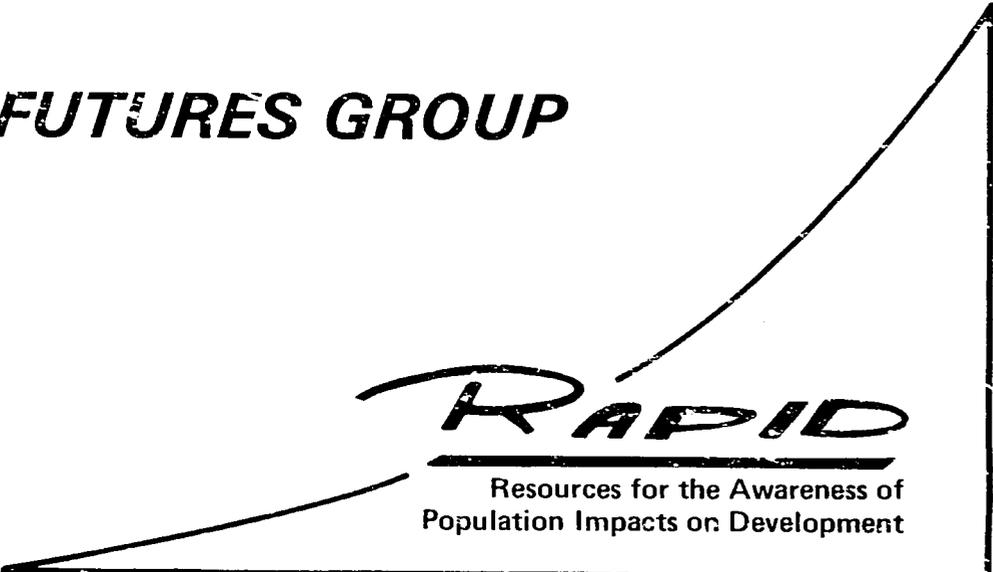


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1987

# MALAWI

## THE EFFECTS OF POPULATION FACTORS ON SOCIAL AND ECONOMIC DEVELOPMENT

*THE FUTURES GROUP*



***RAPID***  
Resources for the Awareness of  
Population Impacts on Development

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May, 1981

TABLE OF CONTENTS

|   |    |
|---|----|
| PREFACE.....  | ii |
| INTRODUCTION.....   | 1  |
| POPULATION DYNAMICS.....  | 2  |
| Birth Rates, Death Rates, and Population Growth Rates.....                        | 3  |
| Age Distribution and Child Dependency.....  | 7  |
| The Momentum of Population Growth.....  | 9  |
| Population Growth Under Three Fertility Assumptions.....                          | 12 |
| HOW MALAWI'S POPULATION CHARACTERISTICS WILL AFFECT NATIONAL OBJECTIVES FOR:..... | 14 |
| Agriculture and Arable Land.....  | 15 |
| Forest Resources and Energy.....  | 29 |
| Labor Force and Child Dependency.....   | 32 |
| Gross Domestic Product and GDP Per Capita.....                                    | 35 |
| Education.....  | 39 |
| Health.....   | 46 |
| CONCLUSION.....   | 57 |
| MAJOR SOURCES.....  | 58 |

## PREFACE

The Futures Group, under contract to the United States Agency for International Development (A.I.D.), is undertaking analyses for a number of countries regarding the effects of population factors on the efforts of these countries to achieve their economic and social goals. These analyses are being carried out for several countries that have specific development plans and are determined to make substantial economic and social progress. In each case, these analyses are offered to national leaders for consideration, and the country's own experts are encouraged to perform comparable research.

## INTRODUCTION

The World Plan of Action, adopted by 136 countries at the World Population Conference in Bucharest in 1974, recognized that "population and development are interrelated: population variables influence development variables and are also influenced by them" (Paragraph 14-C). The Plan of Action also declared that "population measures should be integrated into comprehensive social and economic plans and programs and this integration should be reflected in the goals, instrumentalities, and organizations for planning within the countries" (Paragraph 95).

The main development goals of Malawi, as given in the 1971 Statement of Development Policies, include efforts to:

raise living standards and productivity in the rural areas;

achieve an average annual rate of economic growth of 7 to 8 percent through the parallel development of smallholder production, estate production and industry;

promote a more balanced regional development;

develop local initiatives and increase local participation in the economy.

This analysis explores the impact of population factors on the ability of Malawi to achieve these major social and economic development objectives. More specifically, the effects of different projected rates of population growth on the following sectors will be examined:

Agricultural Development

Forest Resources and Energy

Labor Force and Child Dependency

GDP and GDP Per Capita

Education

Health

# **POPULATION DYNAMICS**

**Birth Rates, Death Rates, Migration, and Population Growth**

**Age Distribution and Child Dependency**

**The Momentum of Population Growth**

**Population Growth Under Different Fertility Assumptions**

## BIRTH RATES, DEATH RATES, MIGRATION AND POPULATION GROWTH

People are born; people die; some people move. Population change results from the interplay of these three forces of fertility, mortality and migration.

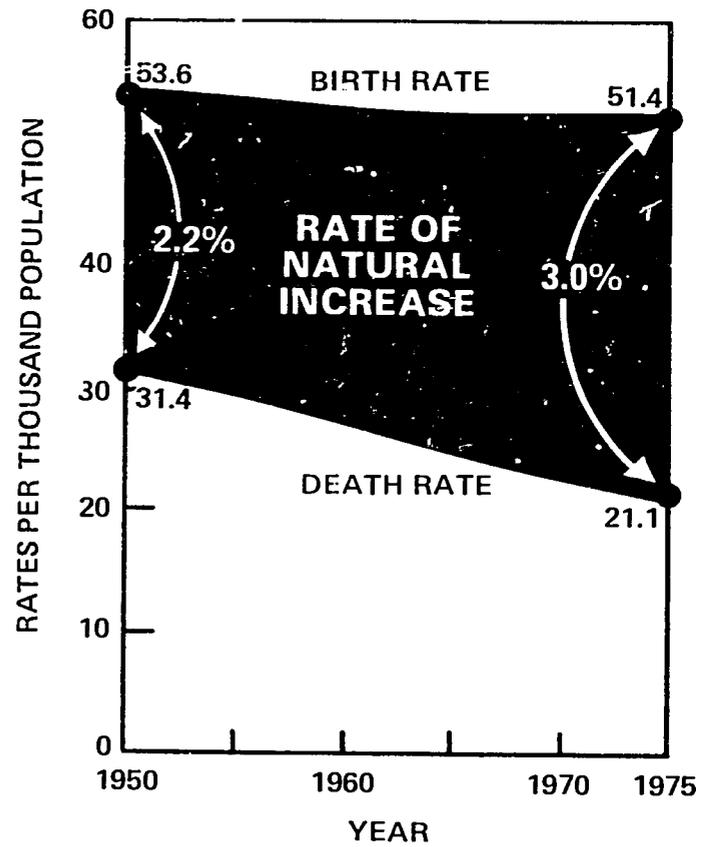
Historically, fertility has been high in Malawi. The birth rate (number of births per 1000 population) was approximately 51 in 1975 - about the same as it was in 1950. The fertility rate (average number of births per woman during her reproductive years) was about 7 in 1975.

Mortality also remains high in Malawi, especially among infants and young children. According to the Ministry of Health, the infant mortality rate (number of deaths to children under 1 year of age per 1000 live births) is still over 150. Information from special surveys suggests that, overall, somewhere between 25 and 35 percent of Malawian children die before reaching their fifth birthdays. Nonetheless, mortality has actually declined in Malawi over the past quarter century with improved public health. Life expectancy at birth rose from about 33 years during the 1950-1955 period to approximately 45 years in 1975. The death rate (deaths per 1000 population) fell from about 30 to 21 during the same period.

High fertility and declining mortality have combined to give Malawi a high rate of population growth. The population grew by 94 percent from 2.7 million in 1950 to 5.3 million in 1975, and the rate of growth was 2.9 -3.0 percent in the latter year. If fertility stays high, the population of Malawi will more than double by the turn of the century to 12.4 million people.

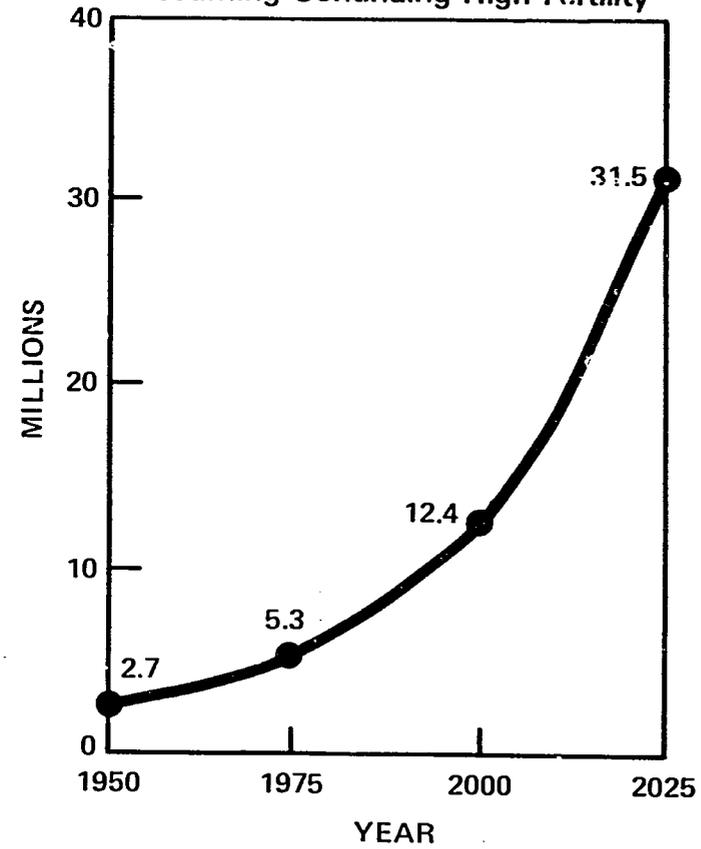
# MALAWI

## Birth Rates, Death Rates, and Rates of Natural Increase, 1950-1975



## Population Growth, 1950-2025

Assuming Continuing High Fertility



International migration has not played an important role in Malawi. At one time, between 200,000 and 300,000 Malawians, mostly young males, worked in the mines in Zimbabwe and South Africa. Following the tragic crash of a company airplane carrying Malawian workers in 1974, the Government stopped this labor migration. In subsequent years, the employment of Malawians outside the country never reached previous levels and now only about 20,000 workers are so employed.

Malawi is predominantly a rural country. About 90 percent of the population still lives in the countryside, although the annual growth rate of the cities - between 7 and 8 percent - is much higher than the rate of growth of the overall population. The Government of Malawi has not encouraged rural to urban migration, and indeed, has actively prevented the proliferation of squatter settlements. The development of the new capital at Lilongwe in the Central Region was intended in part to lessen migration to Blantyre and other metropolitan centers.

Malawi is divided into three distinct regions. The Southern Region has some mountains, but consists mostly of low lying plains. The intensely cultivated Shire Plateau, or Shire Highlands, covers about 2800 square miles. Blantyre, the largest city in Malawi with about 290,000 inhabitants, is located on the Shire Plateau. The Central Region consists largely of plateau, with low lying land along Lake Malawi. The Northern Region is mountainous with altitudes ranging to 8000 feet.

While Malawi is one of the most densely populated nations in Africa - 153 persons per square mile of land area in 1977 to be more exact - population densities vary according to the three regions. In 1977, the Southern Region was the most densely populated with 229 persons per square mile; the Northern Region was the least densely populated with 62 persons per square mile; and the Central Region had 155 persons per square mile of land area.

## AGE DISTRIBUTION AND CHILD DEPENDENCY

As is characteristic of countries where fertility has been high for a long period of time, Malawi has a very young population. Approximately 47 percent of the populace is under the age of 15. Consequently, Malawi has a very high child dependency ratio (proportion of children under 15 to adults in the economically productive ages, 15 to 64).

For every 100 adults, there are slightly more than 94 children.

By contrast, a modern industrial state typically has two or three adults in the economically productive ages for each dependent child. (Developed nations do have a larger proportion of dependent elderly in the population. However, the greater proportion of elderly does not nearly offset the smaller proportion of children.)

Furthermore, fertility levels will largely determine the child dependency ratio in future years.

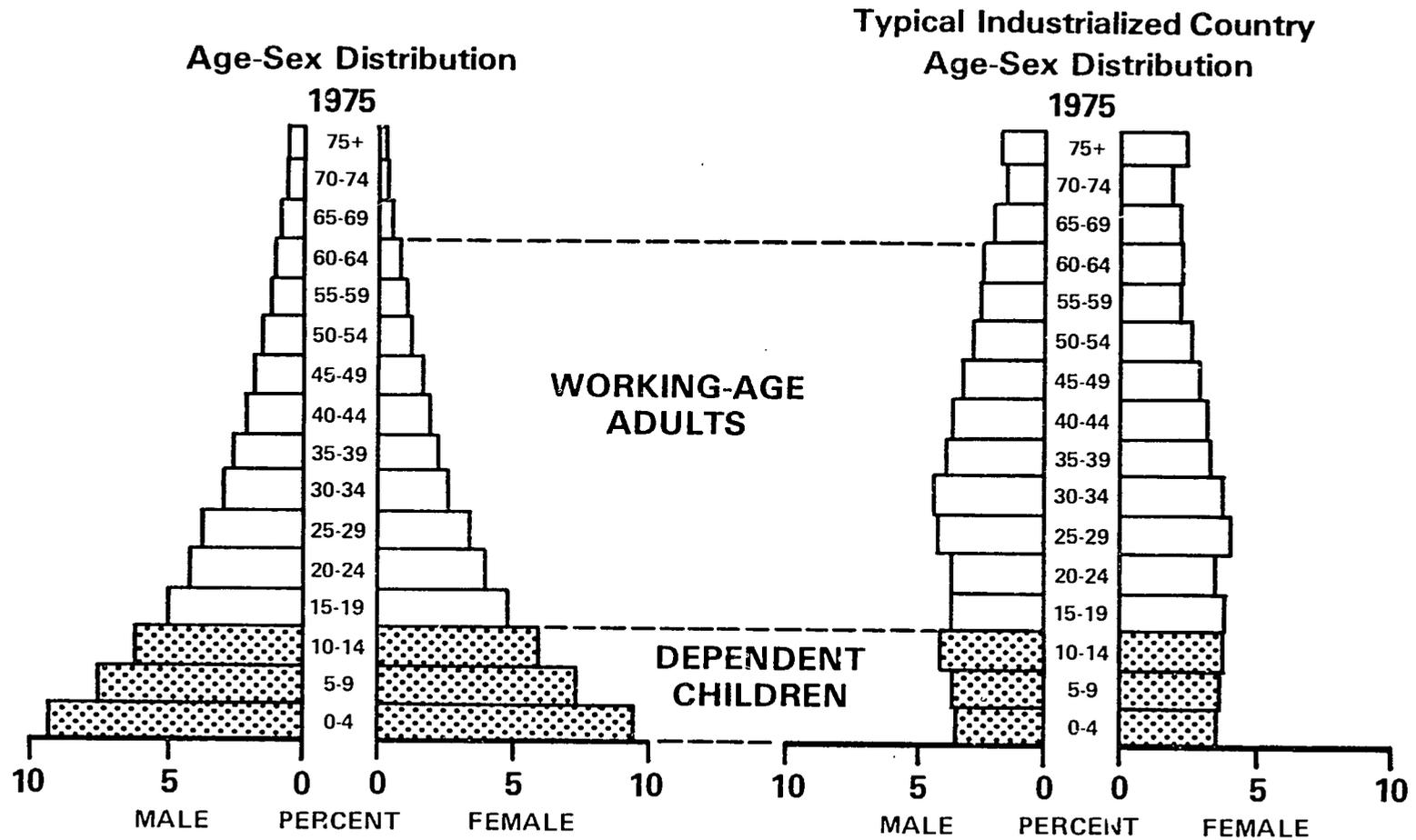
If fertility remains high to the year 2000, the child dependency ratio will increase to 98 children for every 100 adults in the economically productive ages.

If the fertility rate drops to an average of 4 births per woman by the year 2000, the child dependency ratio will drop to 71 children for every 100 adults.

The importance of these ratios to Malawi may change over time. In a traditional rural economy, a large number of children may be to the immediate economic advantage of the agricultural family by increasing the number of workers. As a nation develops socially and economically, however, and as more and more children spend longer periods receiving formal education, a high dependency ratio may strain the resources of individual households and may also affect social and economic development programs. With a large dependent population, a disproportionate share of public and private resources must be devoted to the needs of the young; hence, a significant reduction in the child dependency ratio could potentially release substantial sums to meet the capital and recurrent costs of other development programs.

MALAWI

# Age Distribution and Child Dependency



For each dependent child in Malawi there is only one working-age adult.  
 For each dependent child in most industrialized countries, there are 2 to 3 working-age adults.

## THE MOMENTUM OF POPULATION GROWTH

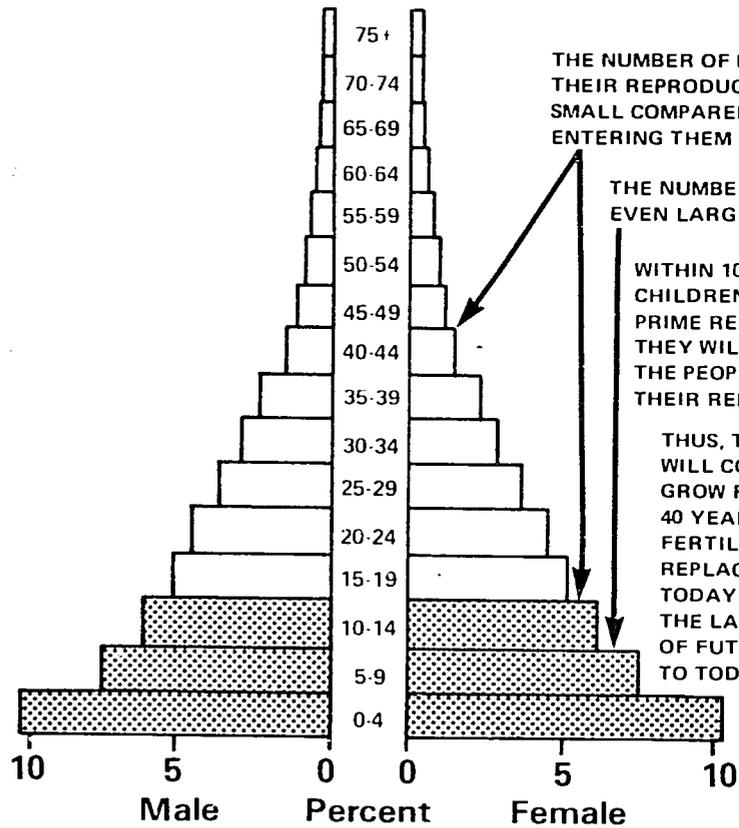
Just as a speeding vehicle cannot be brought to an immediate halt with the application of the brakes, so too a population will continue to grow long after the attainment of replacement level fertility. Should fertility decline from the present average of approximately 7 children per woman to a replacement level of slightly more than 2 children per woman, the population would nonetheless continue to grow for about 40 years. Limiting family size to two children means that eventually the population will reach a zero growth rate; however, a long delay exists between the time women begin averaging two children and population growth stops.

This lag of about 40 years is due to the age composition of the population. Where fertility has been high, as in the case of Malawi, the population is composed of a proportionately large number of young people and a proportionately small number of older persons. Consequently, the number of young women entering their reproductive years exceeds the number moving out of their reproductive years. Even if young couples limit themselves to two offspring, more births will occur than deaths for about 40 years, and the population will continue to grow until the disproportion in the number of young people disappears.

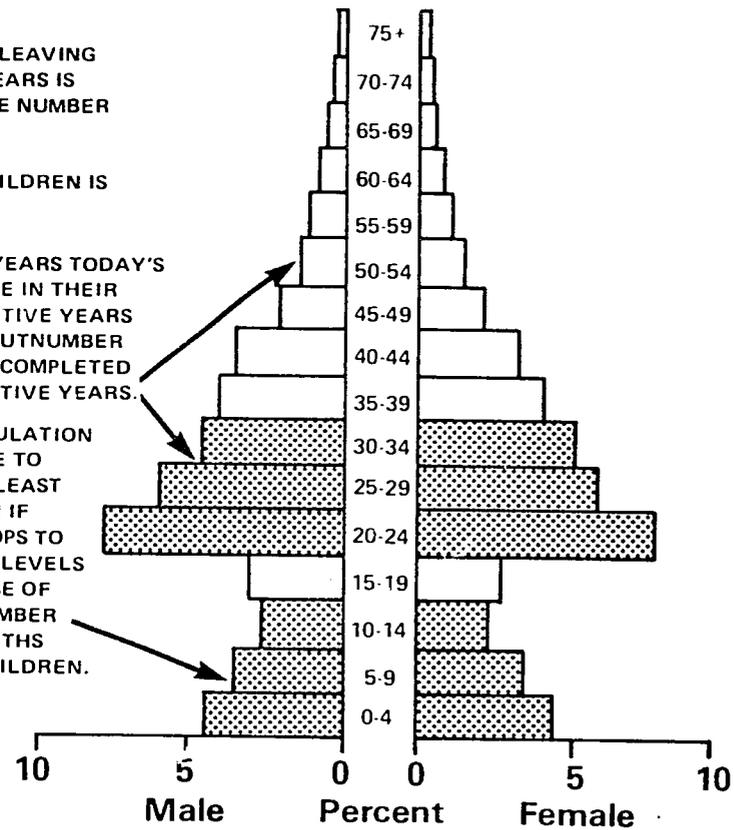
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# Momentum of Population Growth

Population Profile  
1980



Population Profile 2000  
if fertility drops to  
replacement levels immediately



THE NUMBER OF PEOPLE LEAVING THEIR REPRODUCTIVE YEARS IS SMALL COMPARED TO THE NUMBER ENTERING THEM

THE NUMBER OF CHILDREN IS EVEN LARGER

WITHIN 10 TO 20 YEARS TODAY'S CHILDREN WILL BE IN THEIR PRIME REPRODUCTIVE YEARS THEY WILL FAR OUTNUMBER THE PEOPLE WHO COMPLETED THEIR REPRODUCTIVE YEARS.

THUS, THE POPULATION WILL CONTINUE TO GROW FOR AT LEAST 40 YEARS EVEN IF FERTILITY DROPS TO REPLACEMENT LEVELS TODAY BECAUSE OF THE LARGE NUMBER OF FUTURE BIRTHS TO TODAY'S CHILDREN.

Because of this irresistible momentum and because of the time required for fertility to drop from present levels, the population of Malawi will be much larger in the future than it is today no matter what happens to the birth rate. For example, if fertility were to drop to replacement levels (a 2-child per woman average) by 2000 -an unlikely occurrence in the case of Malawi - the population would grow from 6 million today to about 9 million in 2000. The population would grow further to over 11 million over the next several decades because of the inbuilt momentum. For every decade of delay in achieving replacement level fertility, the ultimate population size of Malawi will be about 15 percent greater.

### POPULATION GROWTH UNDER 3 FERTILITY ASSUMPTIONS

Although the built-in momentum means that the population of Malawi will grow substantially in coming decades no matter what happens to fertility, any decline in fertility will markedly affect the future course of this growth. Three population projections based on alternative fertility assumptions demonstrate this fact. All three projections assume an increase in life expectancy to 58.5 years by 2000 and to 65 years by 2025, with no net international migration.

Projection A assumes continuing high fertility, as the fertility rate drops only gradually from 7.0 in 1980 to 6.4 in 2000 to 6.0 in 2025. With continuing high fertility, the 1980 population of 6.2 million will double by the end of the century, to 12.4 million. By 2025, it will be 31.5 million, or a fivefold increase in 45 years.

Projection B assumes that fertility will begin to decline immediately, and that Malawi will achieve a fertility rate of 4 by 2000 and 3 by 2025. If fertility drops to this level, the population will be 10.5 million in 2000, or 1.9 million persons fewer than would be the case with high fertility. In the year 2025 Malawi will have 17.6 million people, and the population will still be growing at a very rapid 1.6 percent per annum.

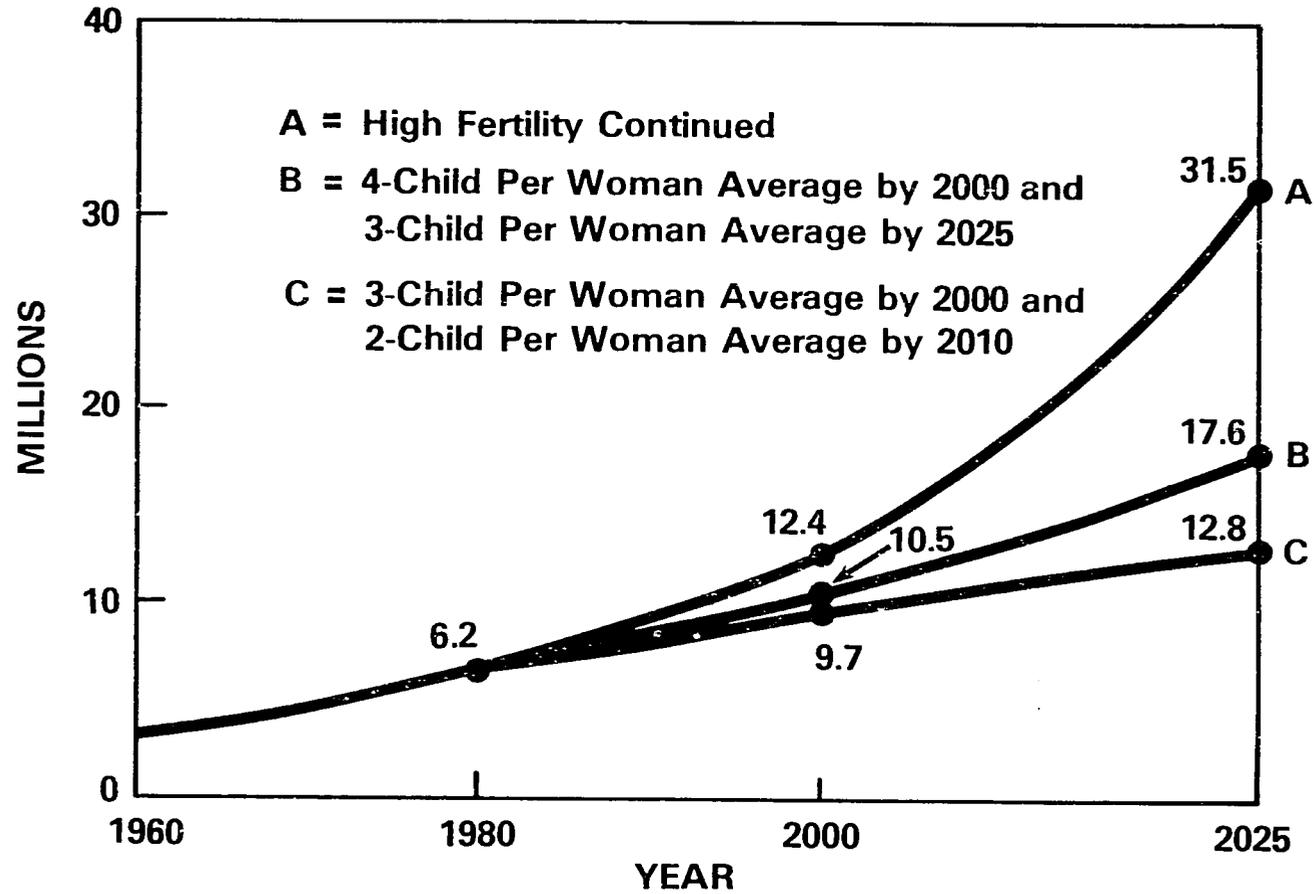
Projection C assumes the fertility rate drops to an average of 3 births per woman by the year 2000 and 2 births per woman by 2010, and is used as an illustrative example because a fertility rate of slightly over 2 represents replacement level fertility. If Malawi could achieve this level of reduction in fertility, the population would be 9.7 million in 2000 and 12.8 million in 2025 and would still be growing because of the built in momentum.

These three projections are used throughout the analysis to demonstrate the effects of different rates of population growth on the ability of Malawi to achieve its social and economic development objectives.

MALAWI

# Population Growth, 1960-2025

Under Different Fertility Assumptions



# **The Effects of Malawi's Population Characteristics on National Objectives for:**

**Agricultural Development**

**Forest Resources and Energy**

**Labor Force and Child Dependency**

**Gross Domestic Product and GDP Per Capita**

**Education**

**Health**

## AGRICULTURE AND ARABLE LAND

Malawi has no significant mineral resources and only a small manufacturing sector. Consequently, the necessary foundation for social and economic development lies in the productivity of the land.

Agriculture accounted for 46 percent of Gross Domestic Product in 1976; employed 85 percent of the labor force; and produced over 90 percent of export earnings. The two major exports are tobacco and tea. Crops are grown on both large commercial estates and smallholdings. The estates compose only about 2.5 percent of the land area and produce about 15 percent of total national agricultural output, but account for over 60 percent of total export earnings. The estates produce over half of Malawian tobacco and nearly all the tea for export.

About 85 percent of the land in Malawi is customary and is held according to traditional patterns of land tenure. Well over a million households work smallholdings averaging 3.8 acres each. The principal crop is maize. The smallholders account for 85 percent of total agricultural output and most of the foodstuffs produced in Malawi. However, the smallholders have not kept pace with the estates in the production of cash crops for export. Smallholder production as a percentage of total agricultural exports declined from 55 percent to 37 percent between 1964 and 1976. Similarly, between 1971 and 1976 production from the traditional sector grew at about 4.5 percent per year compared to about 11 percent per annum in the estate sector.

Although Malawi produces enough food to feed its population, malnutrition is still a serious problem. Local food shortages sometimes occur due to a combination of poor soils, inadequate rainfall, flooding, and inefficient farming methods. Nutritional surveys indicate that many Malawians, especially young children, suffer from an inadequate amount of vegetable or animal protein, either because such foods are not always available in some localities, or because of ignorance of their importance in the diet.

Because smallholders are both the poorest and the most numerous segment of the society, the Government of Malawi has placed emphasis on raising the productivity and incomes of rural smallholders. Beginning in 1968, four integrated rural development projects were developed. These include the Lilongwe Land Development Programme, the Lakeshore Rural Development Project, the Shire Valley Agricultural Development Project, and the Karonga Rural Development Project. These programs are characterized by a strong emphasis on the provision of infrastructure and land improvements, including roads, irrigation systems, and marketing and storage facilities. In 1977, the Government determined that the capital outlay necessary to extend these ongoing projects to all of Malawi in a reasonable time was overwhelming. The Government therefore chose to emphasize a National Rural Development Programme which places less emphasis on the development of infrastructure and more on providing farm inputs and extension services directly to smallholders.

## Land Availability

Rapid population growth may seriously affect the agricultural basis of Malawian development. Outside the Northern Region, most of the best land is already in use. To meet the increased food requirements of a rapidly growing population, fallow periods have been reduced and new lands are being brought into production which are often less fertile and more apt to deteriorate than older lands. Pressures on the forests are also increasing due to a rising demand for fuelwood and wood products brought about by population growth. Consequently, erosion is already a serious problem in parts of the country. According to the National Rural Development Programme, Malawi has 8.6 million acres of potentially arable land, 7.4 million of which were already under cultivation in 1977. About 66 percent of the remaining 1.2 million acres are located in the Northern Region of the country. Some observers have suggested that balanced regional development and the settlement of people in the Northern Region will offset any land pressures rapid population growth is creating in other parts of the country.

Directed migration may have some inherent problems. The cost to construct roads and other infrastructure has already proven to be expensive. But beyond any such limitations, the amount of arable land remaining is not great enough to accommodate population growth for very long. Agricultural surveys show that the average size of a rural landholding in Malawi is about 4 acres, and that each smallholding consists of approximately 4.6 persons. Under those circumstances, should it be possible to cultivate every potentially arable acre in Malawi that is not presently in use, about 293,000 new smallholdings could be established accommodating an additional 1.4 million people on the land.

Due to the rapid rate of population growth, however, the rural population will grow by 1.4 million people very quickly.

With high fertility and a continuation of migration from the countryside to the cities, the rural population of Malawi will grow from 5.5 million in 1980 to 7.4 million in 1990, or an increase of 1.9 million persons in only ten years. Between 1990 and 2010, an additional 6.6 million persons will be added to the rural populace, raising the total to 14 million. If about 90 percent of the rural population resides on smallholdings, 1.7 million new smallholdings would have to be established between 1980 and 2010 simply to accommodate population growth.

With a fertility rate of 4 children per woman by 2000, the rural population will increase from 5.5 million persons in 1980 to 7.0 million in 1990, and 10.3 million in 2010. About 930,000 new rural smallholdings would be required between 1980 and 2010 for the additional population, or more than triple the number that could be created by putting all currently unused arable land in Malawi into production.

With a fertility rate of 3 by 2000, the size of the rural population will be 6.9 million in 1990, and 8.6 million in 2010. Over 600,000 new smallholdings would have to come into existence between 1980 and 2010, or 1.1 million fewer than with continuing high fertility.

In brief, the large amount of unused arable land in the Northern Region presents Malawi with some important development options; nonetheless, resettlement in the Northern Region is not a long range solution to growing population pressures on the land. The alternative, of course, is a fragmentation of smallholdings, and a large, underemployed rural labor force.

MALAWI

# POPULATION GROWTH AND LAND REQUIREMENTS, 1980-2010

 = 100,000 NEW SMALLHOLDINGS

High Fertility  
Continued



4-Child Per Woman  
Average By 2000



3-Child Per Woman  
Average by 2000



 = Number of Additional Smallholdings  
Which Could be Established from  
Unused Arable Land

 + 

= Number of Additional Smallholdings  
Required to Accommodate  
Population Growth

## Agricultural Labor Force

In fact, the growth of the agricultural labor force is a serious development issue in Malawi. To achieve social and economic development and build a modern state, Malawi must rely on the productivity of its agriculture. In the long run, this means that Malawi must move from a labor-intensive and resource-based agriculture to scientific and commercial agriculture. The transition to a modern agricultural economy, with the concomitant changes in the social and economic structure, will be difficult for many reasons, including the rapid rate of population growth.

With rapid population growth, the size of the labor force is increasing dramatically. Despite growth in non-agricultural productivity, it is virtually certain that other sectors will not be able to absorb most new entrants into the labor force. Rather, new workers must find employment in agriculture. The proportion of the labor force working in agriculture has been declining modestly in recent years. If that decline continues, and Malawi develops a stronger non-agricultural sector, the number of new jobs required in the agricultural sector each year will still be impressive.

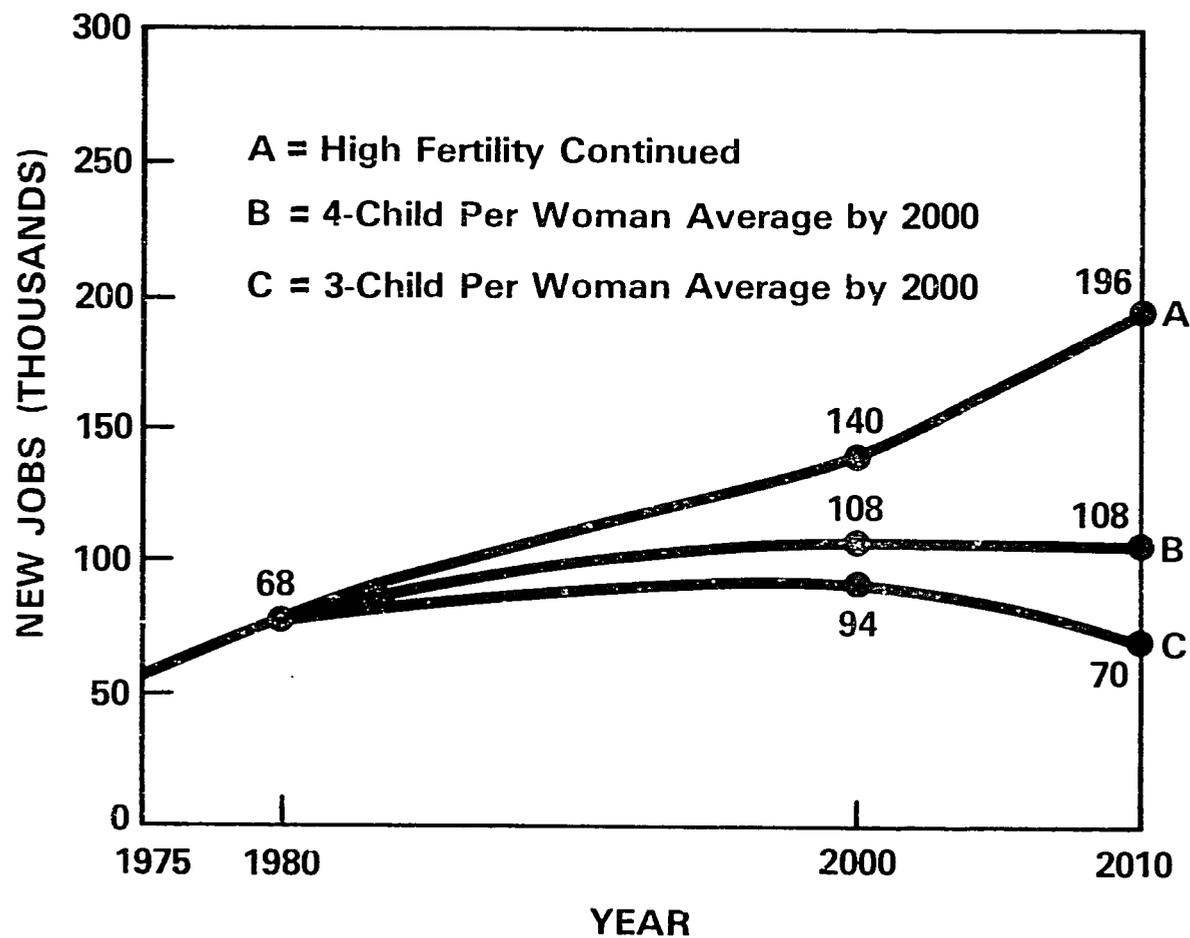
With continuing high fertility, 140,000 new jobs will be needed in the agricultural sector each year by 2000, and 196,000 additional jobs will be required each year by 2010.

With an average of 4 children per woman by 2000, 108,000 new agricultural jobs will be needed each year by 2000 and the same number by 2010.

With a fertility rate of 3 by 2000, the number of new positions needed each year will be 94,000 in 2000 and 70,000 in 2010. By 2010, over 125,000 fewer new agricultural jobs will be required each and every year under conditions of lower fertility.

# MALAWI

## Annual Requirements for New Jobs in Agriculture, 1975 - 2010.



Malawi has emphasized smallholder productivity as the necessary means of increasing total agricultural output and providing the economic base for social and economic development. The rapid expansion of the agricultural labor force, however, may hinder the modernization of agriculture. The entry of such large numbers of new workers into the agricultural sector in such a relatively short period of time suggests that traditional patterns of smallholder production, with land and labor the primary inputs, will probably continue as the most feasible means of employing so many additional people. Similarly, because the small size of the average farm in Malawi is a constraint on increased production, the implied fragmentation of smallholdings with such a rapid expansion of the rural labor force will also make it difficult to modernize agriculture. On the other hand, commercial and scientific agriculture may be more feasible on the smallholdings with less pressure on the land.

## Food Production

While independent Malawi has consistently produced enough food to feed its population, some trends suggest that domestic demand is catching up with production. Exports of maize and cassava - once considerable - are now negligible. Exports of peas and beans also appear to be on a downward trend. Nonetheless, projections of food production are difficult to make because of a paucity of information.

Historically, increases in the food supply have come from farming newly cleared lands. Because of the increasing shortage of good land, however, most future increases in food production will have to come either from increasing yields or from utilizing lands which would otherwise be used to produce export crops.

Should domestic supply continue to be adequate to meet demand, and should current consumption patterns persist, the annual amount of consumable grains, peanuts, peas, and beans required under the different fertility assumptions would be as follows:

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ANNUAL CONSUMPTION IN TONS OF GRAINS, PEANUTS, PEAS AND BEANS UNDER THREE FERTILITY ASSUMPTIONS  
1980, 1995, 2010

---

| Year | High Fertility Continued | Fertility Rate of 4 by 2000 | Fertility Rate of 3 by 2000 |
|------|--------------------------|-----------------------------|-----------------------------|
| 1980 | 2,400,000                | 2,400,000                   | 2,400,000                   |
| 1995 | 4,000,000                | 3,600,000                   | 3,500,000                   |
| 2010 | 6,900,000                | 5,100,000                   | 4,300,000                   |

---

Were yields to increase by 2.0 percent per year, which is higher than the actual historical performance in the agricultural sector, then the situation would be as follows under the different fertility assumptions:

With continued high fertility, Malawi would have to import 800,000 tons of grain annually by 1995 and 2.5 million tons annually by 2010.

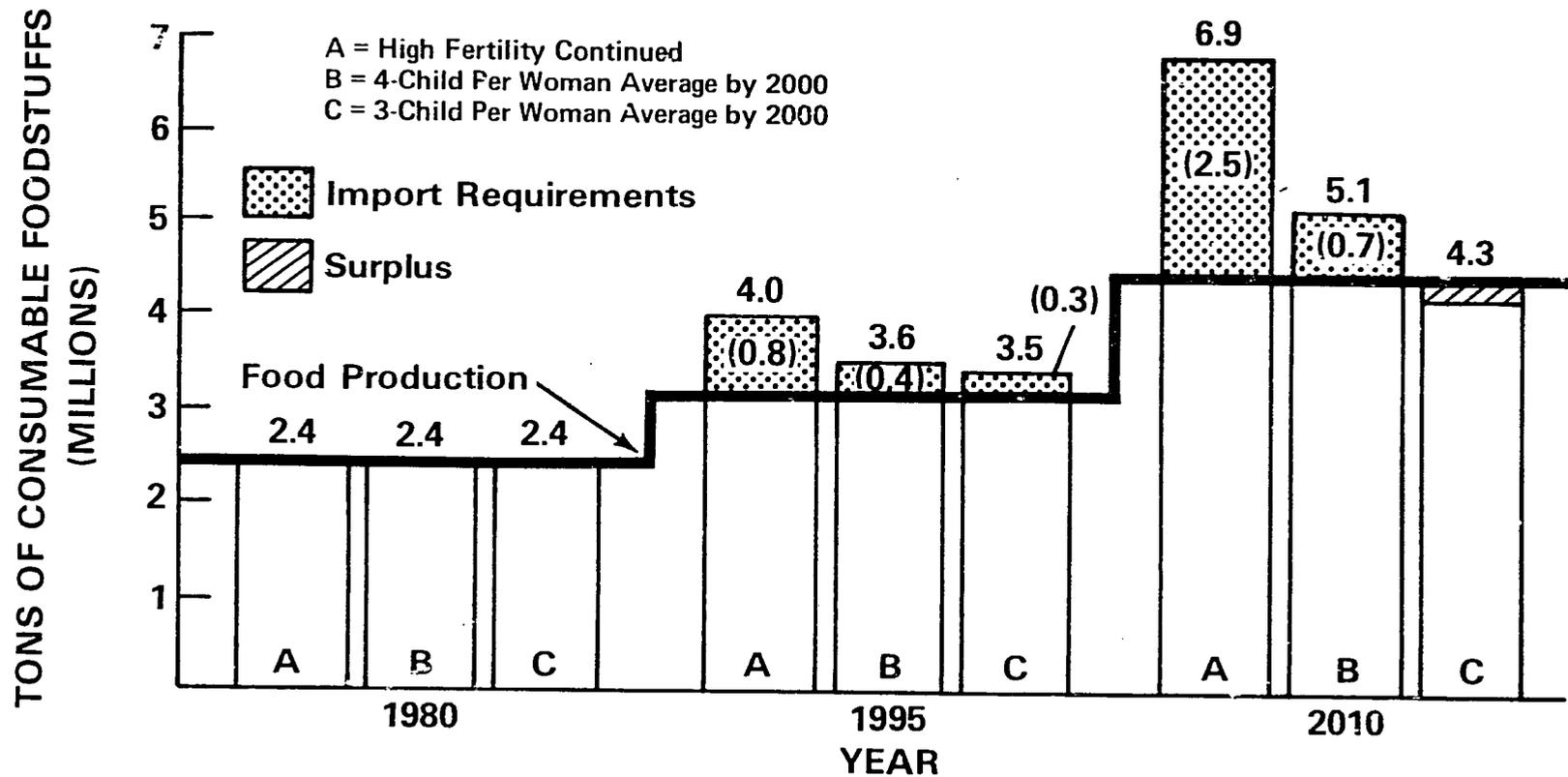
With a 4-child per woman average by 2000, the country would have to import 400,000 tons of grain annually by 1995 and 700,000 tons yearly by 2010.

With a 3-child per woman average by 2000, Malawi would have to import some grains in the short run, but would again be self-sufficient in basic food production by 2000.

Achieving self-sufficiency in basic foodstuffs is a major development goal in Malawi, the attainment of which may be partially determined by the rate of population growth.

## MALAWI

### Grain, Peanut, Pea and Bean Production and Consumption, 1980-2010\*



\*The production of food is assumed to increase by 2 percent a year.

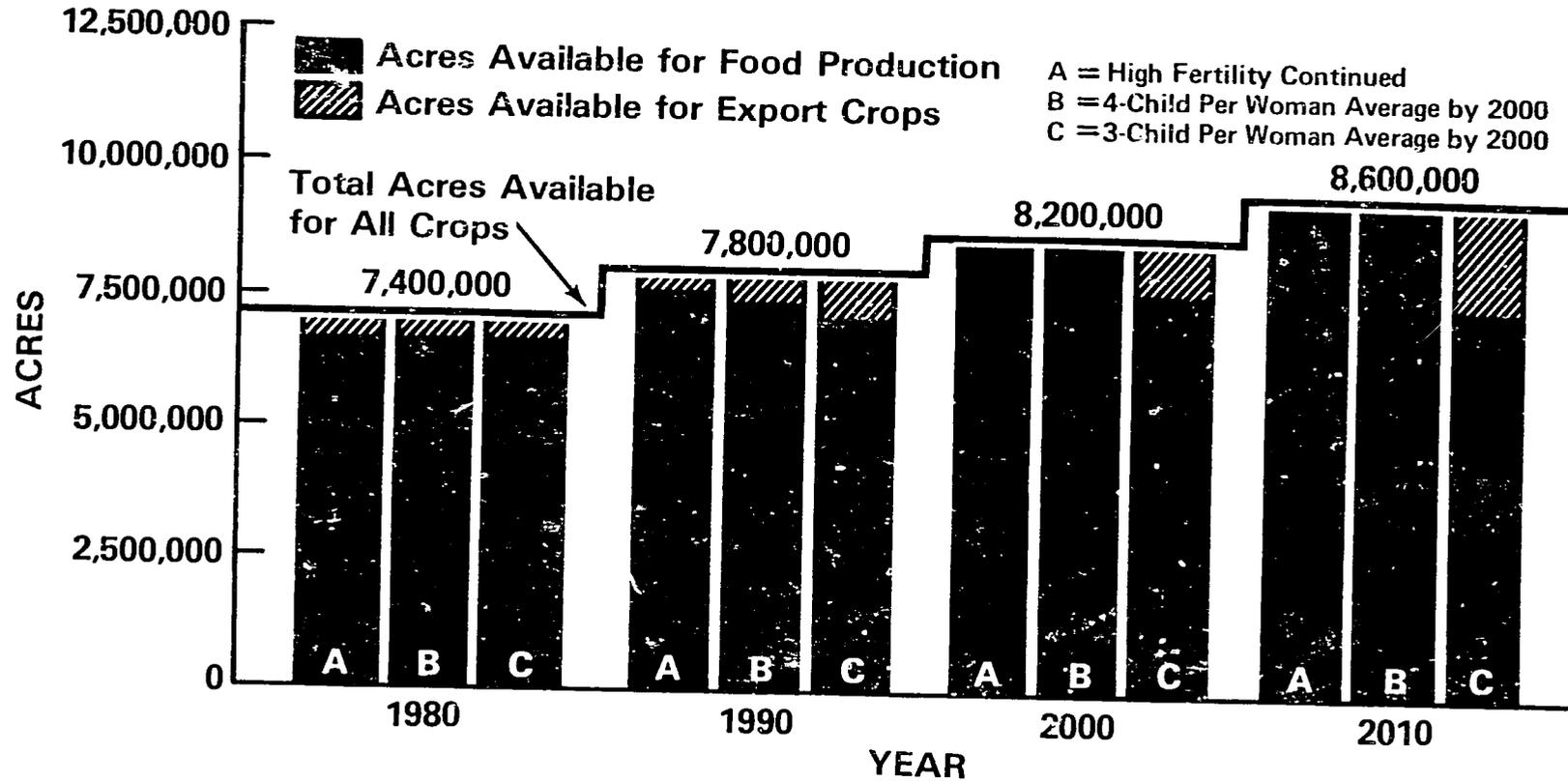
### Competition for Use of Land Between Food and Export Crops

The increased demand for food production suggests that more of the available land may have to be planted for food crops and less for export crops, despite the fact that most of Malawi's foreign exchange is earned through the sale of export crops. Indeed, growing competition for use of the land between food and export crops is an increasingly important issue in Malawi.

Roughly 90 percent of the land under cultivation at the present time is given to food crops. Assuming that yields per acre increase by 1.5 percent a year, which is again far greater than what has actually happened historically in the country, and assuming that the amount of land actually under cultivation increases to the maximum 8.6 million acres indicated by the National Rural Development Programme, within 10 to 20 years Malawi would have to import large amounts of food with continuing high fertility even if all available land were given to the production of food crops and none to the production of export crops. With the low fertility projection, however, Malawi could be self-sufficient in the production of foodstuffs and still devote about 14 percent of its cropped area to the production of export crops.

# MALAWI

## Land Available for Food and Export Crops, 1980-2010\*



\*Assumes that total land available for the production of food and export crops increases to 8.6 million acres and yields per acre increase by 1.5 percent annually.

## Summary

With continued rapid population growth, less and less land will be available proportionate to the expanding size of the population; huge numbers of new workers will have to find employment on the smallholdings, making it more difficult to modernize the agricultural sector and produce export crops; food production will have to increase dramatically if Malawi is to remain self-sufficient; and a greater proportion of the land will have to be devoted to the production of foodstuffs rather than export crops. The extraordinarily rapid growth of the population, then, could make it more and more difficult for Malawi to produce enough agricultural surplus to sustain social and economic development.

## FOREST RESOURCES AND ENERGY

Wood provides over 90 percent of the population with energy for cooking and heating, as well as poles for construction. No affordable alternative sources of energy which could be substituted for wood are available in any significant quantity at the present time. Electricity is not widespread and fossil fuel derivatives, such as kerosene, are too expensive. Wood will therefore undoubtedly remain the primary source of energy in Malawi in the foreseeable future. At the same time, the rapid growth of the population combined with the scarcity of arable land have led to increased pressures on the forests.

Department of Forestry estimates indicate that the supply of fuelwood and poles in 1977 was about 8.8 million m<sup>3</sup>, while actual requirements were estimated to be nearly 11 million m<sup>3</sup>. The deficit was about 2.2 million m<sup>3</sup>, as 14 of the 24 districts in Malawi were unable to meet local wood requirements from the sustained yield of the forests. Of the remaining ten districts, nine more will become deficit wood producers within the next 25 to 30 years, according to projections. Overcutting sometimes compensates for shortterm deficits, but results in permanent destruction of the forests, which, in turn, leads to serious soil erosion and a general ecological disruption.

The Department of Forestry projections show that the maximum potential supply of fuelwood and poles will be about 9 million m<sup>3</sup> in the early 1980's, with supplies declining thereafter to 4.9 million m<sup>3</sup> by 1990, 3.7 million m<sup>3</sup> by 2000, and 3.3 million m<sup>3</sup> by 2010. At the same time, the demand for wood will increase dramatically with the rapid growth of the population. Even assuming that per capita consumption declines over time with the introduction of more efficient wood-burning stoves and with the anticipated rise in the price of wood products, the increase in demand will be significant.

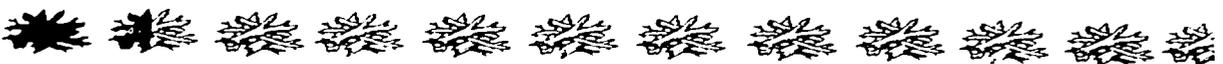
With continued high fertility, the annual consumption of fuelwood would reach 18.1 million m<sup>3</sup> in 2000 and 23.3 million m<sup>3</sup> in 2010. Compared with the anticipated supply, the deficit would be 14.4 million m<sup>3</sup> in 2000 and 20 million m<sup>3</sup> in 2010.

With a 4-child per woman average by 2000, annual consumption would be 15.3 million m<sup>3</sup> in 2000 and 17.2 million m<sup>3</sup> in 2010, with a deficit of 11.6 million m<sup>3</sup> and 13.9 million m<sup>3</sup> in those two years respectively.

With a 3-child per woman average by 2000, annual consumption would be 14.2 million m<sup>3</sup> in 2000 and 14.4 million m<sup>3</sup> in 2010. By 2010, annual consumption would be nearly 9 million m<sup>3</sup> less than with continued high fertility.

What these projections indicate is that the pressures on the forests of Malawi will continue unabated with the rapid growth of the population and that, consequently, the productive capacity of Malawian agriculture will be undermined as more agricultural residues are necessarily burned for energy, rather than being used as fertilizers, and as more soil is lost with the inevitable erosion which accompanies the destruction of the forests. In brief, the pressures on the forests along with the increased demand for energy with the growth of the population in Malawi pose an impressive challenge to the development effort.

**MALAWI**  
**Annual Wood Requirements and Supply, 1977-2010**

| Year                                       |  |             |
|--|--|-------------|
| <b>1977</b>                                |    | <b>(11)</b> |
| <b>2000</b><br>High Fertility<br>Continued |    | <b>(18)</b> |
| 3-Child Per<br>Woman<br>Average by<br>2000 |    | <b>(14)</b> |
| <b>2010</b><br>High Fertility<br>Continued |    | <b>(23)</b> |
| 3-Child Per<br>Woman<br>Average by<br>2000 |  | <b>(15)</b> |

 = 2,000,000 Cubic Meters of Wood

 = Projected Domestic Supply of Fuelwood and Poles

## LABOR FORCE AND CHILD DEPENDENCY

An important development goal in Malawi is the creation of a technically skilled and well qualified labor force to maximize economic growth. Because most new entrants into the labor force over the next 20 to 30 years are children who have already been born or who will be born in the near future, the size of the labor force will almost double by 2000 no matter what happens to fertility over the next 20 years:

With continuing high fertility, the labor force will have 5.1 million participants in 2000 and 7.4 million in 2010.

With a fertility rate of 4 by 2000, the size of the labor force will be 4.9 million in 2000 and 6.4 million in 2010.

With a fertility rate of 3 by 2000, the size of the labor force will be 4.8 million in 2000 and 6.0 million in 2010.

Even with dramatically declining fertility, the labor force will increase two to three times over the next 20 to 30 years. On the negative side, most new jobs for these workers will have to be found in agriculture, making modernization of that critical sector even more difficult. Malawi may also find it increasingly difficult to develop a skilled and qualified labor force with such a rapid expansion in the number of workers. On the positive side, declining fertility eventually has an important impact on growth of the labor force. In Indonesia, for example, a fertility decline which began in the early 1970's will begin to have an impact on the rate of growth of the labor force in the mid 1980's, and most experts suggest that the slower rate of labor force growth will greatly enhance the ability of Indonesia to attain some of its major development goals.

Although the effects of declining fertility on the labor force will not begin to take place for 10 to 15 years, the number of dependents who will have to be supported by the productive members of the labor force will be affected almost immediately. In 1980, every 100 productive members of the labor force had to support about 108 child dependents.

If fertility remains high, every 100 productive members of the labor force will have to support 106 child dependents in 2000, and 107 in 2010.

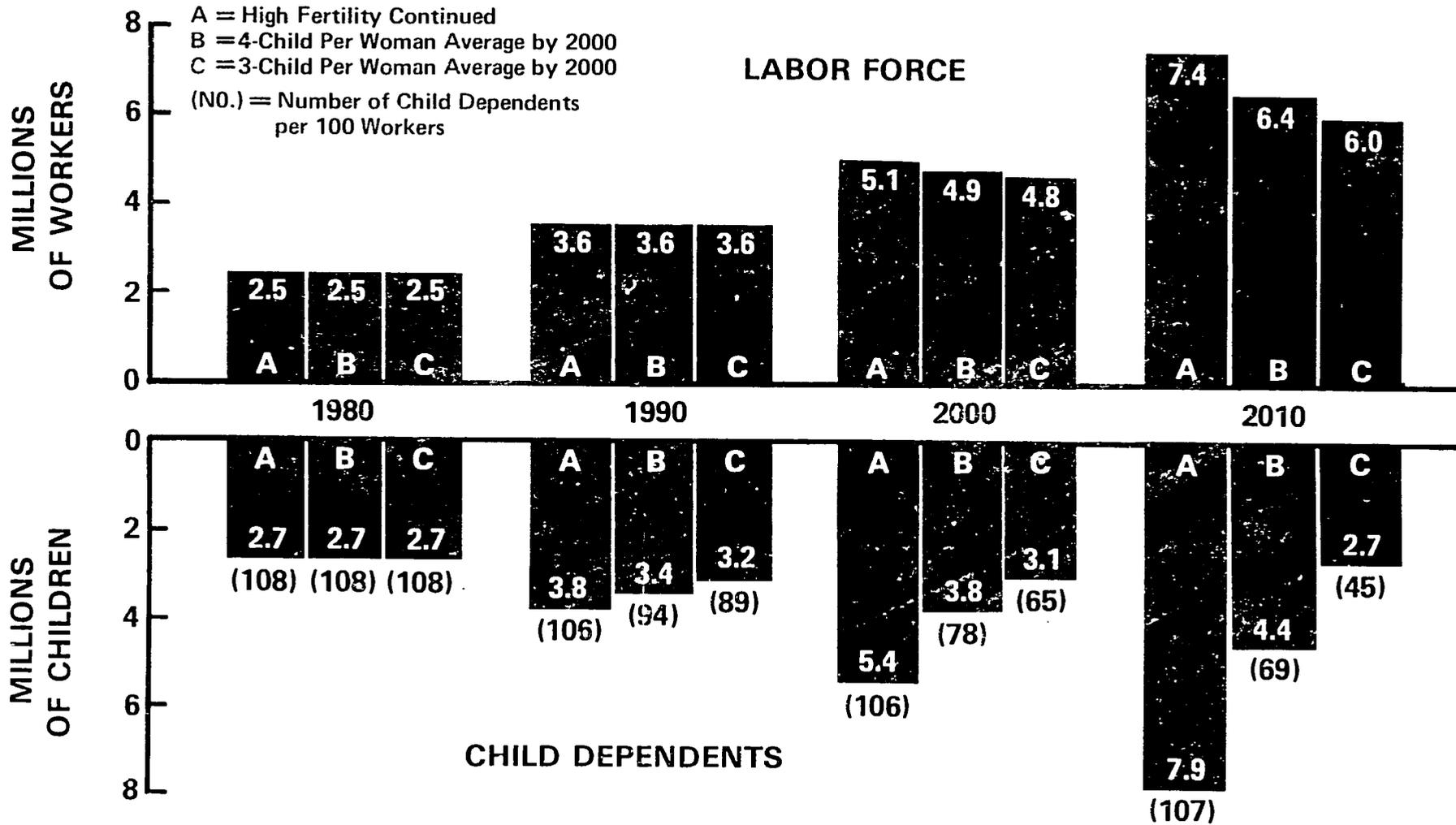
If fertility drops to a 4-child per woman average by 2000, every 100 productive workers will have to support 72 child dependents in 2000, and 69 in 2010.

If fertility drops to a 3-child per woman average by 2000, dependency ratios will be lower. Every 100 workers will have to support 65 child dependents in 2000, 42 fewer than would be the case with high fertility. The same 100 workers will have to support only 45 dependent children in 2000, 82 fewer than with continuing high fertility.

A smaller percentage of dependent children in the population may enhance investment potential at the national level. A lower child dependency ratio reduces the amount of government expenditures needed to maintain current standards of education, health care, and other services, and savings can be used to develop the productive sectors. As a nation develops socially and economically, a lower dependency ratio may also lessen the strain on the resources of individual households.

# MALAWI

## Labor Force and Child Dependency, 1980-2010



## GROSS DOMESTIC PRODUCT AND GROSS DOMESTIC PRODUCT PER CAPITA

The expansion of the economy to raise the standard of living of the people is, of course, a major development objective of Malawi. In seeking to achieve this goal, Malawi's primary assets are moderately fertile soils, adequate water resources, and a climate which permits the cultivation of a wide variety of cash crops, including tobacco, tea, sugar cane and cotton. Malawi has no substantial mineral resources. However, the industrial sector has developed rapidly, as the share of industry rose from 9 percent of the GDP in 1964 to 18 percent in 1976. Because of the increasing importance of other sectors, the contribution of agriculture to GDP actually declined from 55 percent in 1964 to 46.1 percent in 1976. Nonetheless, agriculture remains clearly the most important sector in the economy.

Because of increases in agricultural production, especially in the estate sector, and industrial development, the Gross Domestic Product grew by about 6.1 percent per year between 1964 and 1977, one of the highest sustained rates of growth in all of Africa. Nonetheless, because the economy was so relatively undeveloped at the time of independence, Malawi is still classified as one of the least developed nations in the world by the United Nations. In 1975 per capita income was about Kwacha (K) 109.

Malawi is unusual among the developing countries in its ability continuously to achieve balanced budgets, and fiscal restraint continues to be a keystone of Government policy. Malawi has not unexpectedly been highly dependent on outside sources for capital development projects. In 1977 - 1978, for example, about 86 percent of all development expenditures came from foreign grants and loans; about 38 percent of all development expenditures came from loans.

While increases in Gross Domestic Product reflect the overall growth of the economy, GDP per capita is a better indicator of the ability of the economy to meet the basic needs of the people. Because GDP per capita is directly related to population size, rapid population growth can nullify some or all of the benefits of GDP growth. For example, while GDP grew about 5.4 percent per annum in real terms between 1973 and 1976, GDP per capita increased by less than 3 percent because of the rapid growth of the population. Future increases in GDP per capita will occur only to the extent that increases in GDP outstrip population growth.

Declining fertility could lead to significantly more investment and a higher rate of growth. However, assuming comparable levels of investment, the economy will expand only slightly faster over the next 25 years with high fertility than with low fertility. The reason for this phenomenon lies in the fact that most new entrants into the labor force over the next 15 to 20 years are children who have already been born; hence, the labor force will grow only marginally slower if fertility drops despite a significant decline in the rate of population growth. Consequently, because Malawi is a labor intensive economy, the GDP over the next 20 to 30 years will be approximately the same under all three of the fertility assumptions. GDP per capita, however, will be substantially greater if fertility declines. Assuming that the annual growth rate in GDP is more than 6 percent per annum between 1980 and 2010, GNP per capita will be as follows:

With continuing high fertility, GDP per capita will rise from about K 110 in 1975 to K 250 in 2010 (in constant 1975 K).

With a 4-child per woman fertility rate by 2000, GDP per capita would rise to K 325 by 2010, or K 75 more than with continued high fertility.

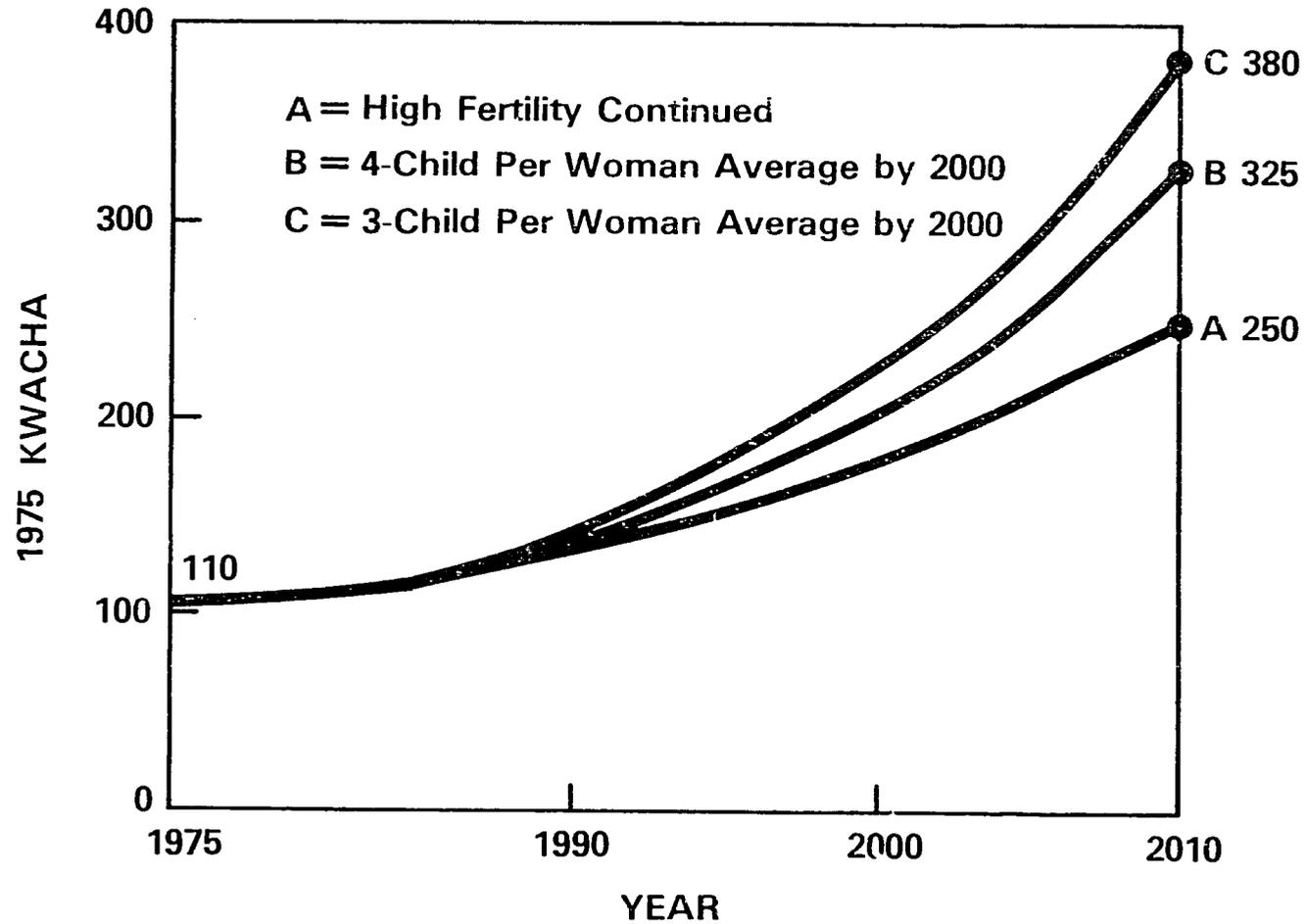
Should the fertility rate drop to 3 by 2000, GDP per capita would be K 380 by 2010, or K 130 greater than with high fertility.

In reality, the differences are likely to be even greater, for with declining fertility more resources will be available for qualitative and quantitative improvements in the productive sectors to increase economic growth.

MALAWI

# Gross Domestic Product Per Capita, 1975-2010

Under Different Fertility Assumptions



## EDUCATION

The "Education Plan of Malawi, 1973 - 1979" outlined the basic educational objectives of the Government, including goals to achieve a fair distribution of educational opportunities and to make the curriculum practically oriented and responsive to the needs of the economy, especially in meeting manpower requirements.

Because the Government has given priority to the directly productive sectors, the development of the educational sector has lagged behind that of others. In 1978, only about 25 percent of the adult population was considered to be literate. About 68 percent of the 6 - 10 age group were enrolled in grades 1 - 5 and about 56 percent of the 6 -13 age group were enrolled in grades 1 - 8. Due to a lack of adequate school facilities, educational materials, textbooks, and qualified teachers, repeater and drop-out rates are high; only about 37 percent of the children entering primary school actually complete the first five grades. Also because settlement patterns consist of widespread isolated family clusters rather than large villages, walking distances to schools which offer all 8 grades of primary school tend to be great. These lengthy distances contribute to the high dropout rates.

Only about 5 percent of school aged children are enrolled full time in secondary schools. However, the Government does not believe that the economy is able to absorb large numbers of secondary school leavers, and does not want secondary enrollments to expand too rapidly.

## Primary School Enrollments

Further improvements in the primary school system in Malawi are important to the development effort in order to raise farmer and worker productivity, improve health and nutritional practices and alleviate the shortage of educated and skilled manpower by providing a base for further education and skilled training. However, the rapid growth of the population will make it more difficult to achieve substantive gains.

If fertility continues at high rates, Malawi will have 2.8 million children of primary school age by 2000. If a 61 percent enrollment rate is maintained, 1.7 million primary students will be enrolled, which is double the number the system accommodated in 1980. The number of children not enrolled would rise from 0.6 million to more than 1.1 million over the 20 year period.

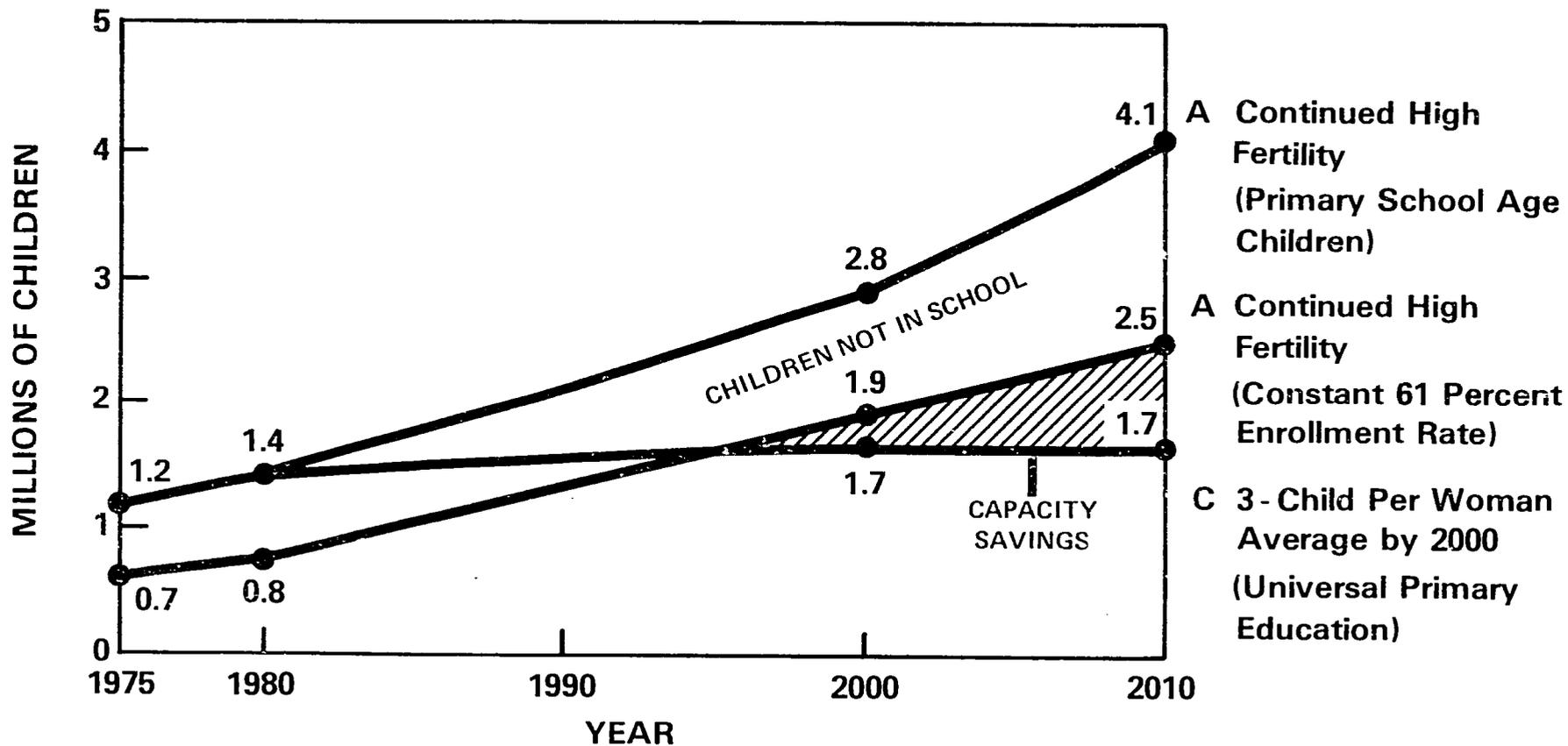
If Malawi attains a 4-child per woman average by 2000, and the enrollment rate remains at 61 percent, then in 2000 2.2 million children will be of primary school age, 1.3 million of whom would be enrolled. The number of children not enrolled would be 0.9 million, or 0.2 million fewer than with continuing high fertility.

If a 2-child per woman average is attained by 2000 and the enrollment rate stays at 61 percent, then in 2000 1.9 million children will be of primary school age, of which 1.0 million would actually be enrolled. The system would have to accommodate 0.7 million fewer children than under continued high fertility, and about 0.7 million fewer children would not be enrolled in the schools than with the high fertility projection.

Looked at another way, Malawi could achieve universal primary education shortly after the year 2000 with very low fertility with the same commitment of resources that would be required to maintain a 61 percent enrollment rate with very high fertility.

MALAWI

Enrollment of Primary School Age Children  
Under Two Fertility Assumptions, 1975-2010



## Teachers

Malawi already suffers from a lack of adequate facilities and qualified teachers, a situation which will be further aggravated with the rapid growth of the population. For example, should Malawi achieve universal primary education by 2000, and should the present student-teacher ratio of 61 to 1 continue, the required number of qualified teachers would increase markedly. Whereas about 14,000 primary instructors presently teach in Malawi, not all of whom are qualified, the following number would be required by 2010 under the different fertility assumptions:

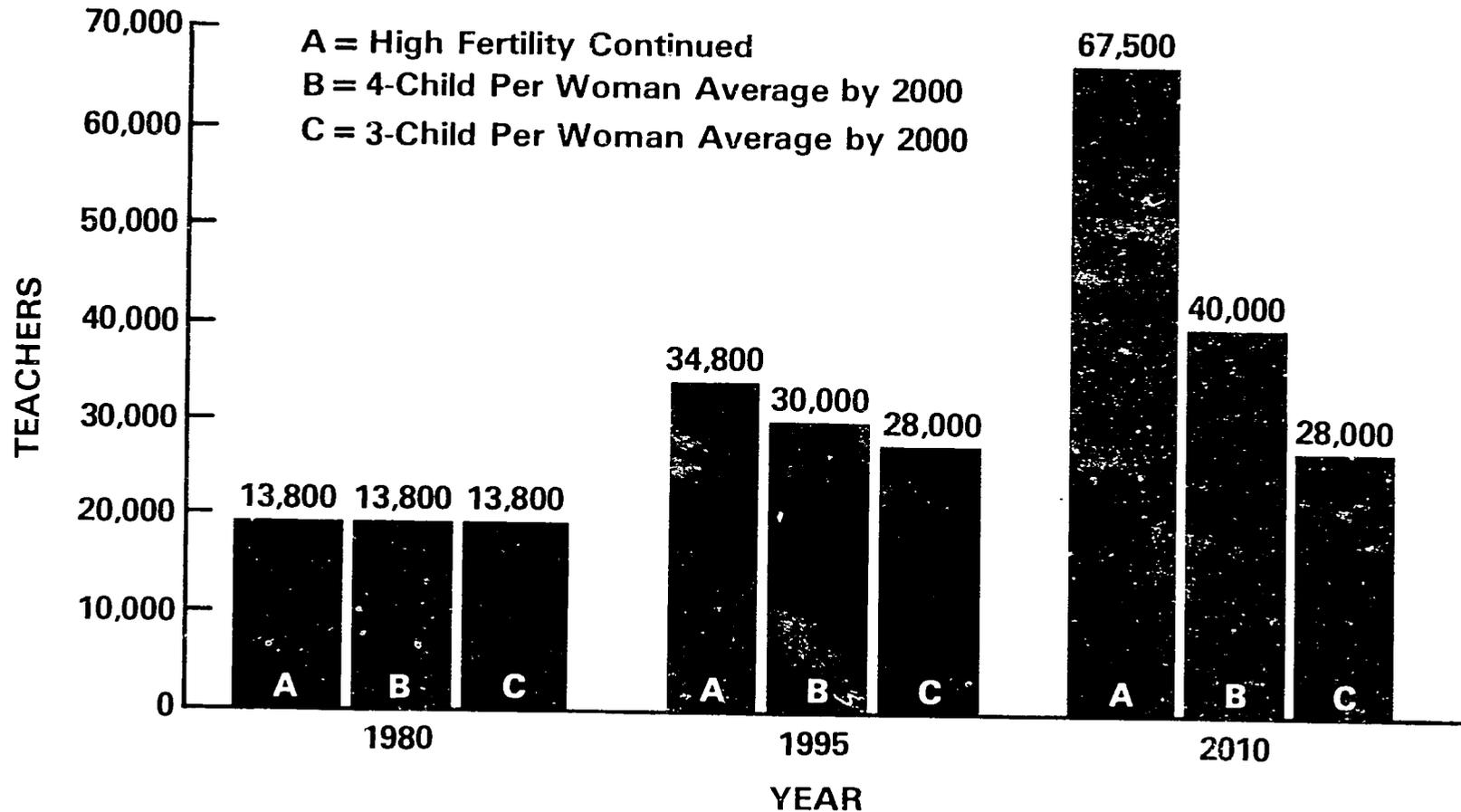
67,500 with high fertility continued;

40,000 with a 4-child per woman average by 2000;

28,000 with a 3-child per woman average by 2000.

At maximum capacity, present teacher training facilities could graduate about 1200 teachers annually which, with continued high fertility and a normal attrition rate, would be inadequate to meet the need. Even with a sharp decline in fertility, Malawi will have a difficult time staffing the primary schools, though requirements will be considerably less than under the high fertility projection.

**MALAWI**  
**PRIMARY SCHOOL TEACHERS REQUIRED TO MAINTAIN THE**  
**1980 STUDENT-TEACHER RATIO, 1980-2010 \***



\*Assumes Universal Primary Education by 2000

## Recurrent Costs

The rapid expansion of the educational system suggests, of course, a necessary rise in educational expenditures. In 1978-79, estimated recurrent costs per primary student were K 14.7. Assuming universal primary education by 2010, recurrent costs would have to rise considerably to maintain the 1978-79 level of expenditure per student.

Annual recurrent costs would rise to K 60.5 million by 2010 with continued high fertility;

With a 4-child per woman average by 2000, however, annual recurrent expenditures would rise to K 35.9 million by 2010, or K 24.6 million less than with continued high fertility.

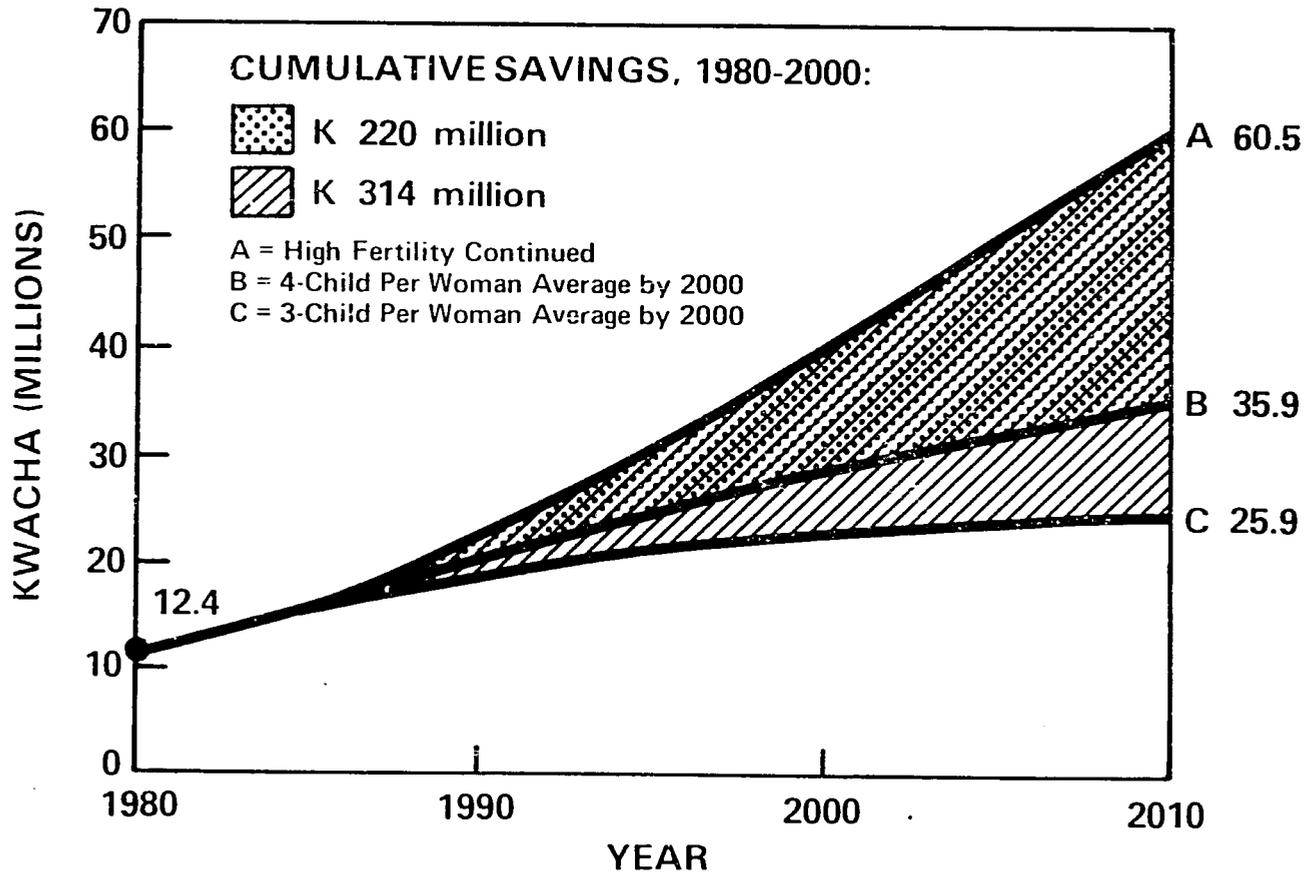
With a more rapid decline in fertility to a 3-child per woman average by 2000, annual recurrent costs would increase to K 25.9 million, or K 34.6 million less than with continued high fertility.

Between 1980 and 2010, savings in recurrent costs in primary education would be K 314 million with a 3-child per woman average by 2000. These savings could be used to improve the quality of education in Malawi to provide the skilled labor force required for social and economic development. The establishment of a working system of universal primary education, which would be a significant contribution to the quality of life in Malawi, could thus be more readily achieved with declining fertility.

MALAWI

RECURRENT COSTS FOR PRIMARY EDUCATION, 1980-2010\*

(Costs to Maintain the 1980 Expenditure Per Student)



\*Assumes Universal Primary Education by 2000

## HEALTH

An important development goal of Malawi is to provide adequate health care to the population. Rapid population growth works against attainment of this aim in at least two ways. First, high fertility is itself related to high rates of mortality and morbidity among mothers and children, a relationship which is especially serious in a nation such as Malawi where a disproportionate share of the population is composed of mothers and young children. Secondly, the rapid growth of the population makes it difficult to build enough facilities, train enough personnel, and meet the costs required to provide adequate health care to the population.

High fertility contributes to maternal and child morbidity and mortality both directly and indirectly. The infant mortality rate (number of deaths to children under 1 year of age per 1,000 live births) is still in the 140 to 160 range. Estimates from special surveys indicate that as many as 25 to 35 percent of Malawian children die prior to their fifth birthday. The principal causes of death for children are measles, malnutrition, malaria, respiratory disease, gastroenteritis, and neo-natal problems. Among the general population, certain diseases are unusually prevalent for an African nation, including measles, tuberculosis, and a high incidence of eye infections and blindness.

## Facilities and Personnel

To meet the overall health needs of the population, health services are being organized according to the Fifteen Year (1973 - 1988) Health Plan, prepared with the assistance of the World Health Organization in 1971. While there were 21 district hospitals and 18 other hospitals in 1978, the heart of the plan centers on the construction of more basic facilities, including primary health centers, health subcenters, and health posts.

Each primary health center will serve 50,000 people and will also serve as a subcenter for its immediate area. The primary health center will attend to the most serious cases and will be able to handle most needs not requiring specialist care. Each subcenter, in turn, will serve 10,000 persons and will also serve as the health post for its immediate area. The subcenters handle curative and maternity cases and serve as a base for health education and mobile clinics.

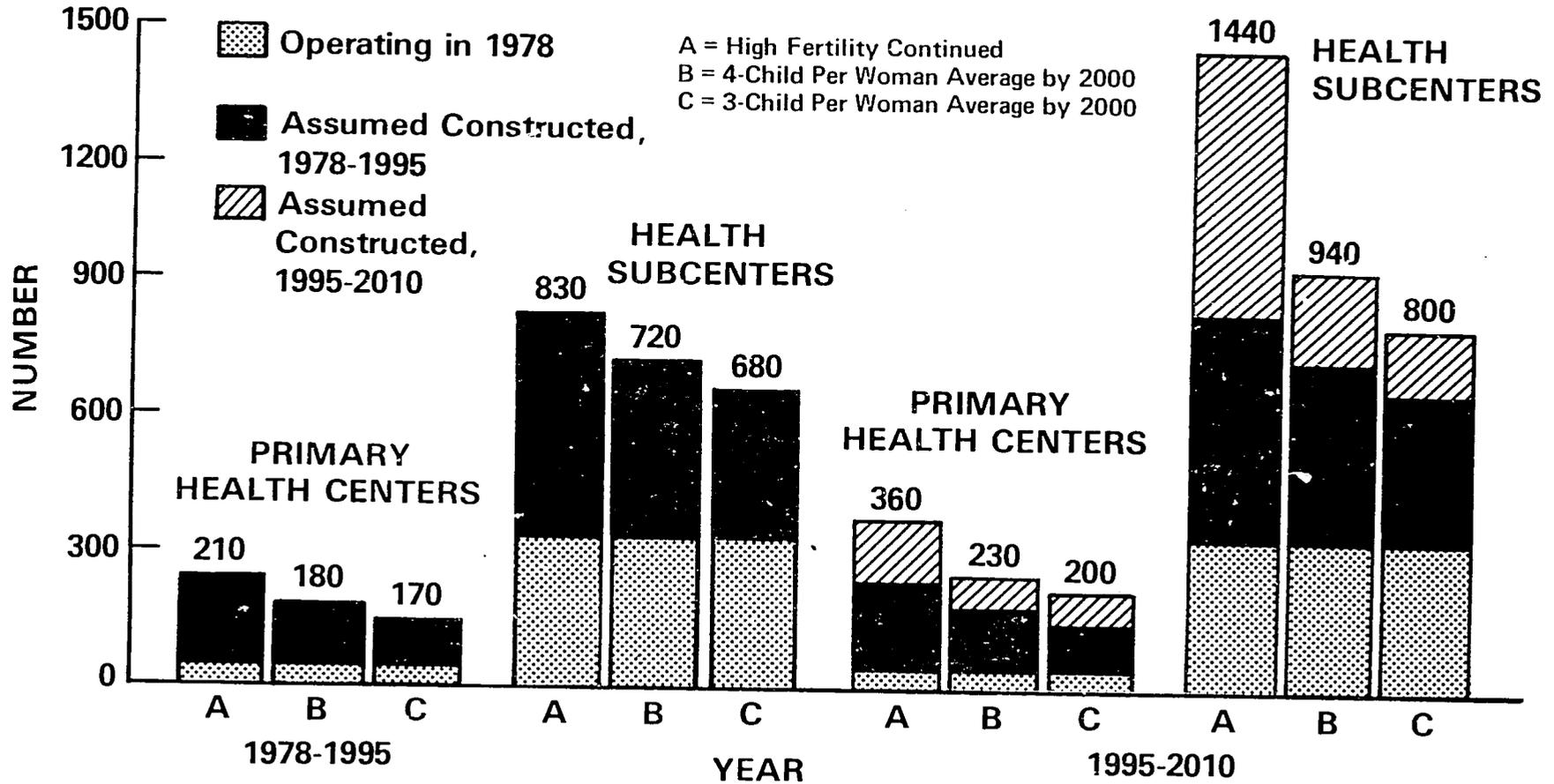
The construction and operation of these basic health facilities had already fallen behind schedule by 1977, due in part to an underestimation of capital and operating costs. Furthermore, the need for new facilities will vary considerably depending on the future growth of the population. With 49 primary health centers and 385 subcenters in operation by 1978, Malawi will need the following between 1978 and 2010 to achieve and maintain the goals of the Fifteen Year Health Plan:

- 310 new primary health centers and 1,050 health subcenters under Projection A;
- 220 additional primary health centers and 670 health subcenters under Projection B;
- 170 new primary health centers and 500 new health subcenters under Projection C.

MALAWI

Primary Health Centers and Subcenters Required To Meet and Maintain the Goals of the Fifteen Year Health Plan, 1978-2010

(Under Three Fertility Assumptions)



The most peripheral units are the health posts, designed to serve a population of 2,000. Health posts will provide basic preventive care, first aid, and simple treatments. However, only 41 were actually in operation in 1978.

With continuing high fertility, Malawi will need to construct 4,100 health posts between 1978 and 1995, and 3,000 more between 1995 and 2010 to meet and maintain the goals of the Fifteen Year Health Plan;

With a 4-child per woman average by 2000, 3,700 health posts will have to be established between 1978 and 1995, and 1,500 additional ones between 1995 and 2010;

With a 3-child per woman average by 2000, Malawi will need to build 3,500 new health posts between 1978 and 1995, or 600 fewer than with continuing high fertility. Between 1995 and 2010, 800 additional health posts will be required, or 2,220 fewer than with high fertility.

MALAWI

Health Posts Required to Meet the Goals of the  
Fifteen Year Health Plan, 1978-2010

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High Fertility  
Continued



(7200)

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4-Child  
Per Woman  
Average by  
2000



(4700)

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3-Child  
Per Woman  
Average by  
2000



(4000)

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 = 500 Health Posts

Additional health personnel will be required to staff these facilities. In 1980, 6,000 health personnel were actually practicing in Malawi. Assuming a 3 per cent annual attrition rate in the health labor force, the following number of additional personnel would be required to maintain the 1980 population to personnel ratio under the different fertility assumptions:

With continued high fertility, 21,000 additional health personnel will be needed by 2010 simply to maintain the present population to personnel ratio;

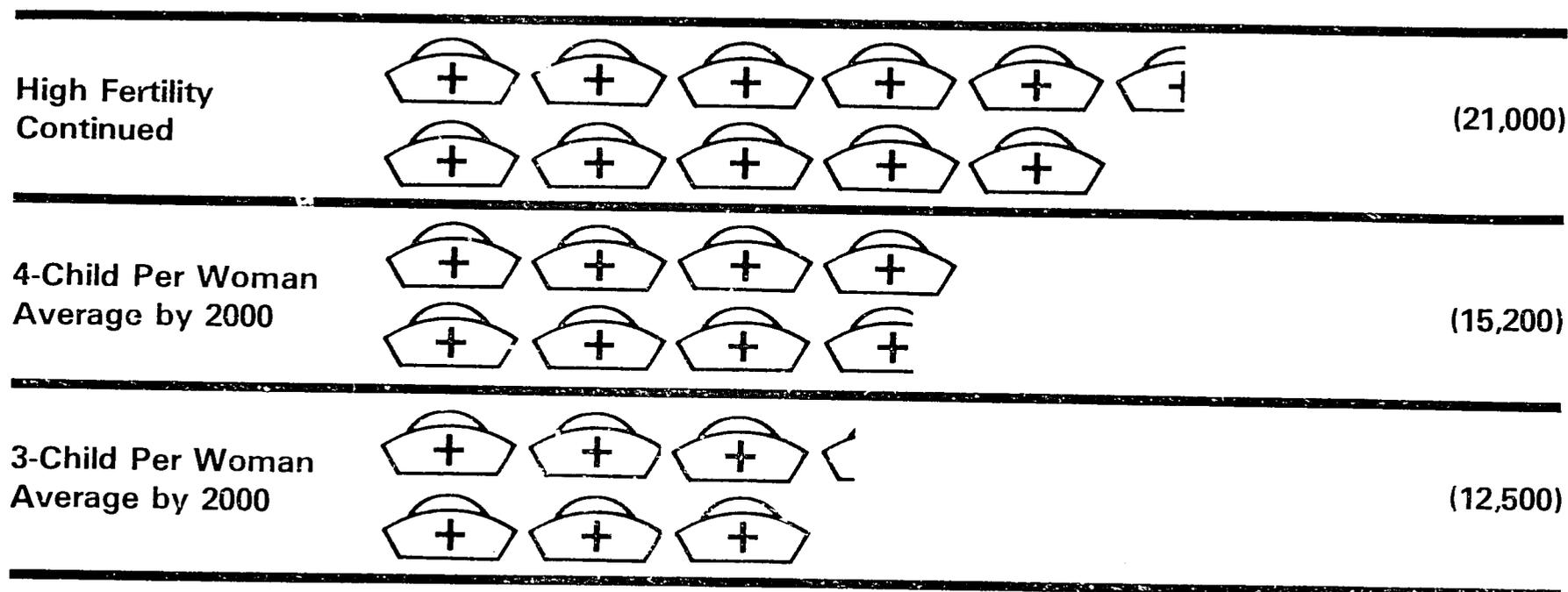
Should fertility decline to a 4-child per woman average by 2000, 15,200 new health personnel will be needed by 2010, or 5,800 fewer than with high fertility;

If fertility declines to a 3-child per woman average by 2000, 12,500 additional health personnel will be required by 2010, or 8,500 fewer than with continued high fertility.

In summary, a declining rate of pop expenditures are likely to rise, so that actual requirements will probably be even greater than those indicated in this set of projections.

MALAWI

Additional Medical Personnel Required to Maintain  
Present Level of Care, 1980-2010\*



 = 2000 Medical Personnel

\*Assumes a 3 percent annual attrition rate

## Health Expenditures

Health expenditures from all sources – public, private and traditional – equalled about K 19.8 million in 1978/79, or K 3.7 per capita. Of the total, the Ministry of Health spent K 12.7 million, of which K 3.5 million were expended for capital costs and K 9.2 million for recurrent expenditures. The construction of health facilities in Malawi has already fallen behind schedule, in part due to a lack of funds, and the MOH budget has become increasingly strained because of rising recurrent expenditures. The situation may be worsened with the rapid growth of the population. Assuming that expenditures per capita by the Ministry of Health remain the same, some of the budget implications of different rates of population growth can be explored.

With continuing high fertility, for example, Ministry of Health expenditures would have to rise to K 43 million by 2010 simply to maintain present per capita expenditure levels.

With a 4-child per woman average by 2000, however, annual government health expenditures would be K 31.7 million by 2010.

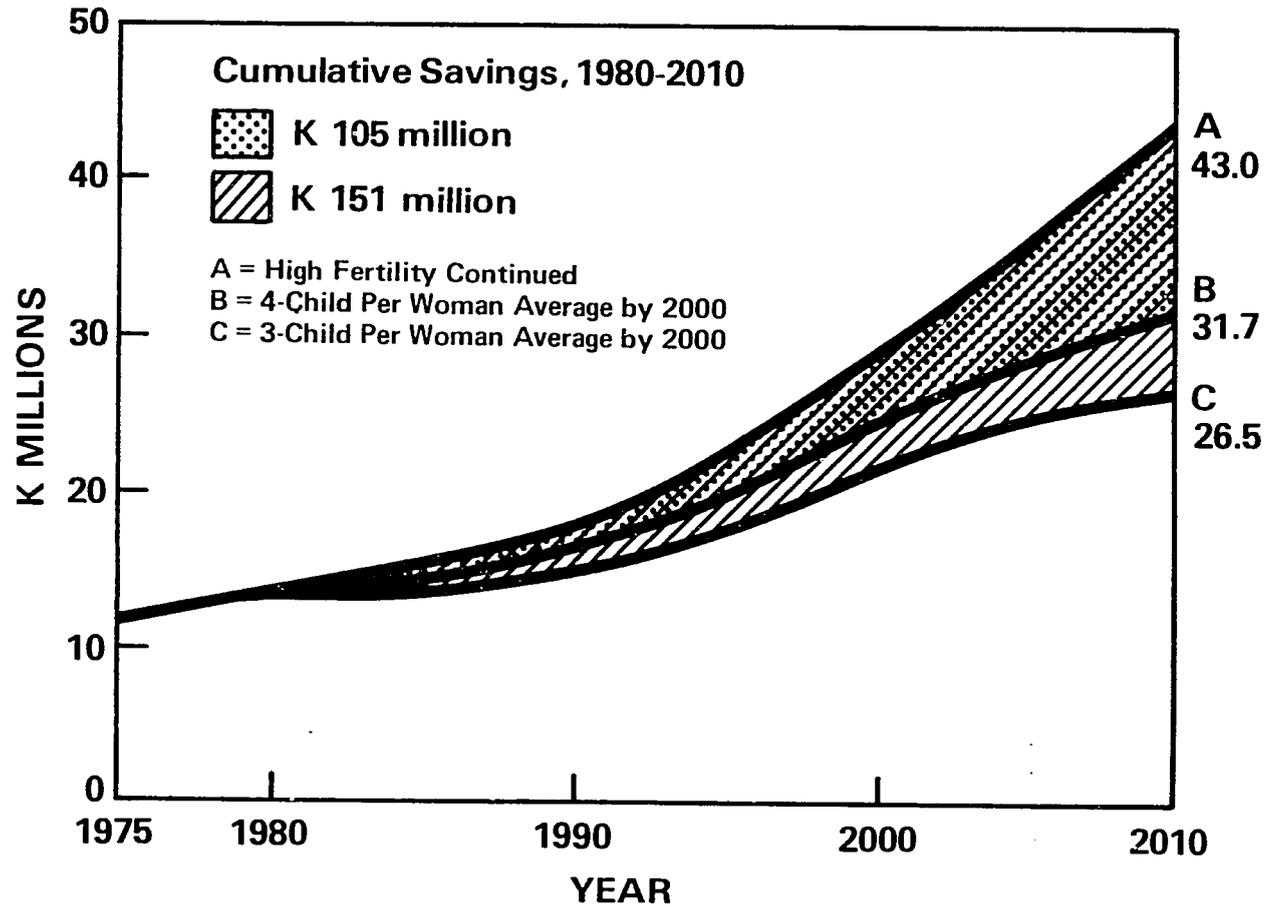
With a 3-child family average by 2000, annual expenditures would be K 26.5 million at present per capita expenditure levels. That would be K 16.5 million less than with continuing high fertility, an amount greater than the entire MOH budget in 1980.

Over the 30 year period, 1980 – 2010, MOH expenditures would be more than K 150 million greater with high fertility than with low fertility. The savings with the lower rate of fertility could be used to provide better health care and to improve the quality of life for the people of Malawi.

Of course, with the development of the health system, per capita expenditures are likely to rise, so that actual requirements will probably be even greater than those indicated in this set of projections.

# MALAWI

## Required Ministry of Health Expenditures\*, 1978-2010



\*Amount required to maintain the 1978/79 expenditure per capita

### Population at High Health Risk

Numerous pregnancies, closely spaced pregnancies, and pregnancies at later ages are all associated with high rates of maternal and child mortality and morbidity. Despite a low maternal mortality rate in hospitals in Malawi, maternal health is a serious issue in the countryside, in part because of the presence of these conditions. Also, as noted, infant and child mortality remains high: the infant mortality rate is still between 140 and 160 deaths per 1000 live births, and, by some estimates, more than 25 percent of all children die before their fifth birthday.

To improve this situation, the Government of Malawi instituted a special health program which has received worldwide attention. Special clinics, known as Under 5 Health Clinics, were organized to meet the health needs of young children. In 1978, a total of 8,484 such clinics - 531 of which were mobile units - were in operation. In addition, as part of the overall maternal and child health program, about 310 special antenatal clinics and maternity wards had been established in Malawi by 1978.

A decline in the rate of population growth would assist Government efforts in this area. With lower fertility, not only would health conditions improve for both mothers and children, but the number of persons at greatest health risk - women in their reproductive years and children under the age of 5 - would be significantly reduced. By 1995, for example, 4.2 million Malawians would be women in their reproductive years and children under 5, if high fertility continues. However, that number would be 3.4 million in 1995 if fertility were in the process of declining to a 3-child per woman average by 2000, or .8 million fewer persons than with continuing high fertility. Health, then, is a development sector in Malawi where declining fertility can have an immediate as well as a positive impact.

MALAWI

**Population at High Health Risk**

(Women in Reproductive Years and Children Under 5 Years)

| YEAR | ANC * |  250,000 Women in Reproductive Years<br> 250,000 Children Under 5 Years | TOTAL        |
|------|-------|---|--------------|
| 1980 | 7.0   |  1.3 million<br> 1.2 million  | 2.5 million  |
| 2000 | 6.4   |  2.5 million<br> 2.5 million  | 5.0 million  |
|      | 4.0   |  2.5 million<br> 1.5 million  | 4.0 million  |
|      | 3.0   |  2.5 million<br> 1.1 million  | 3.6 million  |
| 2025 | 6.0   |  6.6 million<br> 6.0 million   | 12.6 million |
|      | 3.0   |  4.2 million<br> 2.0 million  | 6.2 million  |
|      | 2.0   |  3.2 million<br> 1.0 million  | 4.2 million  |

\*Average Number of Children Per Woman

## CONCLUSION

Population factors are important to the social and economic development effort in Malawi. A different rate of growth may have a favorable impact on the ability of the country to make some important social and economic gains, including efforts to:

Develop the agricultural sector;

Reduce pressures on the forests;

Achieve balanced regional development;

Provide a sufficient number of new jobs for the rapidly increasing labor force;

Increase the rate of economic growth through higher rates of investment;

Increase Gross National Product per capita;

Establish a system of universal primary education;

Provide adequate health services to the entire population, but especially mothers and young children.

Population planning - used in the broadest sense of the term - should become an integral part of the development process in Malawi.

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