjustments in the economy.

One important step toward improving the status of women in Kenya would be to provide them with access to services for agricultural development, for example, agriculture extension services, credit facilities, and the like. Currently these services are only made available to men, although women are largely involved in small-scale agricultural operations. To the extent that women cannot avail themselves of such benefits, they are dependent on men. 1/

1/ See Kathleen Staudt, 'Effects of Government Agricultural Policy on Women Farmers' Institute of Development Studies, Working Paper No. 225, and Achola A. Pala, "Women and Development: An Overview of Kenya," American Council of Education, 1976.

The inclusion of women in the provision of agricultural services would reduce their dependency in general and thereby give them more influence in planning their own fertility.

A substantial fertility differential has been found between urban and rural women, with the former showing lower fertility than the latter. Both the areal and household analyses in Chapter 5 found a strong negative association of urbanization with fertility; however, this difference may well be due to selective migration of women with fewer children. In any case, a policy of encouraging urbanization as a means of fertility reduction cannot be recommended. First, the costs and disadvantages of urbanization may far outweigh the gains from fertility reduction. Second, the present negative effects of urbanization on fertility result from a level of development or living that may not be replicable simply by fostering urban growth.

One frequently recommended means of reducing fertility is a campaign to reduce infant and child mortality. The reasoning is that children are not only loved and desired for themselves, but needed as a source of domestic and agricultural labor. An improvement in child survival rates will lessen the perceived need for large families and create an economic situation that would lead parents to restrict their fertility voluntarily.

A decline in child mortality certainly appears to be necessary, though probably not sufficient, for a large-scale fall in fertility. Although household and areal analyses did not find any significant relationship between mortality and fertility, reduction in child mortality is a goal amply justified for its own sake. The short-term demographic effects of such a reduction must be borne in mind for planning purposes. 1/ The proportion of children in the population will rise, increasing the dependency burden. Population growth will increase, both immediately as death rates fall, and later, when larger cohorts reach childbearing age. Also, many of the measures necessary for really large reductions in child mortality, such as clean water supplies and improved nutritional standards, will probably raise health levels among adults, and the consequent lower general mortality and higher fecundity will contribute further to increased growth pressures. Some immediate slight decline in fertility should also result, however, since lactation uninterrupted by an infant death delays the return of fecundity after a birth. On balance, therefore, an infant health project could be considered an investment in long-term benefits.

The establishment of a pension or welfare system for the elderly and disabled can be recommended as a means of reducing fertility, since it would remove some of the economic necessity for large families. It too is a policy eminently justifiable for its own sake. The Government has instituted the National Social Security Fund to provide social security for old age for persons in wage employment, in addition to a pension program for public sector employees, and it was planned that by 1978, 650,000 workers would be regis-

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1/ These effects would explain why in the short run one may not find a strong association of child mortality and fertility.

tered under the scheme. 1/ This old age security program needs to be substantially expanded to cover almost the entire body of wage sector employees. The demographic effects of a comprehensive old age security scheme, however, are not easy to predict. Probably some decrease in mortality in old age would occur at first, with a consequent very slight increase in population growth. any decline in fertility would probably be slower to come, though it could be expected to occur in time. The purely demographic effects in the short term, therefore, would not be large; nevertheless, some such policy would probably be useful for controlled growth in the long term.

Finally, we should note the expected effect on fertility of a general improvement in level of living. This is important for examining the role of development as a means of fertility regulation. In Chapter 5 we analyzed the effects of various development indicators on fertility; we found that some of the effects were positive and some negative.

6. Conclusion

What emerges from these results can be best described by the roles of supply and demand forces in the fertility outcome at the family level. At a low level of living, 2/ the fertility outcome (represented by the number of surviving children) is determined by supply factors (e.g., health of the mother, nutrition of children). As the level of living improves, it is no longer a matter of how many living children the couple can have, but how many they would like to have, and at that level demand factors become binding. In our results, we find that when women have education above Standard 5 (representing a certain level of living), fertility is lower. Here the demand factors (through attitudes regarding fertility) determine the outcome. Thus, the total effect of development depends upon which group is more affected by it. If most of it goes to improve supply factors, fertility will increase, but if it goes to strengthen demand forces, fertility will decline. Two policy implications follow:

If the process of development is confined to a few who already have low fertility (through the effects of demand factors), then the decline in terms of fertility will be very little. In fact, fertility will increase, if this is coupled with marginal improvement for those who have supply constraints. On the other hand, if the benefits of development go to the vast majority and push them to a level where demand factors matter, total fertility will fall significantly. To make demand forces operative, a diversification of the benefits of development and substantial improvement of the level of living of the majority is called for.

1/ Government of Kenya, Development Plan, 1974-78, p. 495.

2/ What actually constitutes a "low" level of living must be empirically investigated.

The other implication for policy is the necessity for programs that can strengthen demand forces without waiting for the full course of development to occur. This calls for more family planning information, education, and communication activities to strongly influence the preference functions of couples, so that demand factors become binding. As noted, a substantially expanded and intensified IEC component is necessary for attracting a growing number of clients to family planning programs. For a comprehensive population policy, what is needed is a much more broadly based IEC program directed not only to potential clients and their opinion makers at community level, but also the political/administrative leaders who influence the behavior of the prospective clients at large. Such an IEC program has to be a concerted effort of a number of agencies, Information Ministry, rural development departmental bodies, youth and social welfare organizations, etc. These need to be coordinated by either a central administrative agency or by an interministerial committee, when the operating ministry for family planning (Ministry of Health) assumes the leadership. The program has to be designed effectively not only to recruit increasing number of FP clients but also to motivate political/administrative leaders to actively participate in an all-out campaign for family planning.

BIBLIOGRAPHY

Abbott, S. "The Modern Environment of all Kenyan Women." Kenyan Education Review, vol. 2, no. 2 (December 1975).

Anker, Richard, "An Analysis of Fertility Differentials in Developing Countries." Review of Economics and Statistics, vol. 15, no. 4 (February 1978).

_____. "Socio-Economic Determinants of Reproductive Behavior in Households of Rural Gujarat, India," Ph. D. dissertation. Ann Arbor: University of Michigan.

_____. "The Effect of Group Level Variables on Fertility in a Rural Indian-Sample." Journal of Development Studies, vol. 14, no. 1 (October 1977).

Basfield, J. "Age at Marriage and Family Size: Social Causation and Social Selection Hypothesis." Journal of Biomedical Science, vol. 4, no. 1 (January 1972).

Becker, Gary S. "An Economic Analysis of Fertility." Demographic and Economic Change in Developed Countries, Universities-National Bureau, New Jersey: Princeton, 1960.

Blacker, J. C. G. "The Demography of East Africa." National Resources of East Africa. Edited by E. W. Russell. Nairobi: English Press, 1962.

Blake, Judith. "Parental Control, Delayed Marriage and Population Policy." Proceedings of World Population Conference, 1965. vol. 2, New York: United Nations, 1967.

Bloomberg, L. N., and C. Abrams United Nations Mission to Kenya on Housing. Nairobi: Government Printer, 1965.

Bohdal, M., N. E. Gibbs and W. K. Simmons. Nutrition Survey and Campaign Against Malnutrition in Kenya, 1964-1968. Report prepared for the Ministry of Health in Kenya on a WHO/UNICEF assisted project, 1968.

Boserup, E. Women's Role in Economic Development. London: Allen and Unwin, 1971.

Breet, E. A. Colonialism and Underdevelopment in East Africa: The Politics of Economic Change, 1919-1939. London: Heinemann, 1973.

Brown, G., and S. J. Burki. "Sector Policies and Linkages in Meeting Basic Needs," IBRD Development Policy Staff Paper, no. 7 Washington, D.C.: IBRD, February 1978.

Bryant, John. Health and the Developing World. New York: Cornell University Press, 1979.

Caldwell, J. C. "The Economics Rationality of High Fertility: An Investigation Illustrated with Nigerian Survey Data." Population Studies, vol. 31, no. 1. (March 1977), p. 9.

Carruthers, I., and A. Weir. "Rural Water Supplies and Irrigation Development" Edited by Judith Heyer, J. K. Maitha and W. M. Senga. Agricultural Development in Kenya: An Economic Assessment. Nairobi, Oxford University Press, 1976.

Central Bureau of Statistics, "Demographic Surveys 1973-76," Methodological Report, (October 1977).

_____. Economic Survey 1973-1977. Nairobi.

_____. Information System for Vital and Health Statistics." Social Perspectives 1:2 (1976).

_____. Integrated Rural Survey 1974-1975 Republic of Kenya: Ministry of Finance and Planning, March 1977.

_____. "Literacy in Rural Kenya." Social Perspectives 2:3 (1977).

_____. "The Rural Kenyan Nutrition Survey, February-March 1977." Social Perspectives 2:4 (1977). Pp. 5-6.

_____. "Population Projections by Districts 1970-80." Kenya Statistical Digest, Vol. X, No. 3 (September 1972), p. 2.

_____. Population Census 1969. 4 Vols. Republic of Kenya: Ministry of Finance and Economic Planning. November 1970.

_____. Statistical Abstract 1961-1977, Republic of Kenya: Ministry of Finance and Planning.

_____. "The Development of the Teaching Profession." Social Perspectives 2:6 (1977).

Chenery, H.B., and M. Syrquin. Patterns of Development 1950-70. London: Oxford University Press, 1975.

Cho, Lee Jay, and Robert D. Retherford "Comparative Analysis of Recent Fertility Trends in East Asia." Reprinted from International Union for the Scientific Study of Population,International Population Conference,Liege 1973,vol.3,1973.

Cleave, J. H. "Food Requirements and Availability in Uganda: A National Food Balance Sheet" in Nutrition and Food in an African Economy. Ed. by V.P. Amman, D.G.R. Belshaw and J. P. Stanfield, Kampala, Makerere University, 1972.

Coale, Ansley J., and P. Demeny. Regional Model Life Tables and Stable Populations. Princeton, NJ: Princeton University Press, 1966.

Cochrane, Susan "Fertility and Education -- What Do We Really Know," Washington, D.C. World Bank Staff Occasional Paper no. 26. 1979.

Collier, Paul and Lal Deepak. "Poverty and Growth in Kenya." World Bank, 1979. Mimeographed.

Corsini, Carlo A. "Is Fertility Reducing Effect of Lactation Really Substantial?" Seminar on Natural Fertility, INED, March 21-24, 1977. Paris.

Court and Kinyanjui Report, "Access to Education Opportunities in Kenya." International Institute for Educational Planning Working Paper. Institute for Development Studies. Nairobi, University of Nairobi, 1977. Mimeographed.

Crawford, Eric and Erik Thorbecke. "Employment, Income Distribution, Poverty Alleviation and Basic Needs in Kenya." Report of an ILO Consulting Mission. (N.Y.: Cornell University, April 1978).

Donaldson, G. F., and Jan Pischke" Small Farmer Credit in Kenya" AID Spring Review, Washington, D.C.: AID, 1973.

Dow, Thomas. "Attitudes Towards Family Planning in Nairobi." Demography vol. 4 no. 2 (1967): pp. 780-797.

Easterlin, Richard. "An Economic Framework for Fertility Analysis" Studies in Family Planning, vol. 6 no. 5 (March 1975).

Faruqee, Rashid. "Sources of Fertility Decline: Factor Analysis of Inter-Country Data." Working Paper No. 318. Washington: World Bank 1979.

Freedman, Ronald. Community-Level Data in Fertility Surveys. World Fertility Survey Occasional Paper no. 8.

Gachui, J. Mugo. "Family Planning in Kenya and the Problem of Droputs." Discussion Paper No. 220, Institute of Development Studies. University of Nairobi Discussion Paper no. 220. Nairobi: University of Nairobi.

Ghai D., E. Thorbecke, and M. Godfrey. "Alleviating Poverty and Meeting Basic Human Needs in Kenya." International Labor Organization Consulting Mission 1977.

Ginneken, J. Van. "Prolonged Breastfeeding as a Birth Spacing Method." Studies in Family Planning, vol. 5, no. 6 (June 1974)

Goldberg, D. "Modernism: The Extensiveness of Women's Role and Attitudes." World Fertility Survey Occasional Paper no. 14. December 1974.

Gutto S. B. "The Status of Women in Kenya, A Study of Paternalism, Inequality and Underprivilege." Discussion Paper no. 235 I.D.S. Nairobi, April 1976.

_____, R. Marina, and V. W. Muchai. "Law and the Status of Women in Kenya," Law and the Status of Women. New York: United Nations, 1978.

Hanger, Jane and John Morris. "Women and The Household Economy." Edited by R. Chambers and John Morris. An Irrigated Rice Settlement in Kenya. Afrika Studien. no. 83, I.F.O. Munchen, 1973.

Heisel Don, "Attitudes and Practices of Contraception in Kenya." Demography. vol. 5, no. 2 (1968), pp. 632-641.

Henin,Roushdi A. and Susan H.Mott."The Impact of Current and Future Population Growth Rates on the Short Term Social and Economic Development in Kenya." Nairobi, September 1979. Mimeographed.

House, W.J. The 1977 Nairobi Informal Sector Survey. Department of Economics, Nairobi University, 1979.

International Food Policy Research Institute. Food Needs of Developing Countries: Projection of Production and Consumption to 1990. Washington, D.C.: IFPRI, Dec. 1977.

International Labor Office. Employment, Incomes and Equality. Geneva: ILO, 1972.

_____, Labor Force Projections Vol. 2. Geneva: ILO, 1977.

Johnson, Bruce, F. "Food, Health and Population in Development." Journal of Economic Literature, vol. XV, no. 3 (September 1977).

Kabwegyere, T. B. "Determinants of Fertility: A Discussion of Change in the Family Among the Akamba of Kenya." Edited by J. C. Caldwell. The Persistence of High Fertility, Population Prospects of the Third World. Camberra: Australian National University, 1977.

Kelley, Allan, and Caroline Schwartz. "The Impact of Family Structure on Microeconomic Decision Making in Developing Countries." International Union for the Scientific Study of Population (IUSSP) Conference. August 29, 1978, Helsinki. Mimeographed.

Heyer, J., J.K. Maitha and W.M. Senga, eds. Agricultural Development in Kenya, An Economic Assessment. Nairobi: Oxford University Press, 1976.

Knowles, J. C., and Richard Anker. "A Micro-Analysis of Female Labor Force Participation in Kenya." (WEP 2.21/WP 62) Geneva: International Labour Organization, January 1978.

_____, "An Analysis of Income Transfers in a Developing Country: The Case of Kenya." Population and Employment. Working Paper No. 59. Geneva: International Labour Organization, Nov. 1977.

_____. "An Empirical Analysis of Mortality Differentials in Kenya at the Macro and Micro Levels." Working Paper No. 60. Geneva: International Labour Organization, 1977.

_____. "The Determinants of Internal Migration in Kenya: A District Level Analysis." Working Paper No. 56. Geneva: International Labor Organization, 1977.

Krystall, A. "The Education of Women Since Independence." (unpublished paper).

Lapham, J. "Family Planning and Fertility in Tunisia." Demography 7:2 (1970).

Latham, M.C. and others. "The Relationship of Nutrition and Health to Worker Productivity in Kenya." IBRD Memorandum No. 26. May 1977.

Maleche A. "A New Status for Women in Kenya." East African Journal, vol. no. (June 1972).

Massel, B.F. "Consistent Estimation of Expenditure Elasticities for Crop Section Data and Households Producing Parthly for Subsisistence." The Review of Economic and Statistics, vol. 51. no. 2. (May 1969).

Massell, B.F. and J. Heyer. "Household Expenditure in Nairobi: A Statistical Analysis of Consumer Behavior". Economic Development and Cultural Change (January 1969).

Mbithi and Barnes. Spontaneous Settlement Problems in Kenya. Nairobi: East African Literature Bureau, 1975.

Mbungi, Nancy C. "A Community Nutrition Survey Among Children 1-60 Months for the Purpose of Identifying Nutritional Problems and Formulating the Basic Principles of Nutritional Education and Other Strategy in Theika Division."

McKay, D.H. "Venereal Disease in Masai: A Field Survey June and July 1950." East African Medical Journal, vol. 27.

Migot-Adholla, S.E. "Some Sociological Aspects of Family Law in Kenya." Paper presented at the Kenyan National Council of Womens Conference, February 1974.

Mitchell, R. E., "Husband-Wife Relationship and Family Planning Practice in Urban Hong-Kong," Journal of Marriage and the Family. 34 no. 1 (February 1972), 139-146.

Molnos, A., ed. Cultural Source Materials for Population Planning in East Africa. 3 vols. Nairobi, 1972.

Monsted, Mette. "The Changing Division of Labor With Rural Families in Kenya" Project Paper on Rural Families in Kenya. Nairobi, October 1976. Mimeographed.

Mueller, Eva. "Economic Motives for Family Limitation." Population Studies. 26 (November 1972).

Mugar, V. W. "Matrimonial Property in Kenya: A Study of Proprietary Rights of Women." LLB dissertation. Nairobi: University of Nairobi, 1976.

Okoth-Ogendo, H.W.O. Text of Presentation at the International Women's Year Tribune's Panel on the Family, Mexico City, 1976.

Ojwang, J.B. "Polygamy as a Legal and Social Institution in Kenya." East Africa Law Journal, vol. 10 (1974).

Ollenu, N.A. Comments with Special Reference to Customary Law. East Africa Law Journal, vol. 5. (1969).

Oppong C. "Conjugal Power and Resources: An Urban African Example." Journal of Marriage and the Family, vol. 32. no. 4 (November 1970), 676-80.

Pala, Achola, O. "Women and Development: An Overview of Kenya." American Council of Education, 1976.

Paulet, C. "Estimation of Standard of Moroccan Fecundity and Mortality, 1960-70." Paper presented at the 2nd Maghred Demographic Conference, Oran, Algeria 1975.

Population Centre. Bangalore. Occasional Paper Series no. 2. 1975.

Population Reference Bureau. Population Data Sheet, 1978. Washington, D.C.: 1978.

Republic of Kenya, "African Socialism and its Application to Planning in Kenya." Sessional Paper no. 10. Nairobi; Government Printer, 1965.

_____, Development Plan 1974-1978. Nairobi: Government Printer 1974.

_____, Draft Development Plan 1979-1983. Nairobi: Government Printer, November, 1977.

_____, Ministry of Agriculture. "Small Farm Sector Policy Paper." Nairobi, 1978. Mimeographed.

_____, Ministry of Economic Planning and Community Affairs, Child Nutrition in Rural Kenya. Nairobi: Government Printer, 1978.

_____, Ministry of Education. Annual Report 1975 Nairobi: Government Printer, 1975.

_____, Ministry of Finance and Planning, Kenya Statistical Digest. vol. 10. no. 1. (March 1972).

_____, Ministry of Health, Information, Bulletin, Communicable Disease Control, vol. 1. no. 4 (March 1977).

_____, Ministry of Health, National Family Welfare Center Annual Report 1976. Nairobi: Government Printer, 1976.

_____, Ministry of Health, National Family Welfare Center, Evaluation of Family Planning Annual Report 1975. Nairobi, Government Printer 1978 (Mimeographed).

_____, Ministry of Health. "Revision of Demographic and Acceptor Targets." Nairobi, Government Printer 1976. Mimeographed.

_____, Ministry of Health, "Rural Health Services," 1978. Mimeographed.

_____, Ministry of Housing. "The Housing Stock in the Major Towns of Kenya: Public and Semi-Public Housing Stock in 22 Municipalities and Town Councils as per 31st December, 1975." Nairobi: Government Printer, 1977.

_____, Ministry of Lands and Settlement "Human Settlements in Kenya. A Strategy for Urban and Rural Development." Nairobi, Government Printer, 1977. Mimeographed.

_____, Report of the National Committee on Educational Objectives and Policies. Nairobi, Government Printer 1976.

Racki, R., J. Racki and P. Patel. Methodology and Analysis of Low Income Housing System, 1972.

Richardson, H. and others. "National Urban Development Strategy for Kenya Rural-Urban Balance." Washington, D. C.: World Bank, Dec. 1977. Mimeographed.

Rosaldo, Michele and Louise Lampire, Woman Culture and Society, San Francisco: Stanford University Press, 1974.

Ross, Marc. The Political Integration of Urban Squatter. Evanston: Northwestern University Press. 1973.

Rosen, B. and A. Simmons. "Industrialization, Family and Fertility: A Structural - Psychological Analysis of the Brazilian Case," Demography. 8. no. 11 (February 1971), 49-69.

Ruttenberg, Hans. Africa Agricultural Production Development Policy in Kenya 1952-1965. I.F.O., Afrikan Studien 10. Berlin: Springer-Verlag, 1966.

Schultz, T. Paul, "Interrelationships between Mortality and Fertility." in Population and Development. Edited by Ronald Ridker. Baltimore: John Hopkins University, 1976.

Sly, David. "Lifetime Migration Patterns in Kenya, 1969", Population Studies and Research Insitute. Nairobi: University of Nairobi, n.d. Mimeographed.

Smith, M., and R. Rasmussen: Self Reliance in Kenya: The Case of Harambee Scandinavian Institute of African Studies Uppsala: 1977.

Smock A.C., and A. Germaine. "The Status of Women in Kenya and Ghana and the Relationship to Fertility," 1976. Mimeographed.

Standing, Guy. Labor Force Participation and Development. Geneva, 1978.

Staudt, Kathleen, "Effects of Government Agricultural Policy on Women Farmers." IDS Working Paper No. 225. Nairobi: Institute of Development Studies 1976.

The Population Studies and Research Institute. Population, Development and Economic Planning. Nairobi: University of Nairobi, n.d.

Uche, U.U., ed. Law and Population Growth in Kenya. Nairobi: African Literature Bureau, n.d.

United Nations. Report on Monitoring of Population Trends Tabulation, (E/CN .9/XIX/CRP .5/Add.1). New York, 1976.

_____. The Determinants and Consequence of Population Trends. Vol. 1: New York, 1973.

_____, Department of Economic and Social Affairs. Status of Women and Family Planning. New York: United Nations, 1975.

_____, Food and Agriculture Organization. World Food Survey, The Fourth, Rome, 1977.

_____, Food and Agriculture Organization Provisional Indicative World Plan for Agricultural Development. Vol. 1, New York: United Nations, August 1969.

U.S. Department of Commerce, Social and Economic Statistics Staff, Bureau of the Census. LRPM2. Washington, D.C.: International Statistical Programs Center, September 1977.

Verhagen, A.R.H.B. "Gonorrhoea." in Health and Disease in Kenya. Edited by L.C. Vogel and others. pp. 375-380. Nairobi, 1974.

VIAK EA LTD. Evaluation of the Rural Water Supply Program. Report prepared for the Government of Kenya. Nairobi, 1977.

Weller, R. "The Employment of Wives, Dominance and Fertility." Journal of Family and Marriage 30. no. 3 (August 1968), 437-42.

World Bank. "Agricultural Sector Survey." Washington, D.C., 1973.

_____. "The Second Decade: A Basic Economic Report on Kenya." Washington, D.C.: World Bank 1974.

_____. "The Relationship of Nutrition and Health to Worker Productivity in Kenya." Technical Memorandum No. 26, Washington, D.C.: World Bank, 1977.

Zarate, Alvan, and Alicia Unger de Zarate, "On the Reconciliation of Migrant-Nonmigrant Fertility Differentials in Urban Areas." International Migration Review, vol. 9, no. 2 (Summer 1975).

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