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The Kingdom of Nepal

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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THE FUTURES GROUP

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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 seriously 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 population of Nepal is over 14 million persons and is growing at more than 2.4 percent a year. If that rate continues, the population will more than double to about 30 million within 30 years. Nepal is already densely populated, with a very uneven spatial distribution. Overall, there are 598 persons per square kilometer of land, but in the Hills region there are 1,053 persons per square kilometer of land. Migration from the Hills and Mountains to the Terai region does little to alleviate the pressure on land and resources.

Population is only one factor to be considered in the development of a country, but a critical one nonetheless. The purpose of economic development is not simply to increase the total goods and services produced--the Gross National Product--but to increase the standard of living and quality of life of the individual, including the amount of goods and services available per person.

GNP per capita can be raised by increasing the production of goods and services, or by slowing the increase of the population, or, most effectively, by doing both. Where there is a rapid increase in the population and government attention is given only to increasing the output of goods and services, the increase in GNP per capita may be limited or even nonexistent, and attainment of goals for improving the quality of life of the individual citizen may be difficult and long delayed. However, where attention is also given to slowing population growth, the development effort is likely to be more successful.

This paper, in conjunction with the RAPID presentation, is provided as a means of understanding the close relationship between Nepal's population characteristics and the ability of the country to attain its national development objectives. Data are taken from national sources, including the Census and several demographic surveys, and from information compiled by international organizations, including the International Bank for Reconstruction and Development (World Bank), the United Nations, and the International Monetary Fund.

NATIONAL DEVELOPMENT GOALS

Nepal will soon embark on its Sixth Development Plan, to be in effect from 1980/81 through 1984/85. The Basic Principles of the Sixth Plan (amended version) was approved in November 1979. Among the goals set forth to meet major needs were the following:

Increase the rate of growth of GDP from less than 2.5 percent per annum to 4 percent per annum.

Increase agricultural production, especially of foodgrains, in order to improve nutrition.

Expand reforestation in order to reduce erosion and provide more fuelwood and fodder.

Encourage the growth of cottage and small scale industries to provide greater employment.

Improve the land tenure system.

Invest in mini-hydro projects for rural electrification.

Improve transport in rural areas.

Improve the quality and increase the availability of water supplies.

Expand basic health facilities.

Upgrade the quality of primary and adult vocational education.

Increase family planning program efforts to reduce population growth.

This presentation paper will show how important fertility decline is to the attainment of Nepal's social and economic goals. The analysis will address two major questions:

Can Nepal achieve its social and economic development goals without a reduction in the current high fertility rate?

If effective measures to slow population growth were integrated with development programs, how much difference would it make to the attainment of Nepal's goals?

Population Dynamics

Fertility, Mortality, Migration, and Population Growth

Age Distribution and Dependency Ratios

The Momentum of Population Growth

Population Growth Under Different Fertility Assumptions

FERTILITY, MORTALITY, MIGRATION, AND POPULATION GROWTH

Fertility, mortality, and migration are the three components of population change; of these three, fertility is the most important in Nepal. Although a sharp decline in the death rate or a large influx of immigrants would increase the population growth rate, it is primarily the high birth rate which is determining the age structure, rate of growth, and size of the population. Annual birth rates in Nepal have ranged between 40 and 50 births per 1,000 population since 1950; currently, the birth rate is around 44. According to the Nepal Fertility Survey (1976), the fertility rate, or the average number of births per woman, is about 6.3.

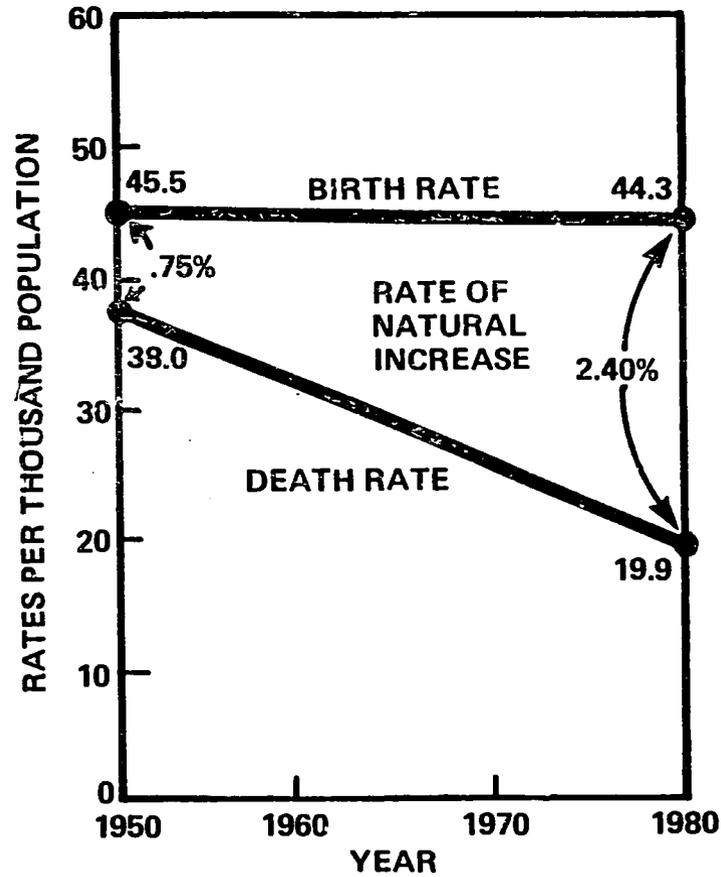
While fertility has remained high in Nepal, mortality has declined. The death rate has dropped from nearly 38 deaths per thousand population in 1950 to 20 per thousand in 1980. Concomitantly, life expectancy at birth has increased from 32 years in 1950 to 45 years in 1980. Thus, not only are large numbers of children being born in Nepal every year, but at the same time more children are surviving to older ages.

High fertility and declining mortality have combined to give Nepal a rapid rate of population growth. The population grew from about 8 million to 14 million between 1950 and 1980 and, if the present rate of growth continues, the population will double to almost 30 million within the next 30 years. Indeed, if fertility remains high while death rates continue to fall, the rate of growth of the population may actually increase in coming years.

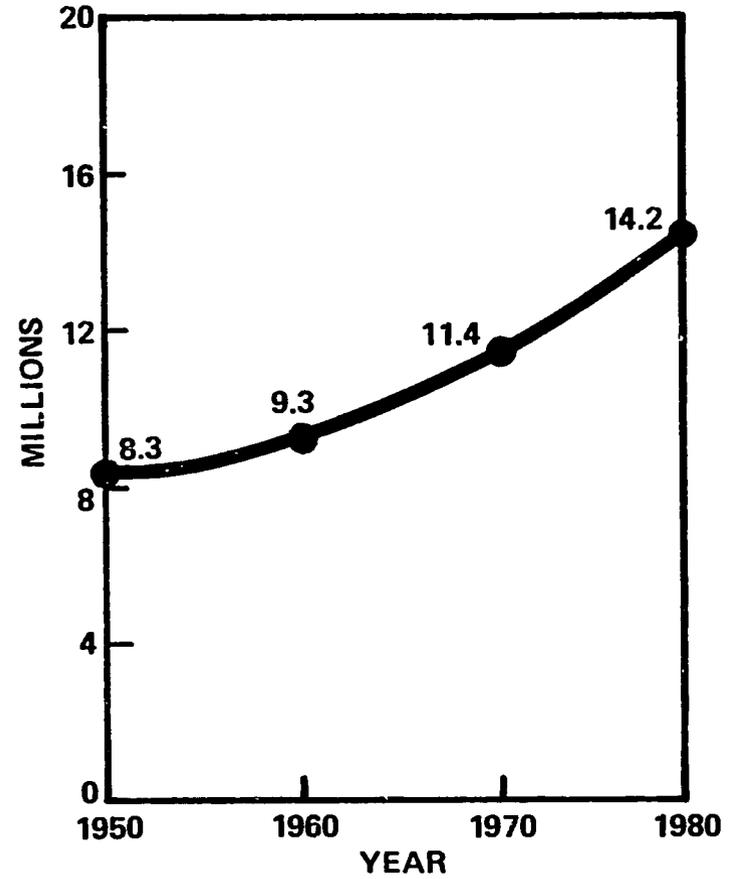
Population pressures have influenced internal migration. The shortage of arable land in the Hills and the Mountains has pushed people to the fertile plains, newly freed from malaria. Despite this movement, population pressures in the Hills and Mountains have not abated, while an ecologically disruptive deforestation of the Terai is taking place. A large scale seasonal migration of Hill and Mountain people seeking cash employment also occurs annually, although the monetary sector of the economy is not large enough to absorb all temporary job seekers.

NEPAL

Birth Rates, Death Rates, and Rates of Natural Increase, 1950 - 1980



Population Growth, 1950 - 1980



External migration is also considered to be a problem in Nepal. The open border between Nepal and India makes precise counts impossible, but the statistics which exist now show that almost as many Nepalese leave the country as foreigners enter. However, the numbers disguise a social issue. Almost all the Indian immigrants settle in the Terai, where their degree of organization and sophistication puts Nepali job seekers at a disadvantage. Conversely, the flow of young, healthy Nepalis to India, where they work as porters and servants, is a loss to Nepal of potentially productive labor, a loss only partially offset by remittances.

AGE DISTRIBUTION AND DEPENDENCY RATIOS

Every population is composed of different percentages of people in different age groups. The group of people aged 15-64 are usually considered the most economically productive section of the population, even though, as in Nepal, younger and older people may also be active members of the labor force. The working age population 15 to 64 must support themselves and also younger and older age groups; the ratio of those under 15 plus those over 64 to those 15 to 64 is called the dependency ratio, while the simpler ratio of children under 15 to adults 15 to 64 is the child dependency ratio.

Despite a very high incidence of infant and child mortality, so many births occur per couple that over 42 percent of Nepal's population is made up of dependent children under age 15.

For every 100 adults aged 15 to 64 there are 78 children to be maintained and educated; this means that, on the average, each worker has to support almost one child. When the elderly are included in the ratio, there are 82 dependents per 100 workers; 45 percent of the Nepalese population is dependent.

Although more developed countries have a greater percentage of older people than less developed countries, the burden of dependents is still smaller because the birth rates are so low. The Netherlands, which has a population approximately the same size as Nepal's, has only 23.7 percent under age 15 and even when older dependents are added, only 35.0 percent of the population is dependent. Each dependent child is supported by two to three adults of working age.

The current high birth rates will largely determine child dependency ratios in future years.

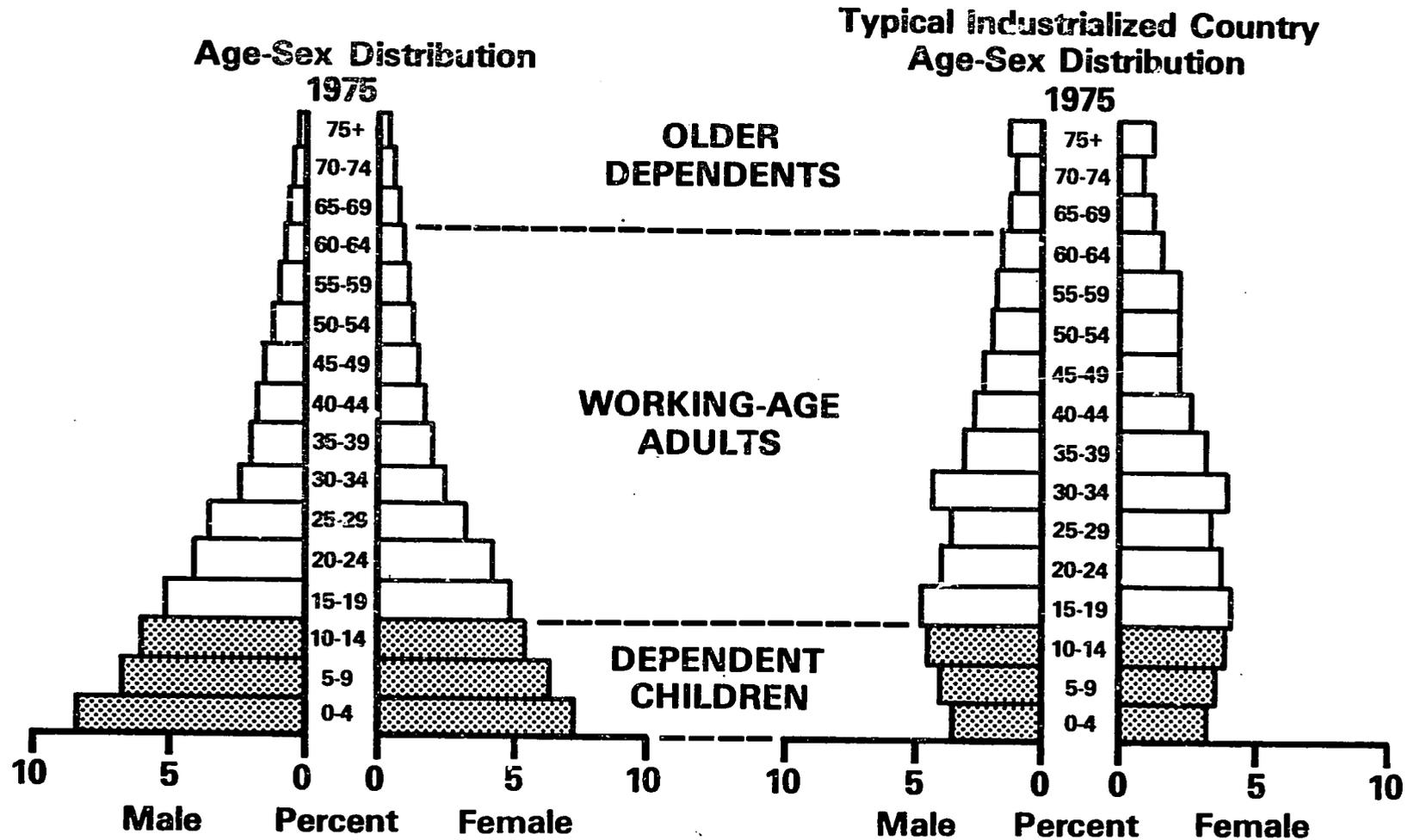
Without a marked downward trend in fertility, there will be 82 child dependents for every 100 working age adults in 2000.

However if fertility begins to fall immediately and reaches a 3-child family average by 2000, then the child dependency ratio will be reduced to 52 children per 100 adults in that year.

A fertility decline to a 2-child family average by 2000 would mean only 41 children per 100 adults, or more than 2 working age adults to support each child in that year, which is close to the present situation in more developed countries.

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Age Distribution and Child Dependency



For each dependent child in Nepal there are only 1.25 working-age adults.
 For each dependent child in most industrialized countries, there are 2 to 3 working-age adults.

In Nepal's traditional agricultural economy, large extended families are the accepted norm. Children contribute to the support of their families at a young age, and are perceived to be of great psychic, social, and economic benefit to their parents. Yet children are also an economic burden; they must be fed, clothed, housed, educated, and cared for when they are ill. As Nepal evolves into a modern state, the cost of childraising to the family and to society increases along with rising standards of health, education, and material welfare. A large dependent population demands a disproportionate share of private and public resources which might otherwise be invested in programs to stimulate economic growth and social progress.

THE MOMENTUM OF POPULATION GROWTH

Should fertility decline from the present average of approximately 6.3 children per woman to a replacement level of slightly more than 2 children per woman, the population will nonetheless continue to grow for several decades. 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 the time population growth stops.

This lag of about 50 years is due to the age composition of the population. Where fertility has been high, as in the case of Nepal, 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 50 years, and the population will continue to grow until the disproportion in the number of young people disappears.

Hence, an irresistible momentum is built into the population. Some hypothetical illustrations serve to demonstrate the importance of this momentum in determining the future population size of Nepal.

If fertility were to drop to replacement levels immediately, the 1980 population of 14 million would increase to 17 million before growth stopped.

If Nepal were to attain replacement level fertility by 2000, the population would grow from 18 million in that year to 22 million over the next several decades because of this built-in population momentum.

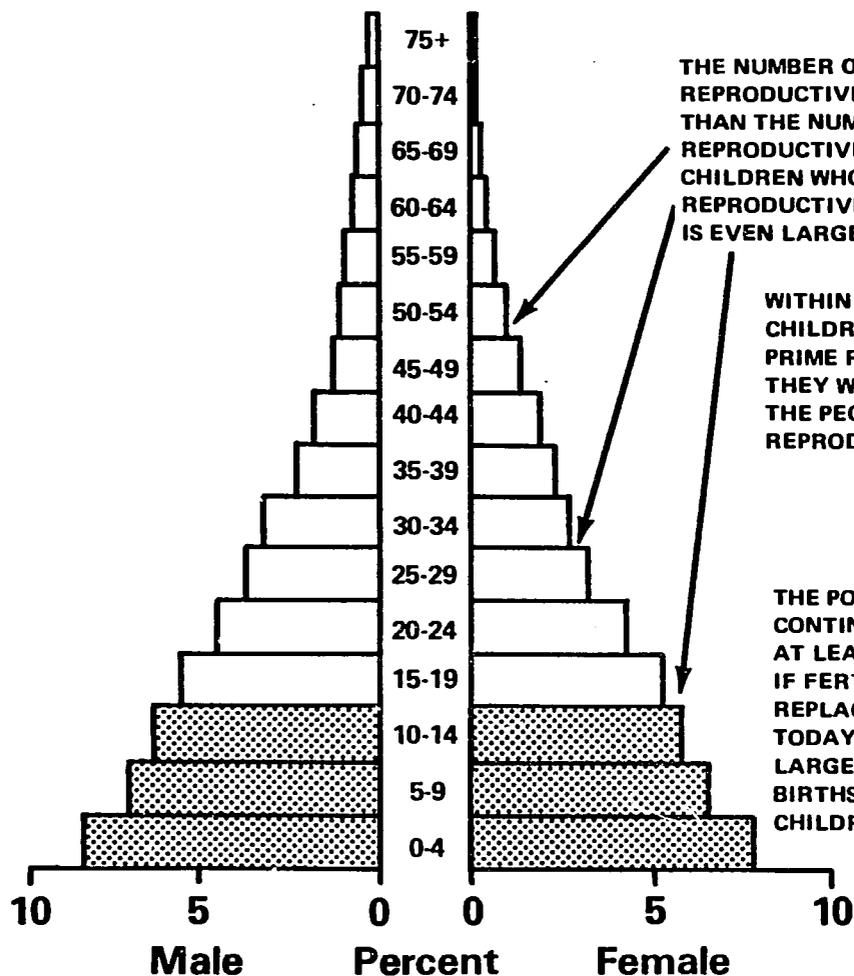
For every decade of delay in achieving replacement level fertility, the ultimate population size of Nepal will be about 17 to 18 percent greater. The momentum of population growth is an inescapable force which should be taken into account in planning development programs.

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Momentum of Population Growth

Population Profile

1980



THE NUMBER OF PEOPLE LEAVING THEIR REPRODUCTIVE YEARS IS MUCH SMALLER THAN THE NUMBER ENTERING THEIR REPRODUCTIVE YEARS. THE NUMBER OF CHILDREN WHO WILL ENTER THEIR REPRODUCTIVE YEARS IN THE FUTURE IS EVEN LARGER.

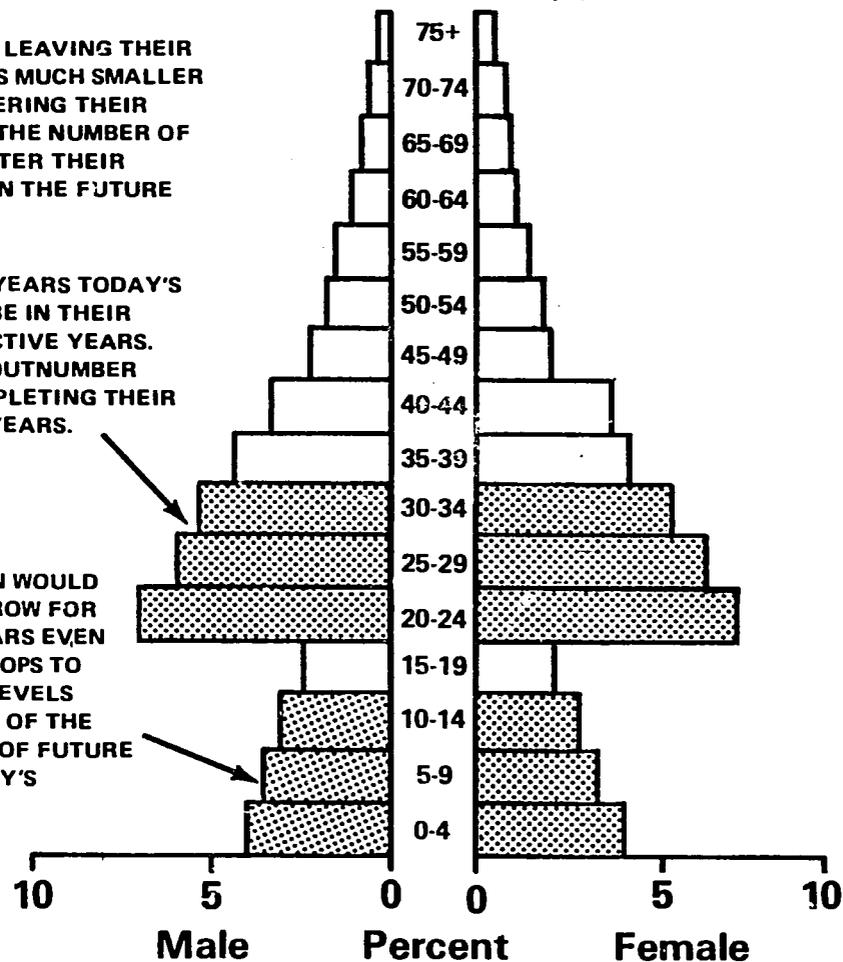
WITHIN 10 TO 20 YEARS TODAY'S CHILDREN WILL BE IN THEIR PRIME REPRODUCTIVE YEARS. THEY WILL FAR OUTNUMBER THE PEOPLE COMPLETING THEIR REPRODUCTIVE YEARS.

THE POPULATION WOULD 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.

Population Profile

2000

if fertility drops to replacement levels immediately



POPULATION GROWTH UNDER DIFFERENT FERTILITY ASSUMPTIONS

The implication of the built-in momentum of population growth is that it is already too late to prevent Nepal from becoming one of the world's most densely populated countries. Nonetheless, any decline in fertility would reduce future population growth. The projections below, based on alternative fertility assumptions, demonstrate this fact. All three projections assume an increase in life expectancy from 45 years in 1980 to 55 in 2000 and 65 in 2025, and no international migration.

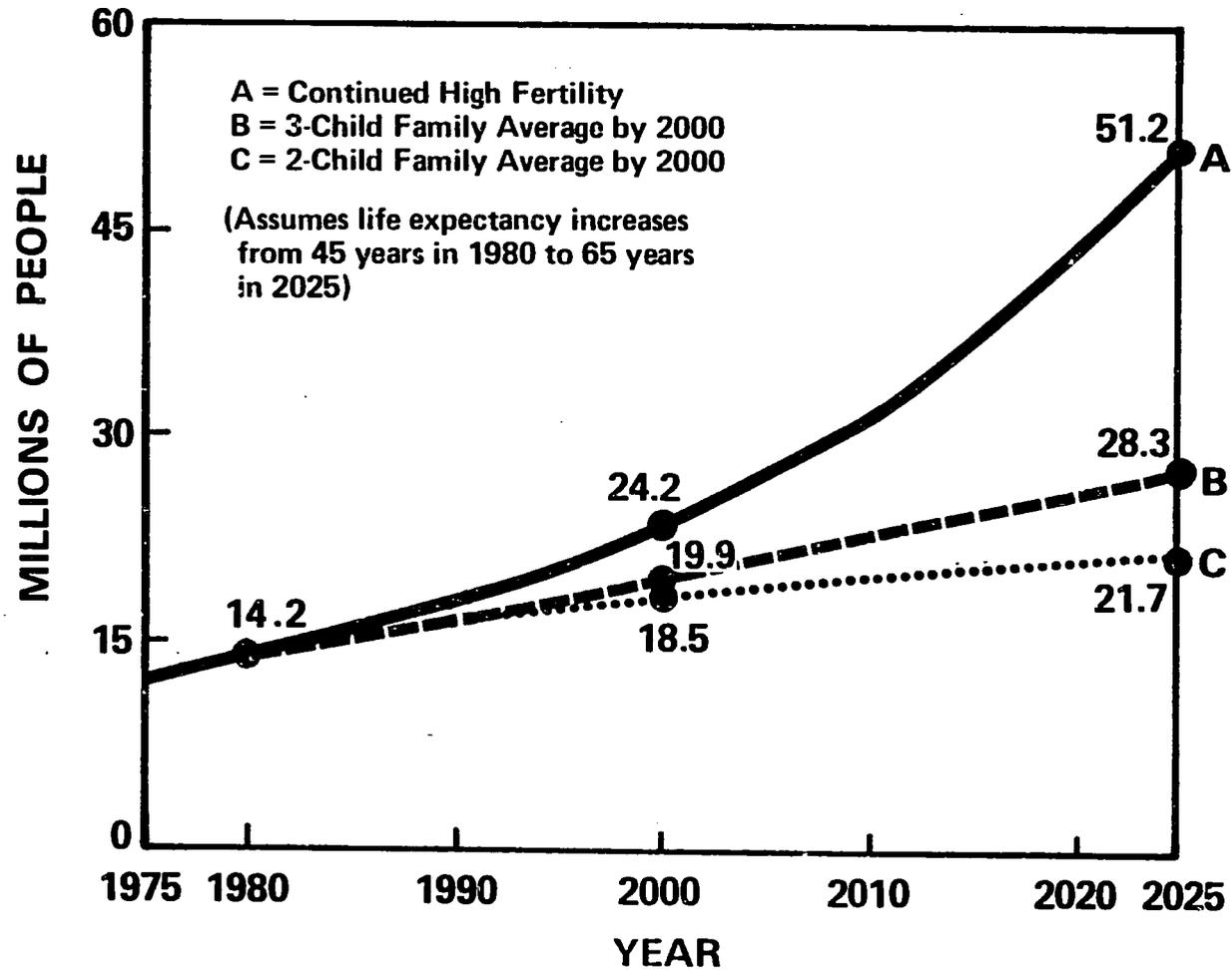
A. Continued High Fertility. Assuming the current fertility rate of 6.3 declines only to 5.9 by 2000 and to 5.5 by 2025, then the 1980 population of 14.2 million would expand to 24 million by 2000, 69 percent larger than in 1980. By 2025 the population would increase to 51 million, nearly four times the number in 1980, and would be growing at more than 3 percent a year, doubling every 24 years. The urban population alone in 2025 would be 23 million, one and one half times as large as the entire 1980 population.

B. Three Child Family Average by 2000. With a strong development and population/family planning effort, fertility could decline substantially in the next 20 years. If the rate dropped to 3.0 by 2000, the population in that year would be 20 million, 4 million less than with continued high fertility, but still 41 percent larger than the 1980 population. There would be 28 million people in 2025, 23 million less than under Projection A. The population would still be growing at a very rapid 1.3 percent a year.

C. Two Child Family Average by 2000. If somehow fertility could be brought down to replacement level in 20 years, there would be 18 million people in 2000. By 2025 the population would be over 21 million and the growth rate would have slowed to less than 0.5 percent. Due to the built-in momentum, the population would continue to grow to over 22 million before growth stopped.

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

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Population Growth Under Different Fertility Assumptions
1975 - 2025



The Effects of Nepal's Population Factors on the Achievement of Economic and Social Goals

Agriculture and Forests

Labor Force, New Job Requirements and Employment

Gross National Product and GNP Per Capita

Capital Accumulation and Investment for Economic Growth

Education

Health

AGRICULTURE AND FORESTS

Land

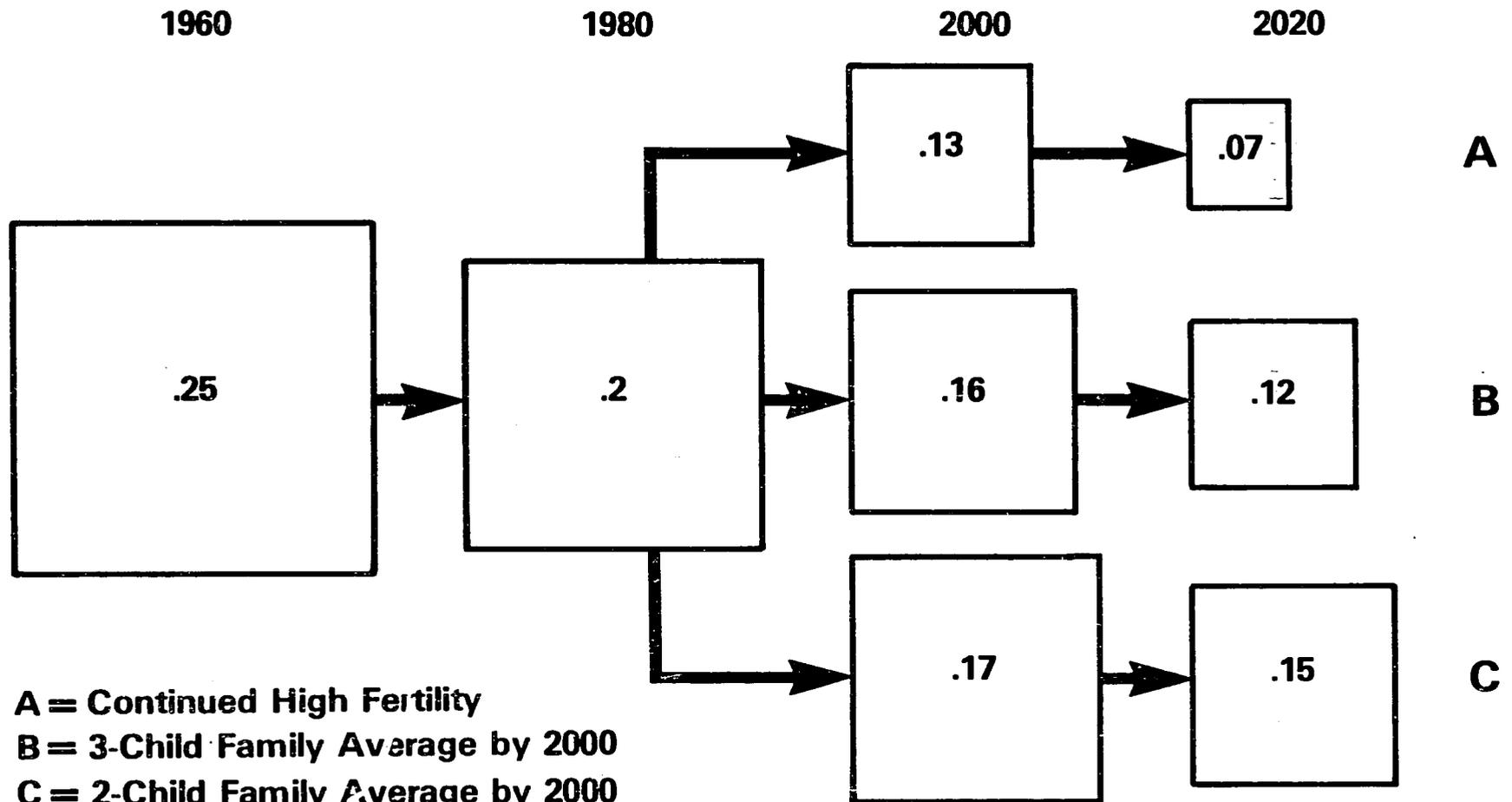
Of the 14.1 million hectares of land which comprise Nepal, approximately 9 million are cultivated, forested, or grasslands. Half of the 4.5 million hectares of forested land is already under commercial use; encroachment upon the remainder is rapidly occurring. Uncontrolled settlement in the Terai has led to the burning of forests and to the cultivation of sub-optimal land, while fuel gathering and fodder needs in the Hills have stripped once wooded land. Deforestation and over-cultivation of marginally productive mountainsides are causing serious topsoil losses and fuelwood shortages. Estimates of cultivated land range between 2 and 3 million hectares, of which roughly 1.6 million are plains (the Terai). In addition, 1.7 million hectares of grassland are suitable for pasturage. This combined agricultural acreage cannot be significantly extended unless more forest area is alienated, but surveys indicate that only about 250,000 forested hectares are suitable for agriculture; moreover it is not certain that cultivation would be the most productive use of this land. Even if these 250,000 hectares were converted to cultivated land by 2000, cultivated land per capita would still decrease because of the growing population. The following projections assume that there were 2.8 million hectares of cultivated land in 1980, and that this will increase to 3.15 million hectares by 2000.

In 1980 there are 0.2 hectares of cultivated land per capita. Continued high fertility would reduce this to 0.13 hectares per capita in 2000 and 0.07 hectares per capita in 2020.

If fertility were reduced to a 3-child family average by 2000, then there would be 0.16 hectares per capita in 2000 and 0.12 hectares per capita in 2020. This is 23 percent and 71 percent more cultivated land per person than with the higher fertility rates.

A decline to a 2-child family average by 2000 would mean 0.17 hectares per capita in 2000 and 0.15 hectares per capita in 2020. This is 31 and 114 percent more cultivated land per person than with continued high fertility, but even with this sharp fertility decline, the amount of arable land per capita would go down.

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Cultivated Land Per Capita in Hectares, 1960 - 2020



The situation is even more severe from a regional perspective. The shortage of cultivable land is acute in the Hills and Mountains, which contain only 1.2 million cultivated hectares but over 9 million people. There are only 0.13 cultivated hectares per capita in the Hills and Mountains, compared to 0.32 in the Terai. This difference in density is a major factor influencing the migration of at least 0.5 percent of the Hills population to the Terai every year. However, because there is a limited amount of land suitable for cultivation in the Terai, the region cannot continue to absorb large numbers of agricultural workers and families. In both regions, the rapid growth of the population will increase pressures on the land.

Continued high fertility would reduce cultivated land per capita to 0.08 hectares in the Hills and Mountains and 0.19 hectares in the Terai by 2000. Twenty years later there would be only 0.05 hectares per capita in the Hills and Mountains and 0.09 hectares per capita in the Terai.

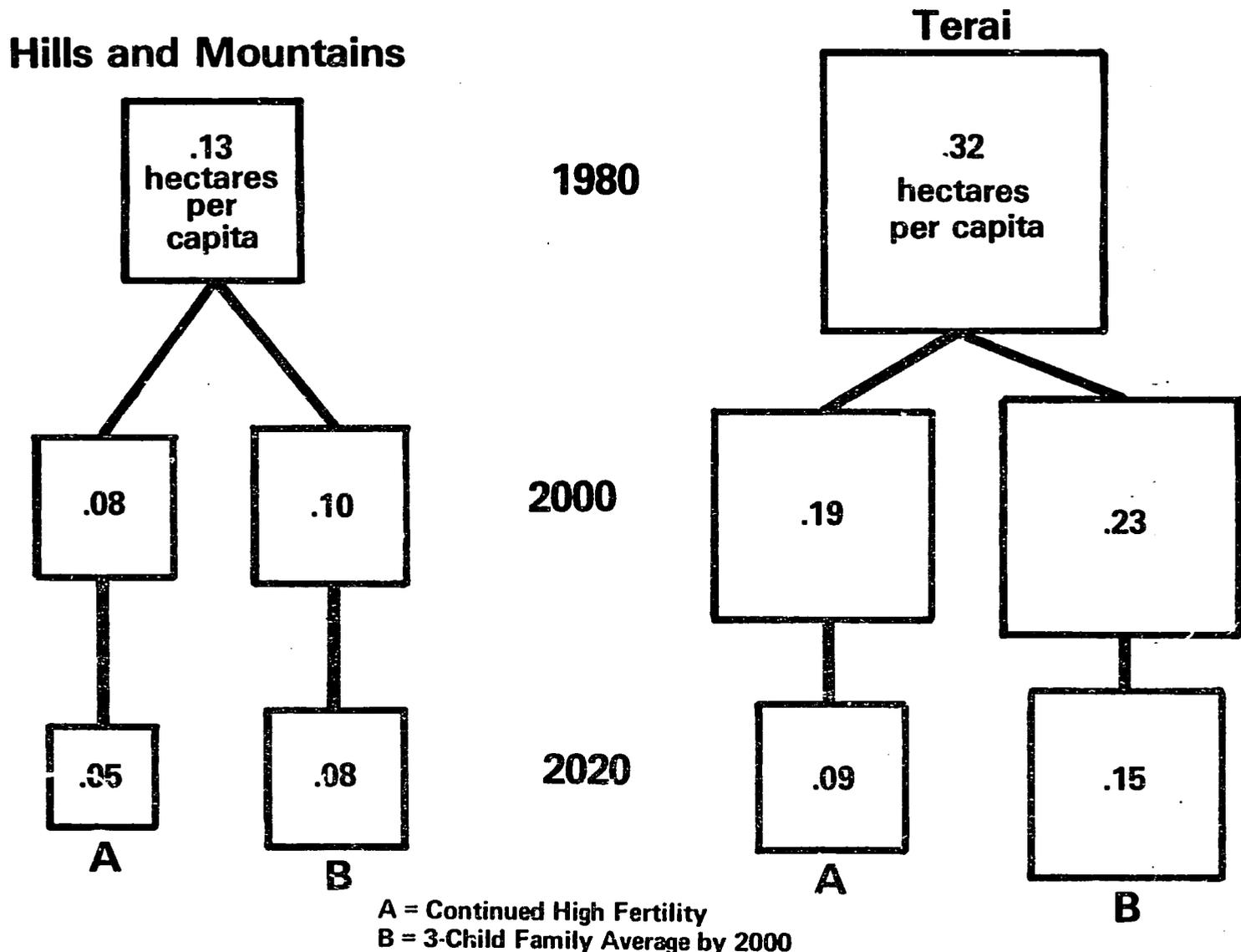
If fertility were reduced to a rate of 3.0 by 2000, there would be 0.10 hectares of cultivated land per capita in the Hills and Mountains and 0.23 hectares in the Terai. By 2020 there would be 0.09 hectares per capita in the Hills and Mountains and 0.15 hectares in the Terai.

A decline to a 2-child family average by 2000 would mean 0.11 hectares of cultivated land per capita in the Hills and Mountains and 0.25 hectares in the Terai. By 2020 there would be 0.10 hectares per capita in the Hills and Mountains and 0.19 hectares in the Terai.

The increasing shortage of good agricultural land will continue to be one of Nepal's most critical problems, and will only be exacerbated by the rapid expansion of the population.

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Cultivated Land Per Capita by Region, 1980 - 2010



Foodgrain Production

Although Nepal was a rice exporter until the mid 1960s, food imports will give the country a deficit trade balance within the next decade. Agricultural production is fast being outstripped by population growth: the historical rate of growth of the food supply has been 1.4 percent per annum, while the population growth rate has been higher. Food deficits are already apparent in the Hills and Mountains whose inhabitants rely upon dwindling surpluses from the Terai. The fragmented and terraced Hills farms produce maize, paddy, wheat, millet, potatoes, dairy and livestock products and manure (used for fertilizer and fuel). The pastures are overgrazed, the woodlands depleted, and cultivated acreage has been stretched to the maximum. The result is severe erosion which is causing massive loss of topsoil, landslides, flooding and destruction of terracing, pathways, and irrigation works. Agricultural production in the Terai benefits from more accessible terrain, better water supplies, more advanced infrastructure and larger farm size (an average of 1.7 hectares compared to an average of less than 0.4 hectares in the Hills and Mountains). Enough paddy, wheat, and cash crops are produced in the Terai to satisfy local demand and to export to the Hills and Mountains and to India.

Given the dependence of the population and of the economy on foodgrain production, especially in the Terai, it is alarming that total production and average yields have actually declined in recent years, despite increased inputs of land, irrigation, and high yield seeds. Bad weather and the extension of cultivation to marginally productive lands were partly responsible for the yield decline, but if Nepal is to avoid major food shortages, a wide range of improvements and reforms must be made. The future growth of the food supply will necessitate intensification of production as significant extension of cultivation to new lands is no longer possible. A concomitant decline in fertility would facilitate the institutional and technical changes needed to raise productivity by freeing resources for investment in human and

material capital so that the economy can make the developmental transition from traditional subsistence to a modern economy.

Average annual growth rates of cereal production between 1966/67 and 1976/77 were 1.3 percent in the Terai and 0.6 percent in the Hills--a national average of 0.95 percent. Although total production of cereals and potatoes increased over the ten year period, yields per hectare did not improve and in some cases declined. Cereals yields averaged between 1.31 and 1.48 metric tons per hectare. Not all of this gross yield is actually consumable. After allowing for wastage, seed requirements, and conversion loss, consumable production in Nepal is only about 69 percent of gross production. Thus while the average yield for cereals and potatoes in 1977/78 was 2 metric tons per hectare, the consumable yield was 1.4 metric tons per hectare. To fulfill the normal subsistence needs of the population*, Nepal needs to produce 0.209 consumable metric tons (209 kilograms) of foodgrains per capita each year. The following projections assume that consumable production of foodgrains will grow by 2 percent a year--far above historical increases in productivity. Most of this growth will have to come from decreased wastage or increased yields per hectare as the possibility for increasing cultivated acreage is very limited.

*Annual per capita demand for consumable foodgrains is based on (a) 1976/77 production weighted average calorie content of crops; (b) population weighted average of regional calorie requirements; (c) in take of calories required to meet normal subsistence needs.

If fertility continues at high levels, then by 1990 there would be only 186 kilograms per capita of domestically produced, consumable foodgrains available; 422,000 tons would have to be imported annually to meet normal subsistence needs. By 2000 there would be 172 kilograms per capita available, and 884,000 tons would have to be imported. Ten years later, only 157 kilograms per capita would be available, and 1,669,000 tons would have to be imported.

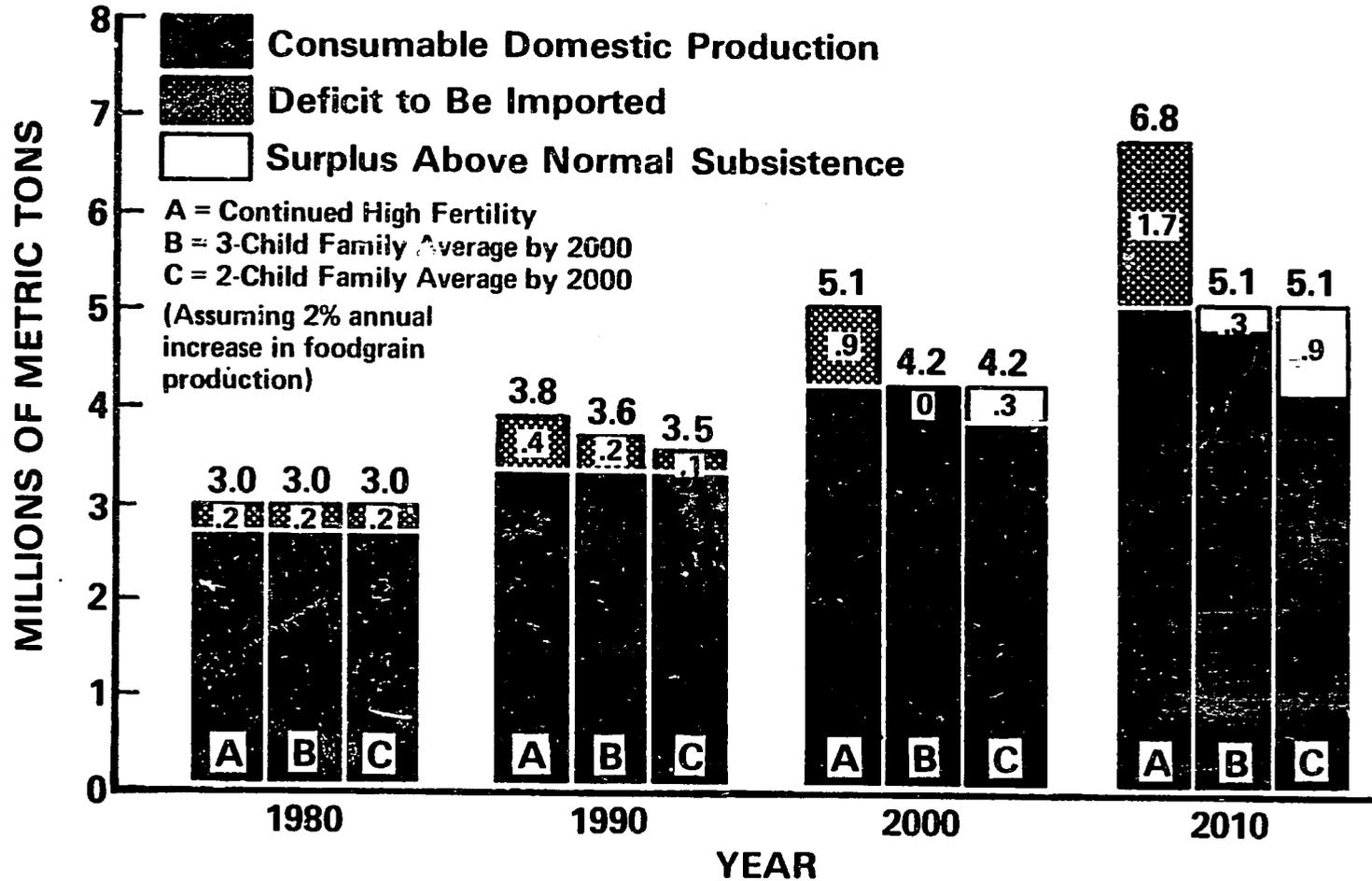
If fertility declined to a 3-child family average by 2000, then in 1990 there would be 197 kilograms per capita of domestically produced, consumable foodgrains available; 201,000 tons would have to be imported to meet normal subsistence needs. By 2000, however, production would again be equal to normal subsistence needs.

If fertility declined to a 2-child family average by 2000, then in 1990 there would be 202 kilograms per capita of domestically produced consumable foodgrains available; 46,000 tons would have to be imported. Thereafter, production would exceed normal subsistence needs. In 2000, Nepal would produce 320,000 tons of foodgrains above normal subsistence needs, and that number would rise to 950,000 tons in 2010.

Should Nepal continue the historic pattern of increases in foodgrain productivity of about 1 per cent per year, the situation would be considerably worse. With continuing high fertility, Nepal would have to import 1.6 million tons of foodgrains annually by 2000 and 3.0 million tons by 2010 to meet normal subsistence needs. Even with a 2-child family average by 2000, Nepal would still be in a foodgrain deficit situation by 2010. Thus, increases in productivity combined with a decline in the rate of population growth would be the most effective way of improving foodgrain availability.

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Consumable Domestic Production and Supply of Foodgrains Required to Meet Normal Subsistence Needs, 1980 - 2010



Forests

Future agricultural productivity is closely tied to the fate of the forests in Nepal, which have suffered important losses in recent years. As a result of the increased demand for fuelwood and fodder and the deforestation of the Terai with greater human settlement, forest area in Nepal declined from about 6 million hectares to 4.5 million hectares between 1964 and 1975. This deforestation has resulted in serious soil erosion, severe flooding, the drying up of streams with the loss of valuable water supply, and the destruction of precious agricultural land with a corresponding decline in food production potential. Should the encroachment of forests for fuelwood, fodder, and new agricultural land continue, all forests would disappear from the Hills in about 15 years and from the Terai in about 25 years. The Government of Nepal recognizes the seriousness of the situation, and reforestation is a high priority in the development effort. The question now is whether the successful implementation of a massive reforestation program will be able to outpace the deterioration of a fragile environment.

A decline in fertility would greatly assist the Government in its reforestation goals by alleviating the unremitting demand for fuelwood, fodder, and new agricultural land. Because fuelwood is the single most important demand on the forests of Nepal--87 percent of all energy consumption in the entire country comes from this source--projections on fuelwood consumption can be used to demonstrate the impact of declining fertility on the forests of Nepal. World Bank forestry experts suggest that fuelwood will remain an important source of energy in Nepal in coming years and project annual consumption of 1 cubic meter per person.

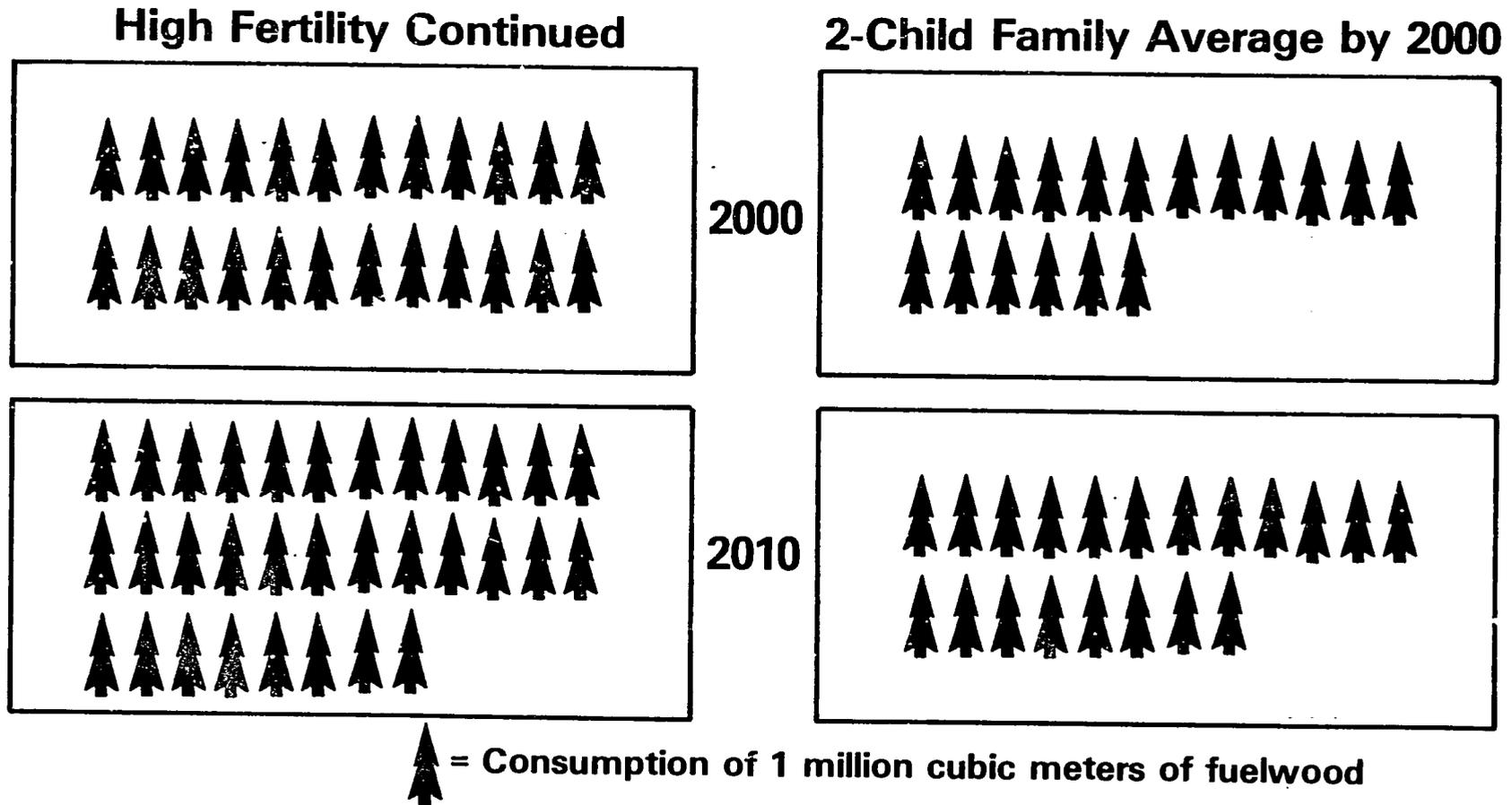
Under those conditions and with continuing high fertility, 24.2 million cubic meters of fuelwood would be consumed in Nepal in 2000 and 32.4 million cubic meters in 2010.

If fertility declines to a 3-child family average by 2000, however, consumption would be 19.9 million cubic meters in 2000 and 23 million in 2010.

And with a 2-child family average by 2000, fuelwood consumption would be 18.5 million cubic meters in 2000 or 3.7 million fewer cubic meters than with continuing high fertility. By 2010, Nepal would be consuming 19.9 million cubic meters of fuelwood each year. The cumulative savings in consumption of fuelwood would be almost 130 million cubic meters between 1980 and 2010 with low fertility.

Population pressures are one of the most serious factors contributing to deforestation in Nepal. A lower rate of population growth would greatly assist the reforestation effort in Nepal, and by so doing, would help prevent flooding, soil erosion, and the corresponding loss of scarce agricultural land.

NEPAL
Consumption of Fuelwood
Under Different Fertility Assumptions:
2000 and 2010



LABOR AND EMPLOYMENT

The Nepalese labor force is predominantly agricultural. The 1978 Employment, Income Distribution and Consumption Patterns Survey (EIDCP) by the National Planning Commission reported 79.5 percent of the economically active population in agriculture. Production workers (6.9 percent) and clerical workers (6.9 percent) are the next two biggest groups. The rate of open unemployment is uncertain, but it is probably between 2 and 6 percent, depending upon the season and the definition of unemployment used. The marginal employment situation, however, is much worse; Nepalese scholars at the Centre for Economic Development and Administration estimate rural underemployment to be 50 percent of full employment, which is defined as 250 workdays per person in a year. The EIDCP survey figures for underemployment are even more alarming: 63.5 percent in rural areas and 44.6 percent in urban areas. Female and male underemployment are given as 68.8 and 57.9 percent respectively.

Underemployment in Nepal is caused by four major factors: rapid population growth combined with a relatively fixed amount of arable land; low marginal productivity due to traditional production methods; lack of employment opportunities in the modern sector; and the low level of skills in the labor force. These problems are most severe in the Hills and Mountains regions, where almost two-thirds of the population subsists on only one-third of Nepal's arable land. Average family size is 7 to 8 people, but the average family land holding is less than 0.4 hectares. The extension of cultivation to steep, marginally productive mountain slopes has exacerbated soil erosion, floods, landslides, and fuelwood shortages. Hundreds of thousands of Nepalis have migrated from these densely populated areas to the Terai plains in search of new land and employment, but the plains cannot continue to absorb surplus labor indefinitely.

The overabundant supply of labor in Nepal causes the wage level to be depressed, the capital to labor ratio to be low, and the marginal productivity of agricultural labor to be close to zero. The labor force, which is defined as the economically active population 15 to 65, currently numbers 6.0 million. Because most new entrants into the labor force over the next 15 years are children who have already been born, the number of workers will increase to 8.6 million in 1995 regardless of what happens to fertility between now and then. Thereafter, declining fertility will affect the size of the labor force.

If fertility continues at a high rate, 13 million workers will be in the labor force in 2010 and 21 million in 2025.

A decline to a 3-child family average by 2000 would mean 12 million workers in the labor force in 2010 and 14 million in 2025.

If fertility drops to a 2-child family average by 2000, the size of the labor force will be 11 million in 2010 and 12 million in 2025. This is 17 percent less in 2010 and 44 percent less in 2025 than under continued high fertility.

By reducing the rate of growth of the total population, more resources would also be made available for improving the productive qualities of the labor force and for creating jobs in the non-agricultural sector.

Labor Force and Child Dependents

Although the size of the labor force will be about the same by 2000 no matter what happens to fertility between now and then, the number of dependents who will have to be supported by the productive members of the labor force will be markedly different. The relationship between labor force size and child dependency under the three fertility assumptions demonstrates the importance of the rate of population growth.

If fertility remains high, every 100 productive members of the labor force will have to support 106 child dependents in 2000 and 108 in 2010.

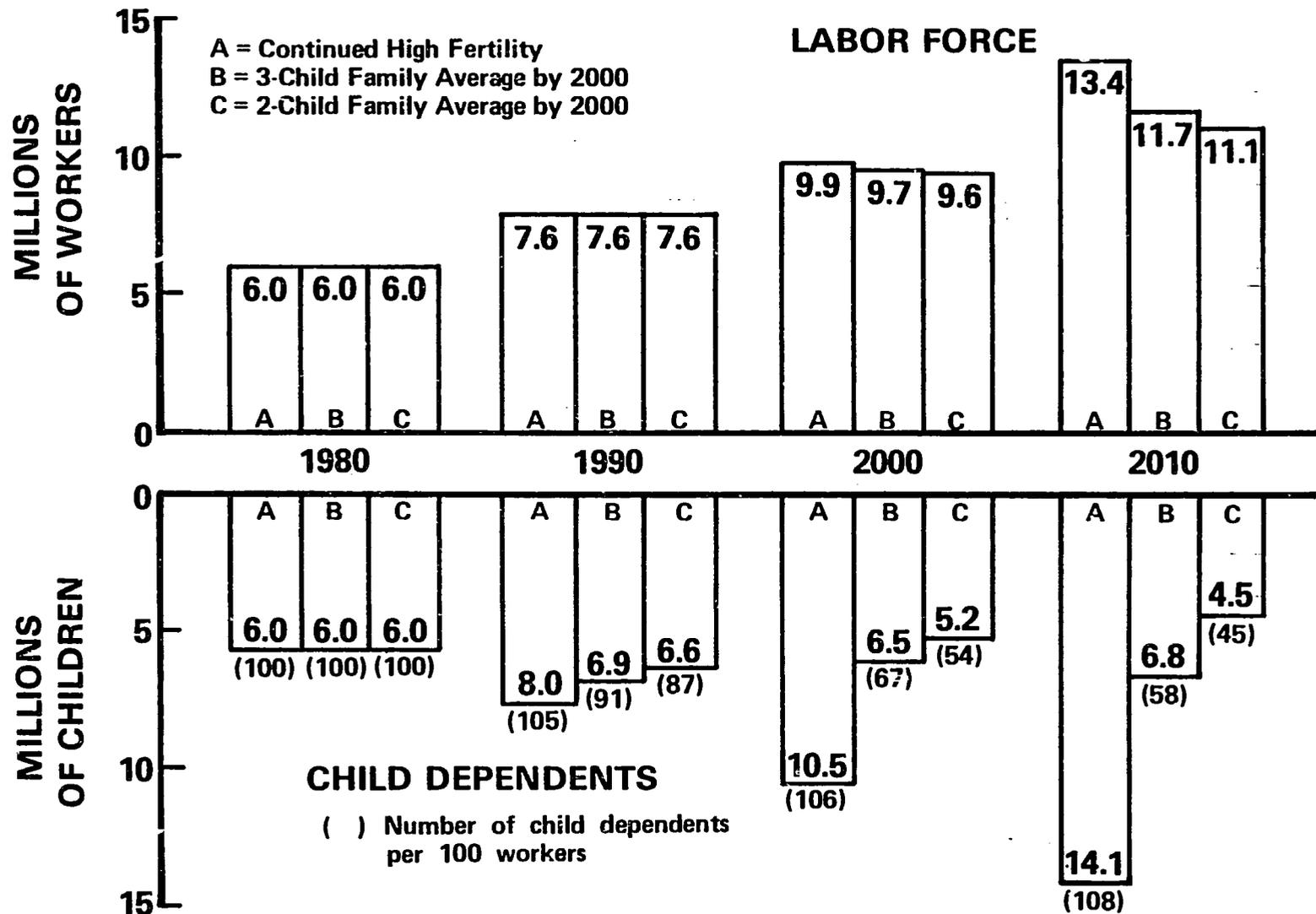
If fertility drops to a 3-child family average by 2000, every 100 productive workers will have to support 67 child dependents in 2000 and 58 in 2010.

If fertility drops to a 2-child family average by 2000, dependency ratios will be lower. Every 100 workers will have to support 54 child dependents in 2000, 52 fewer than would be the case with high fertility. The same 100 workers will have to support only 45 dependent children in 2010, 63 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.

NEPAL

Labor Force and Child Dependents, 1980 - 2010



New Job Requirements

Assuming that the current high participation rate of 77 percent remains constant, then about 1.8 million young people will be needing training and jobs between 1980 and 1990. The retirement of older workers will make some jobs available, but there will be many more young workers entering the labor force than there are older workers leaving. This means the majority of the new entrants must rely upon the creation of new jobs in order to be fully and productively employed. However, because of the slow development of the modern sector in Nepal, most of these young people must be absorbed by the agricultural sector, where labor is already overabundant and productivity low.

The employment of so many workers in low productivity jobs is costly to the economy and a waste of human resources. Furthermore open and disguised unemployment widens income differentials and may lead to social unrest. More efficient investment and organization in both the modern and traditional sectors are needed to increase profits and provide more employment at above subsistence wages, but this can only occur when population growth has slowed enough to allow the economy to produce the necessary capital, skilled labor, and entrepreneurial opportunities. The large number of additional entrants to the labor force each year aggravates unemployment and underemployment and reduces the possibility of improving capital to labor ratios and output per worker.

With continued high fertility the number of new job requirements would increase from roughly 140,000 in 1980 to 290,000 in 2000 and 410,000 in 2010.

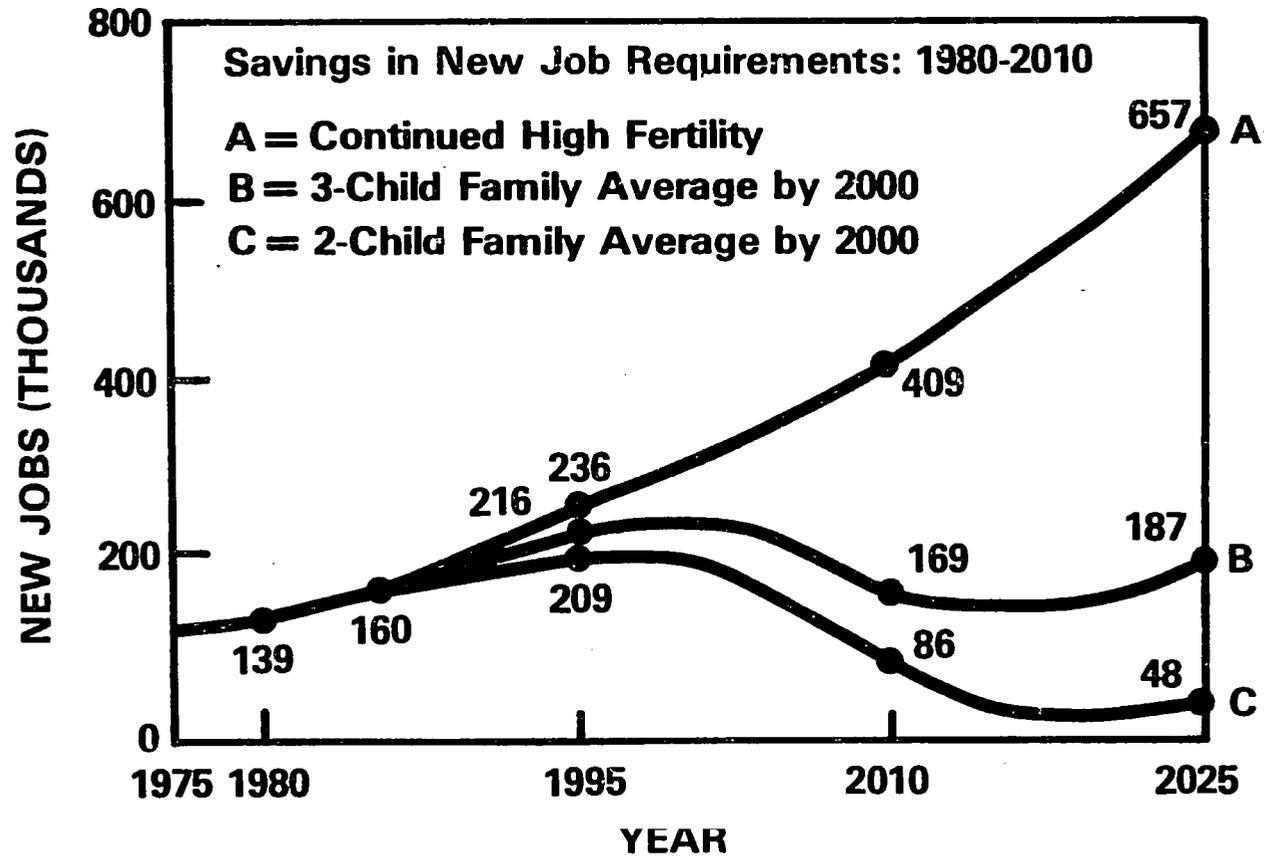
A reduction in fertility to a rate of 3.0 by 2000 would mean only 215,000 new job requirements in 2000 and 170,000 in 2010. The economy would have to generate 2 million fewer new jobs between 1980 and 2010 than with continued high fertility.

If fertility declines to a 2-child family average by 2000, there would be only 190,000 entrants to the labor force in 2000 and 90,000 in 2010. The economy would have to generate nearly 3 million fewer jobs between 1980 and 2010 than with continued high fertility.

With lower fertility, Nepal will have more opportunity to provide a sufficient number of good jobs for the rapidly expanding labor force.

NEPAL

New Job Requirements Under Different Fertility Assumptions, 1975 - 2025



GROSS NATIONAL PRODUCT AND GNP PER CAPITA

Eighty percent of employment, 80 percent of exports and 60 percent of GNP in Nepal are derived from agriculture. Ancillary food processing and industrial growth also depend upon agricultural growth to supply raw materials and to generate demand for finished products. When the agricultural sector stagnates, the whole economy suffers. Such has been the case in recent years when the annual growth in real GNP has been 2.5 percent or less. In some years when the monsoon seasons brought little rain, economic growth actually fell behind population growth. Even in the best years not enough income was generated to significantly raise the GNP per capita, which at NRs 1,468 in 1975 was among the lowest in the world. To meet the Sixth Plan's goal of a 4 to 5 percent per annum GNP growth, Nepal must continue to rely upon its comparative advantage in agriculture and considerably improve productivity in this sector.

The stimulation of GNP growth depends upon the social and structural organization of the economy and upon many different factors of production, one of which is population. Since most new entrants to the labor force for the next 20 years have already been born, GNP would not be significantly affected over the next 20 to 30 years by a fertility reduction. Per capita GNP, however, would immediately be augmented as fewer people would have to share the national income. Assuming that GNP will grow between 4.2 and 4.5 percent per annum over the next 30 years, per capita income would rise more rapidly with lower fertility.

With continuing high fertility, GNP per capita would rise from NRs1,468 in 1980 to NRs 1,900 in 2000 and NRs 2,300 in 2010*. This implies a small average annual rate of growth of 1.6 percent, which is insufficient to raise the majority of the population above poverty level. Yet even this modest rise in per capita income may be impossible to achieve if the current GNP growth rate of 2.5 percent does not increase to at least 4.5 percent.

If a 3-child family average can be achieved by 2000, GNP per capita would increase to NRs2,400 in 2000 and NRs3,100 in 2010.

If a 2-child family average can be achieved by 2000, GNP per capita would be NRs2,600 in 2000. By 2010, it would be NRs3,500, or NRs1,100 greater than with continuing high fertility.

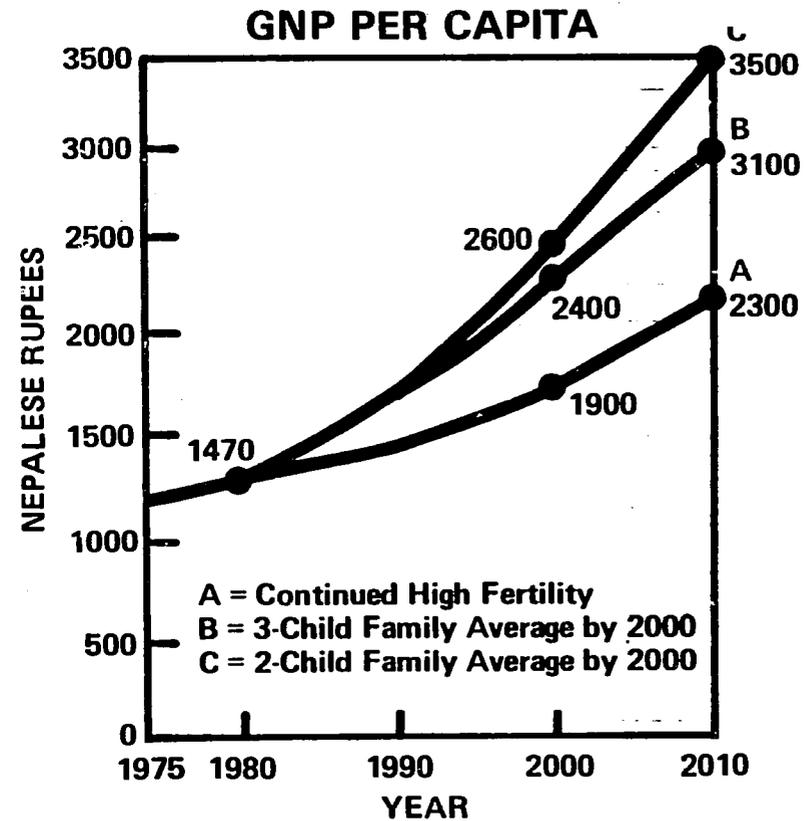
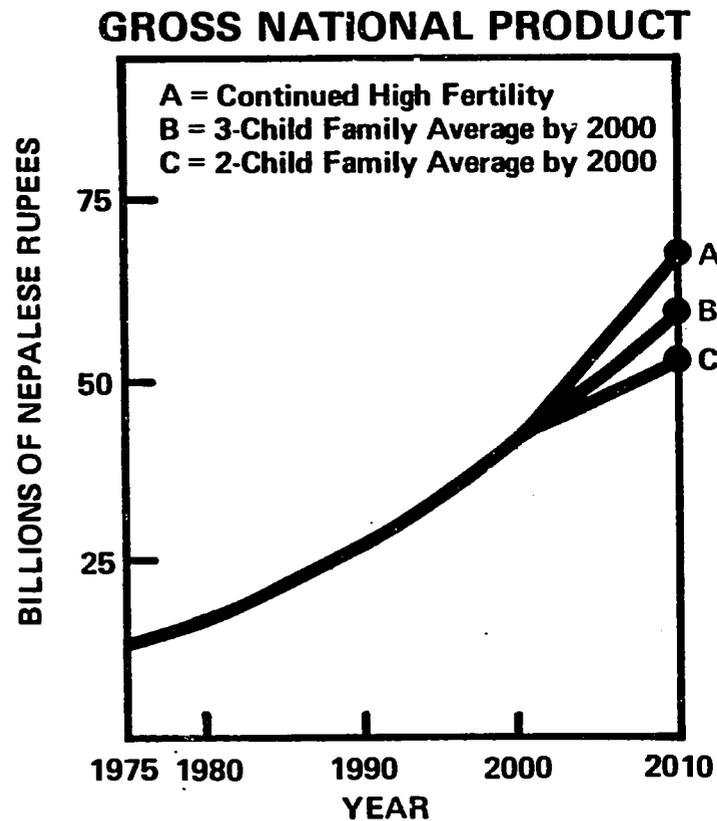
In reality the differences are likely to be even greater, for with fewer people, more resources will be available for qualitative and quantitative improvements in the productive sectors to increase economic growth. Nonetheless, even a sharp decline in fertility will not be enough by itself to give most Nepalese a high annual income by 2000. To significantly raise the average per capita income will require an increase in economic output concomitant with a decrease in fertility. Nevertheless, average family size plays a substantial role in determining the level of per capita income.

*All Nepalese Rupees at constant 1975 values

NEPAL

Gross National Product and GNP Per Capita, 1975 - 2010 (Constant 1975 NR's)

Assuming an average annual increase in GNP of between 4.2 and 4.5 percent.



CAPITAL ACCUMULATION AND INVESTMENT FOR ECONOMIC GROWTH

In order to increase economic output, a country must divert resources from current consumption to voluntary or compulsory savings which can be invested. Nepal, like many developing countries, has a low savings rate, between 5 and 8 percent of GNP.¹ A high annual rate of capital accumulation is especially important to Nepal's development because the country lacks the capital base of industrialized economies. Many development economists believe that a savings rate of 15 percent is necessary if enough surplus capital is to be generated (over consumption and current expenditure) to accelerate the growth rate, improve capital/labor ratios and increase income per capita.

Of course the expansion of capital supplies is not sufficient by itself to increase economic output; certain combinations of qualitative factors are needed to improve the efficiency of production. These qualitative factors essential to growth may include the education and vocational training of the workforce, technological innovation, economies of scale, and, importantly, the development of financial, commercial, and governmental networks. In sum, how, where and when capital is invested is just as relevant as the quantity of capital invested.

Gross domestic investment was 10 percent of gross domestic product in 1976. During the Fifth Plan (1975/76-1979/80) public investment in development expenditures increased from NRs1,239 million to NRs2,970 million, a rise of more than 15 percent a year in real values. Only part of this increase was due to a higher level of domestic savings; foreign borrowing, foreign aid, and a deficit budget have enabled Nepal to proceed with development projects and will continue to be essential in the Sixth Plan period. Net external assistance is currently NRs 1.3 billion, which is between 5 and 6 percent of GDP. At the same time, external public debt rose from NRs 207 million in 1973 to NRs 1,052 in 1978.

¹Standard economic measures for Nepal are imprecise. They exclude nonmonetized transfers of goods and services and subsistence production, both of which are significant in the Nepalese economy.

Future Savings and Investment

The amended Basic Principles of the Sixth Plan projects annual revenue growth at 7 percent, but expenditure growth at 10 percent. In addition to depending upon foreign assistance, more local resources will have to be mobilized through taxation or savings incentives to bridge this gap. The Government hopes to have NRs 16,000 million available over the next five years for development spending, of which about 60 percent is earmarked for capital investment. If this public investment target is met all four major economic sectors will benefit: agriculture, social services, industry and power, and transport and communications. The World Bank estimates that public investment will need to increase 12 percent per annum if Nepal is to achieve even a 4 percent annual growth in real GDP in the 1980's.

Meeting these investment and growth goals will be difficult in a country where consumption is already low and the domestic resources available for savings are limited. Rapid population growth is a constraint to capital accumulation because little income is left after the basic needs of ever expanding numbers have been met. Besides diminishing the quantity of resources available for investment, population pressure erodes the productive potential of the economy by destroying the delicate ecology of the Himalayan region. The deterioration of agricultural land combined with the increasing needs of greater numbers in the population has decreased the possibility of mobilizing sufficient economic surplus to finance development. Under these conditions, Nepal will find it difficult to meet the basic needs of the population, and even more difficult to generate and put to efficient use enough investment to fuel economic growth.

Effect of Fertility Decline on Savings and Investment

The rate of population growth is one of the key determinants of a country's ability to accumulate capital. With a decline in fertility, the child dependency ratio will decrease, which in turn will decrease the income needed for basic services at the household and national levels. Consequently, a reduction in the burden of dependency would greatly improve the opportunity for savings and investment.

Investment potential is important to Nepal because of the ever increasing amount of revenue which will be required simply to maintain the 1976 per capita income. That amount, however, would be reduced with a lower rate of population growth. In 1980 NRs 990 million will be required to maintain the 1976 per capita income.

With continued high fertility, the annual investment required to sustain the 1976 income per capita would be NRs 1,640 million in 1995, and NRs 2,740 million in 2010.

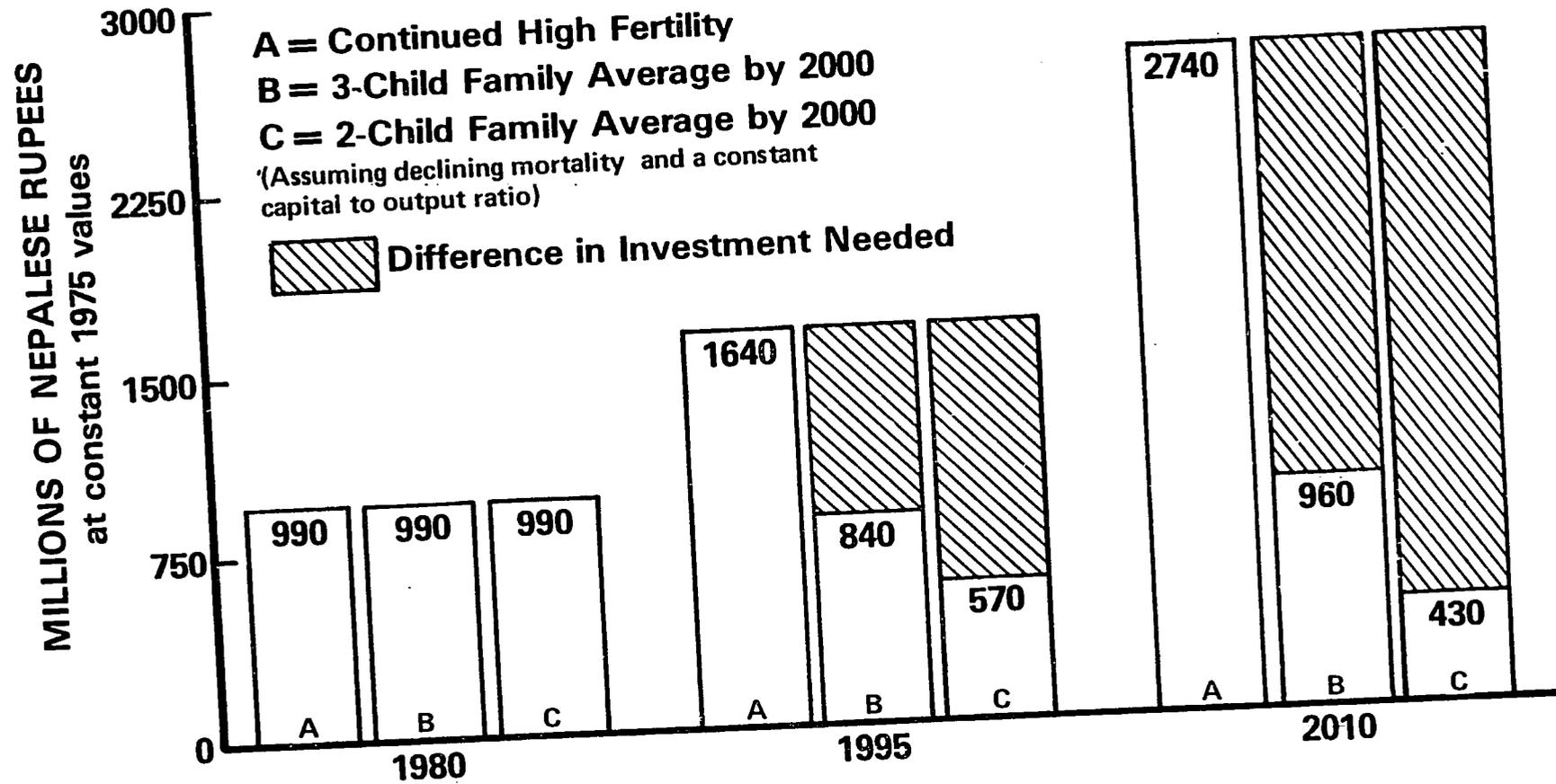
If a 3-child family average were achieved by 2000, the annual investment needed to maintain the 1976 GNP per capita would be NRs 890 million in 1995 and NRs 960 in 2010. This is NRs 800 million and NRs 1,780 million less than with continued high fertility.

Should a 2-child family average be achieved by 2000, an investment of NRs 570 million would be required to maintain the 1976 GNP per capita in 1995, and an investment of NRs 430 would be needed in 2010. This is NRs 1,070 million and NRs 2,310 million less than would be needed with continued high fertility.

With high fertility, substantially more investment will be required to sustain the same GNP per capita. Just to maintain the 1976 level of GNP per capita through the year 2010 would require an average investment of NRs 852 million more each year with higher fertility than with a 3-child family average by 2000. Of course, in order to attain the Government goals of increasing GNP per capita, even greater amounts of investment will be required.

NEPAL

Investment Required to Maintain the 1976 GNP Per Capita Under Different Fertility Assumptions, 1976 - 2010



National Savings on Social Services

The Nepalese Government estimates that NRs 3,200 million will be annually available for development expenditure during the Sixth Plan. Of this, it is planned to spend 29 percent on agriculture, 22 percent on industry and power, 21 percent on transport and communications and 28 percent on social services. Sixty percent of the NRs 3,200 million will be allocated to capital investment and the remainder, NRs 1,280 million, to recurrent costs. Thus the Sixth Plan allocates NRs 358 million for current expenditure on social services in 1980 for a population of 14.2 million. This is an annual per capita level of NRs 25.2.

With continued high fertility and declining mortality, achieving the level of investment in social services envisioned in the Sixth Plan would require the expenditure of NRs 460 million in 1990, NRs 610 million in 2000 and NRs 820 million in 2010.

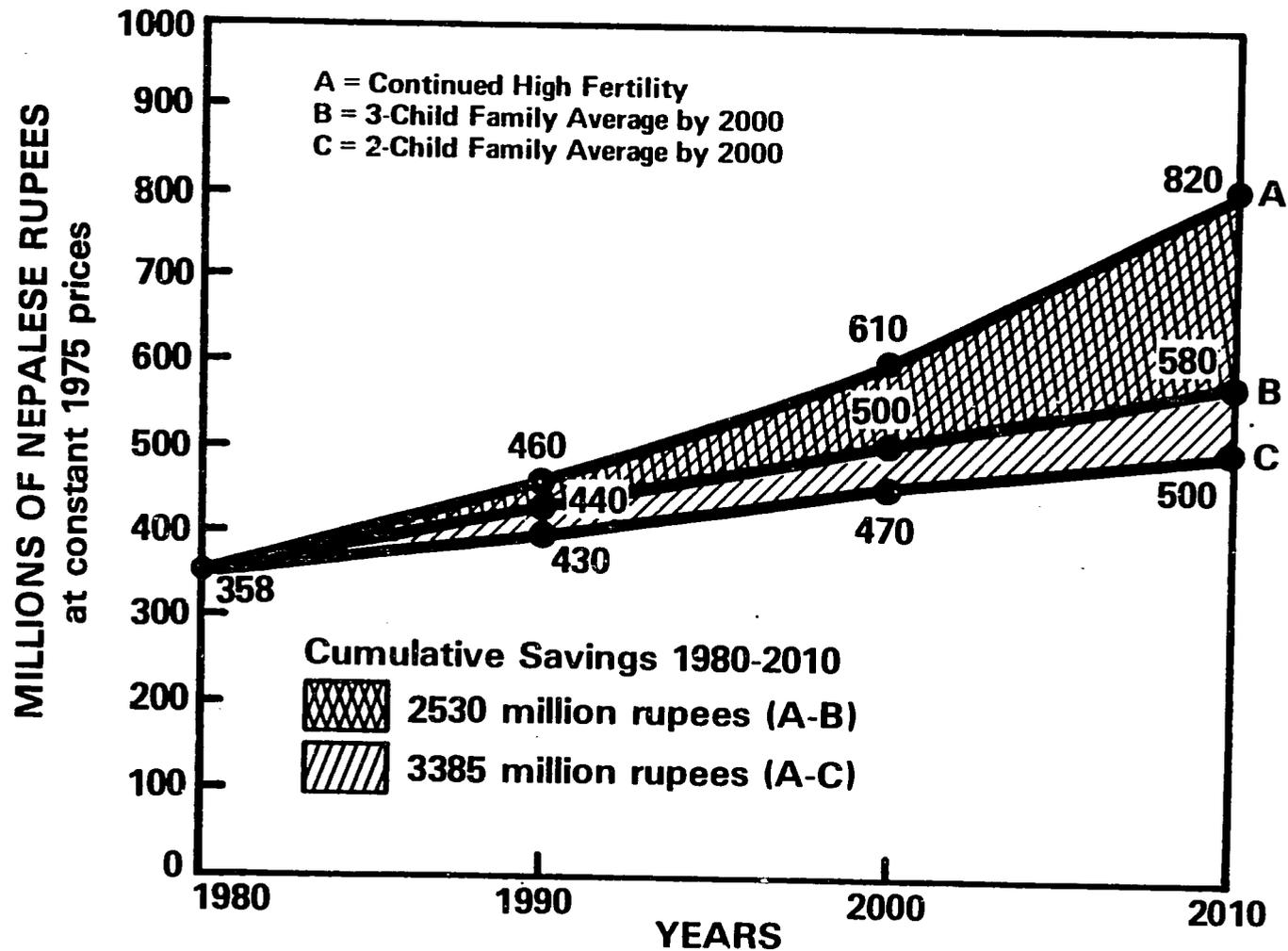
If a 3-child family average is attained by 2000, a total of NRs 440 million would be needed in 2000 and NRs 500 million in 2010. Compared to the expenditure requirements under continued high fertility, a population with a 3-child family average would require 21 percent less spending in 2000 and 41 percent less spending in 2010.

Should fertility be reduced to 2.0 by 2000, to meet the Plan's target investment in social services would require the expenditure of NRs 430 million in 1990, NRs 470 million in 2000 and NRs 500 million in 2010. Compared to the expenditures under high fertility conditions, a population with a 2-child family average would require 31 percent less spending in 2000 and 63 percent less spending in 2010.

Larger amounts of investment will be needed each year simply to maintain the level of social services in the Sixth Year Plan, but expenditures would be much lower under reduced fertility than under continued high fertility. Capital freed by reduced fertility can be used to improve the quality of social services or to invest in other development sectors.

NEPAL

Government Expenditures Needed to Meet the Sixth Plan Target Level of Social Services Spending Per Capita , 1980-2010



EDUCATION

Nepal has made great progress in expanding education since 1950, when literacy was less than 2 percent and school was only for a privileged few. Today the adult literacy rate is 19 percent and the primary enrollment rate approximately 77 percent.* Education expenditures increased by 18 percent a year during the Fifth Plan and are now 1.5 percent of GDP. Despite these gains, the educational system suffers from certain problems: The drop out and repeater rate is high, teachers are underqualified and in short supply, buildings and equipment are inadequate, female enrollment is low, and the quality of education is often poor. It is essential that these handicaps be removed, as a dearth of educated and skilled technicians and workers is a key constraint to development in Nepal. Furthermore education and vocational training are an excellent means of introducing modern ideas of nutrition, sanitation, environmental protection and agriculture. Female education, in particular, is important in the attainment of smaller families and lower maternal and child mortality rates.

Because of Nepal's high fertility rate and the momentum of population growth, the number and percentage of children in the population will be increasing. If the current enrollment rate is sustained or increased, enrollments will rise and more teachers, schools, and supplies will be needed. The number of primary age students in 1980 was 1.7 million. Of these, 1.4 million (77 percent) were officially enrolled in school, while 0.3 million were not in school.

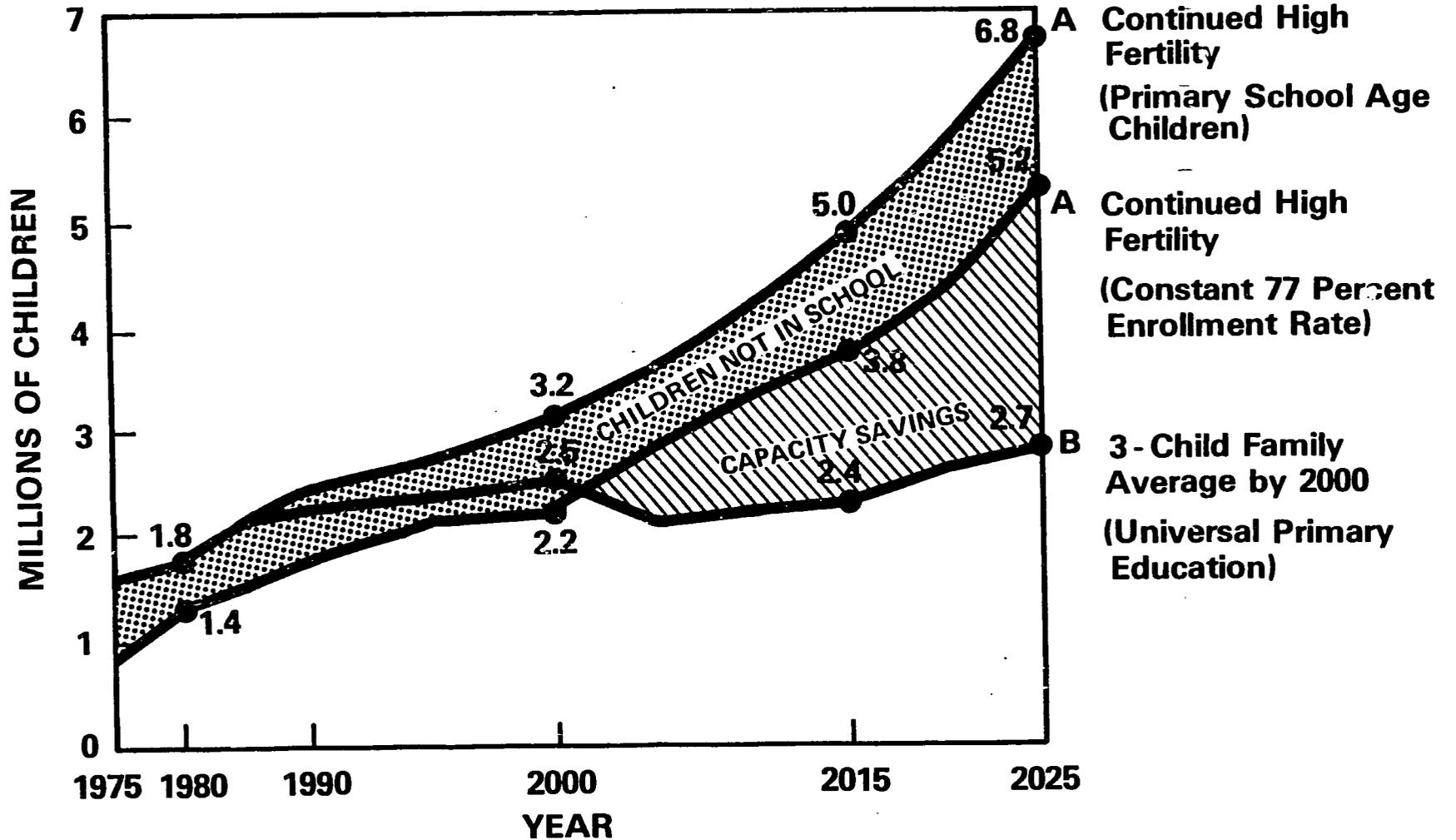
* The actual percent of children of primary school age in school is smaller because many enrolled students are over and under age, and because many students drop out or attend irregularly.

If fertility continues at high rates, Nepal will have 3.2 million children of primary school age by 2000. If a 77 percent enrollment rate is maintained, there will be 2.5 million primary students enrolled, 1.1 million more than the system accommodated in 1980. The number of children not enrolled would rise by 0.4 million to 0.7 million.

If Nepal attains a 3-child family average by 2000, and the enrollment rate remains at 77 percent, then in 2000 there will be 2.2 million primary age children, of which 1.7 million would be enrolled. The number of children not enrolled will be 0.5 million, 0.2 million fewer than under continued high fertility.

If a 2-child family average is attained by 2000, then in 2000 there will be 1.9 million primary age children, of which 1.5 million will be enrolled. The system would be accommodating 1 million fewer children than under continued high fertility. The number of children not enrolled would be 0.4 million, 0.3 million fewer than under continued high fertility.

NEPAL
Enrollment of Primary School Age Children
Under Two Fertility Assumptions, 1975 - 2025



Declining fertility will also significantly affect educational expenditures for the primary schools. Currently primary and higher education are free, while the lower and upper secondary cycles are 50 percent subsidized. In 1980, there were about 36 students per teacher, and Government expenditure per primary student was about NRs 56, or a total of NRs 53 million for the year. Just maintaining the present enrollment rate and quality of education will place a greater and greater strain on the budget.

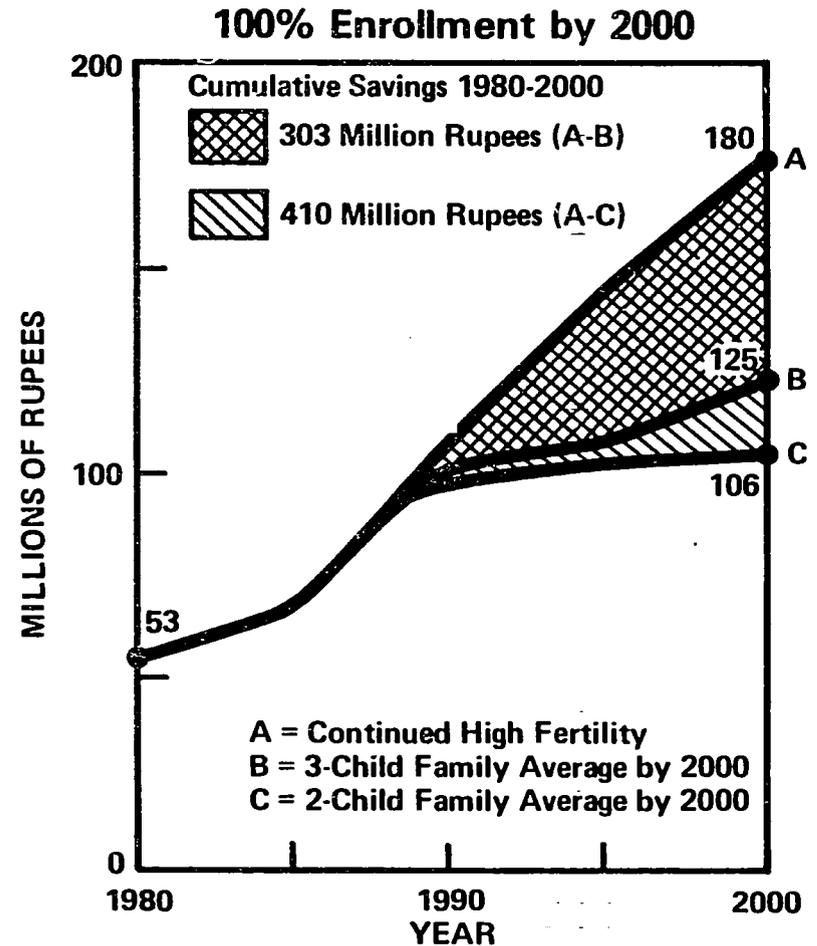
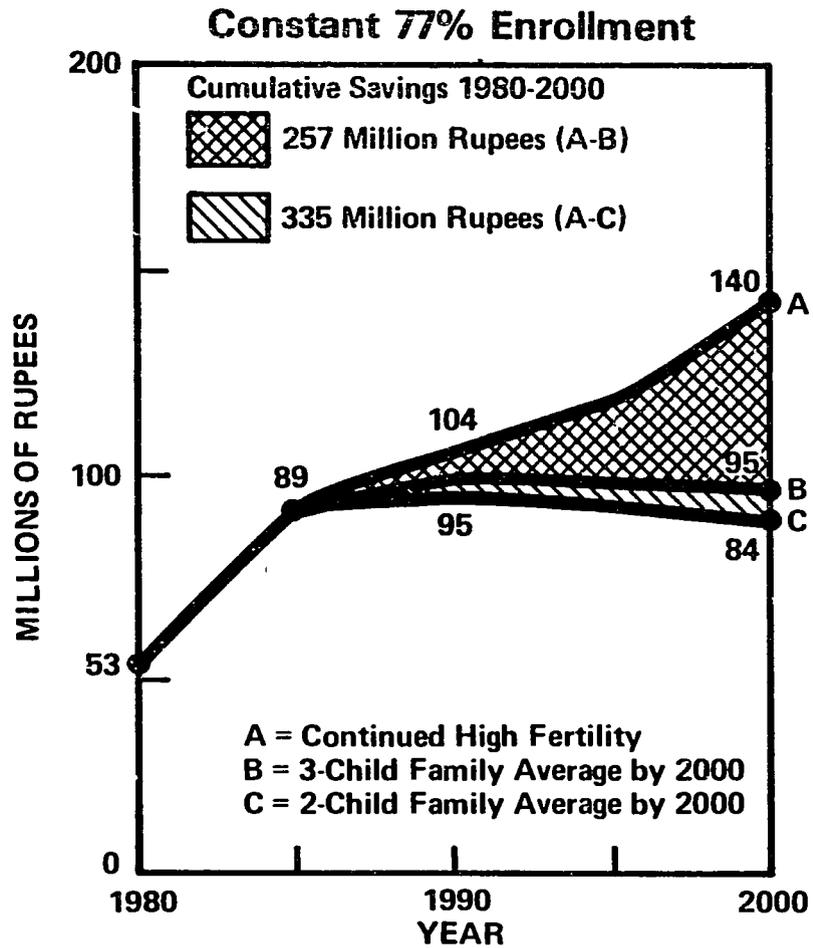
If the 1980 level of expenditure per student is sustained, the operating cost for just the primary level will be NRs 140 million in 2000 with high fertility continued. If Nepal wishes to attain 100 percent primary enrollment by 2000, then the operating costs in that year would be NRs 180 million.

In 2000, if the 1980 educational spending per student is sustained, the operating costs for the primary level will be NRs 95 million with a 3-child family average by 2000, NRs 45 million less than with high fertility. If 100 percent enrollment is attained by 2000, then the costs will be NRs 123 million, NRs 57 million less than with high fertility.

In 2000, if the 1980 educational spending per student is sustained, the operating costs for the primary level will be NRs 84 million with a 2-child family average by 2000, NRs 56 million less than with high fertility. If 100 percent enrollment is attained by 2000, then the costs will be NRs 106 million, 74 million less than with high fertility.

Reductions in fertility can make a dramatic difference to the number of children in school, and thus to the level of literacy, knowledge, and skills in Nepal. The same money which would be needed to finance a constant enrollment rate and educational standard can be used to raise the enrollment rate and the educational level if the population growth rate is slowed.

NEPAL
Primary Education Operating Costs*, 1980 - 2000
Under Different Fertility Assumptions



*Costs to Sustain the 1980 Expenditure per Student at Constant 1975 Values

HEALTH

Morbidity and mortality rates have greatly improved in Nepal in the last twenty years, but health conditions are still poor and life expectancy low. Protein-energy malnutrition, iron and iodine deficiencies and an unsanitary environment make the populace highly susceptible to communicable diseases. Adequate and ready water supplies are not available to a large percentage of the population; only 9 percent of Nepalese have regular access to clean water. Lack of hygiene contributes to the spread of water-borne diseases. Dysentery and other intestinal diseases are commonplace; respiratory and cardio-pulmonary disorders are also prevalent. Smallpox has been eliminated, but malaria, leprosy, cholera, typhoid, tuberculosis, syphilis, filariases, trachoma, asthma, bronchitis, and goiter are still chronic. There is a continuing shortage of health personnel and infrastructure: for every doctor there are 36,450 people, for every hospital bed 6,693 people.

In 1978 there were 712 medical care facilities: 68 hospitals, 26 health centers, 533 health posts, and 85 ayurvedic services centers. While health education and services need to be extended, the expanding population means that the country will be challenged just to sustain present per capita coverage.

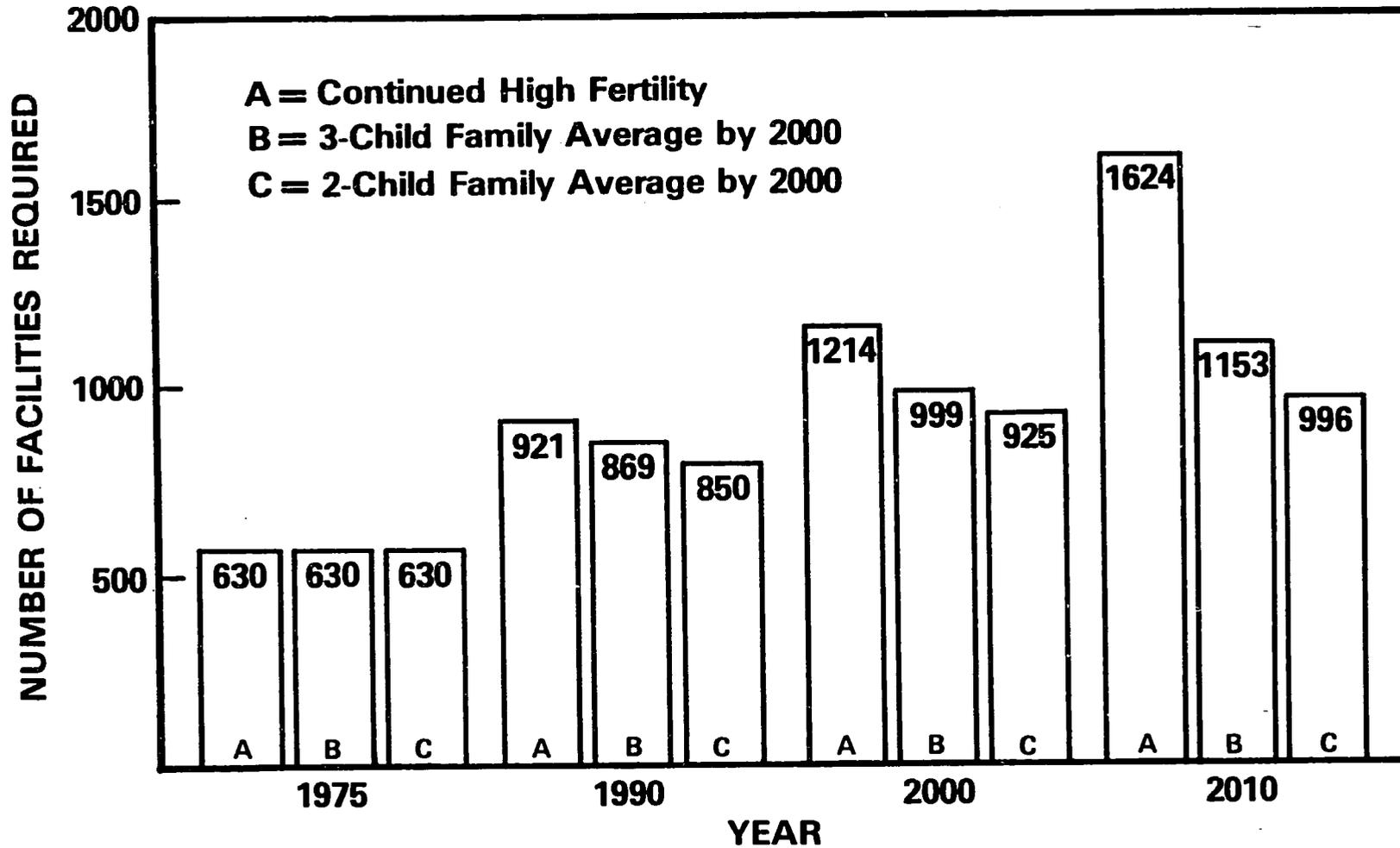
If fertility continues at high rates, then by 1990 it would be necessary to increase the number of medical facilities to 921 just to maintain the same population to centers ratio. By 2000, 1,214 centers would be required and by 2010, 1,624 centers would be needed.

With fertility reduced to a 3-child family average by 2000, Nepal would require 869 medical centers by 1990, and 999 centers by 2000. Ten years later, 1,153 centers would be needed. Thus with fertility reduced to the 3-child family average, 471 fewer centers would be required by 2010 in order to maintain the 1978 service level. Because there would be fewer people needing health care services, the quality and coverage of health care could be improved.

A decline in fertility to a 2-child family average by 2000 would mean even fewer centers would have to be built. In 1990, 850 centers would be needed; in 2000, 925 centers, and in 2010, 996 centers. Thus by 2010, 625 fewer centers would be required than under continued high fertility.

NEPAL

Number of Health Care Facilities Required
to Maintain 1978 Level of Care



In 1978 there were 1,708 medical personnel in Nepal: 415 doctors, 392 nurses, and 901 assistant nurses/midwives.

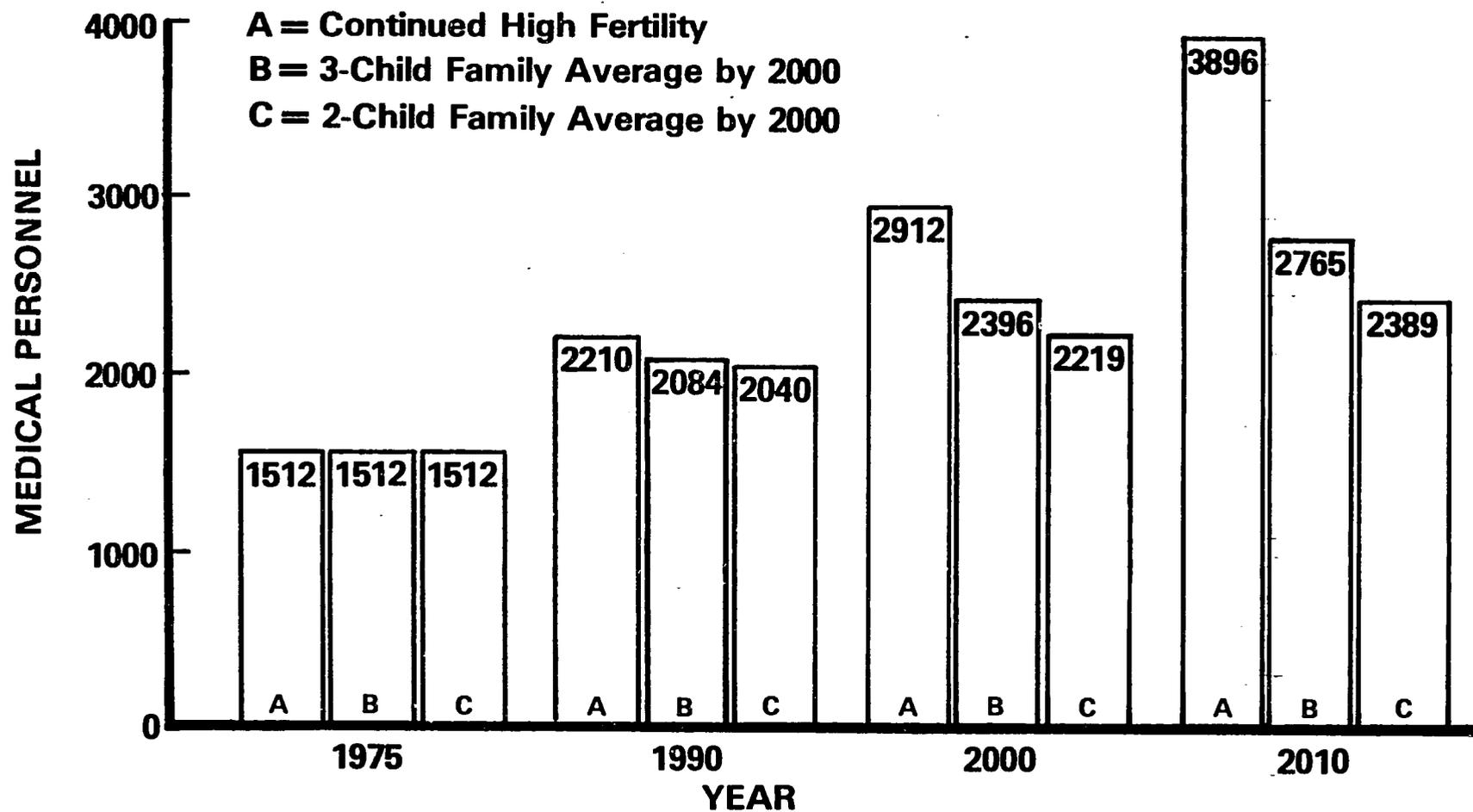
If fertility continues at high rates, then by 1990 it would be necessary to increase the number of medical personnel to 2,210 just to maintain the same population to personnel ratio. By 2000, 2,912 personnel would be required and by 2010, 3,896 personnel would be required.

With fertility reduced to a 3-child family average by 2000, Nepal would require 2,084 personnel in 1990, 2,395 in 2000, and 2,765 in 2010. Thus in 2010, 1,131 fewer personnel would be required.

A decline in fertility to a 2-child family average by 2000 would mean even fewer personnel would be needed just to maintain the 1978 service level. In 1990, 2,040 personnel would be needed. The requirements in 2000 would be 2,219 and in 2010, 1,289. Thus by 2010, 1,507 fewer personnel would be required than under continued high fertility.

NEPAL

Number of Medical Personnel Required to Maintain 1978 Level of Care



High fertility is a major factor in maternal and child illness and death. Many early or closely spaced pregnancies weaken a mother's health and reduce her capacity to provide good prenatal and infant care. Numerous pregnancies, closely spaced pregnancies, and pregnancies at comparatively late ages are all associated with higher rates of illness and death for both mothers and children. With lower fertility, not only would health conditions improve for both mothers and children, but the proportion of the population at greatest health risk--women in their reproductive years and children under the age of 5--would be significantly reduced. By 2000, for example, 9 million Nepalis would be women in their reproductive years and children under 5 with continuing high fertility; however, the number would be reduced to 6 million in that year with a 2-child family average by 2000.

Smaller family size also increases the amount of food available for each family member, thus alleviating or eliminating listlessness, physical and mental growth retardation and vulnerability to disease, all of which are associated with malnutrition. Longer spacing between pregnancies lengthens the period of breastfeeding for each baby, giving the infant more nourishment and immunities than an infant who is quickly displaced. A slower rate of population growth mitigates the problem of crowded habitats, villages and towns, and facilitates hygiene and sanitation so that illness and disease are less readily communicated. In sum, smaller families would contribute to healthier, more active and longer lives for the people of Népal.

NEPAL

Population at High Health Risk

(Women in Reproductive Years and Children 5 Years and Under)

YEAR	ANC*	 500,000 Women in Reproductive Years  500,000 Children Aged 5 Years and Under	TOTAL
1980	6.3	                                    3 million                                     2 million	5 million
2000	5.9	                                    5 million                                     4 million	9 million
	3.0	                                    5 million                                     2 million	7 million
	2.0	                                    5 million                                     1 million	6 million
2025	5.5	                                    11 million                                     8 million	19 million
	3.0	                                    6 million                                     3 million	9 million
	2.0	   	

The Effects of Nepal's Population Factors on Regional Distribution

The Hills and Mountains and the Terai

The Kathmandu Valley

REGIONAL POPULATION DISTRIBUTION

Currently, about nine million people live in the Hills and Mountains region and about 5 million live in the Terai. The most marked flow of migration over the past twenty years has been from the Mountains to the Hills and from the Hills to the Terai. At least 40,000 people moved to the Terai in the 1961-1971 intercensal period, and the next census is expected to reveal a flow of even greater magnitude in the 1971-1981 period. Analysis of surveys taken in the 1970s suggests that at least 0.5 percent of the Hills and Mountains population migrates permanently to the Terai every year, and that perhaps as many as half of the male labor force in the Hills and Mountains migrate on a seasonal basis. Although land redistribution and resettlement programs have provided some migrants with a new home and livelihood, many more migrants have settled spontaneously, so that Government efforts to develop the Terai in an ecologically and economically rational way have been undermined. Neither the Hills and Mountains nor the Terai can continue to adequately support a rapidly growing population, and the Terai cannot absorb an unlimited number of landless, unemployed migrants. Presently 65 percent of the population lives in the Hills and Mountains. Of this 65 percent, 5 percent live in the Kathmandu Valley. Migration is shifting this distribution, so that by 2020 about half the population is expected to reside in the Terai.

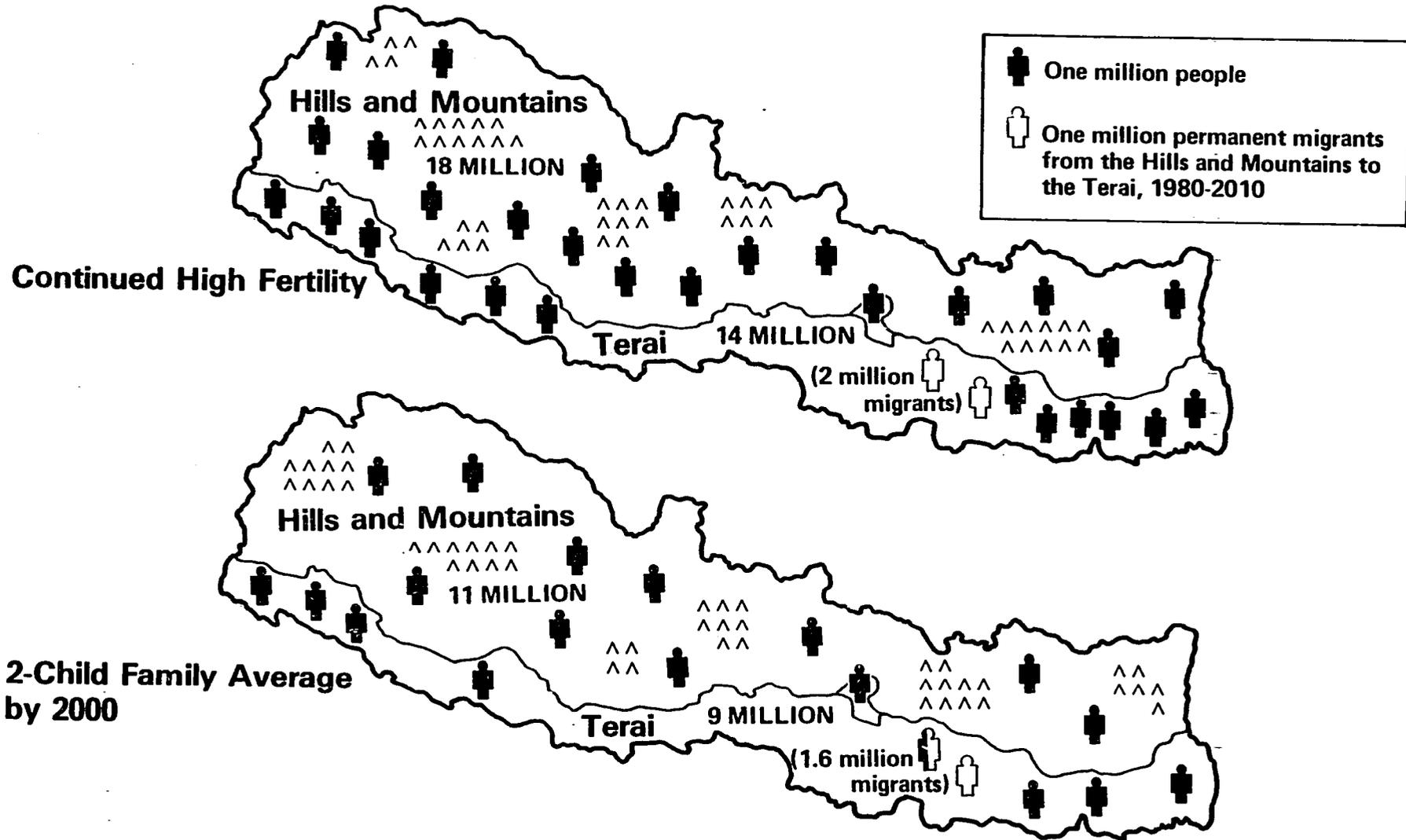
If high fertility continues, the population of the Hills and Mountains can be expected to increase from 9 million in 1980 to 14 million in 2000 and 23 million in 2020, despite the migration of 3 million persons from the Hills and Mountains to the Terai.

With a decline in fertility to a 3-child family average by 2000, the population of the Hills and Mountains would be 12 million in 2000, or 2 million fewer persons than with continuing high fertility. By 2020, 14 million persons would live in the Hills and Mountains.

With a 2-child family average by 2000, the population of the Hills and Mountains would be 11 million in 2000 and would remain at that number because of outmigration.

NEPAL

Regional Population Distribution and Migration in 2010



Nor can the Terai be expected to relieve the population pressures of the Hills and Mountains.

With continued high fertility, the population of the Terai would rise from 5 million in 1980 to 10 million in 2000 and 21 million in 2020. If migration patterns remain the same, more than 3 million people will migrate from the Hills and Mountains to the Terai between 1980 and 2020.

With a 3-child family average by 2000, the population of the Terai would be 8 million in 2000, or 2 million people fewer than with continuing high fertility. By 2020, the population of the Terai would be 13 million; and 650,000 fewer people would have migrated from the Hills and Mountains between 1980 and 2020 with the lower fertility rate.

If fertility declines to a 2-child family average by 2000, the population of the Terai would still be 8 million in 2000 and 10 million in 2020. Nearly one million fewer people would have migrated from the Hills and Mountains to the Terai between 1980 and 2020.

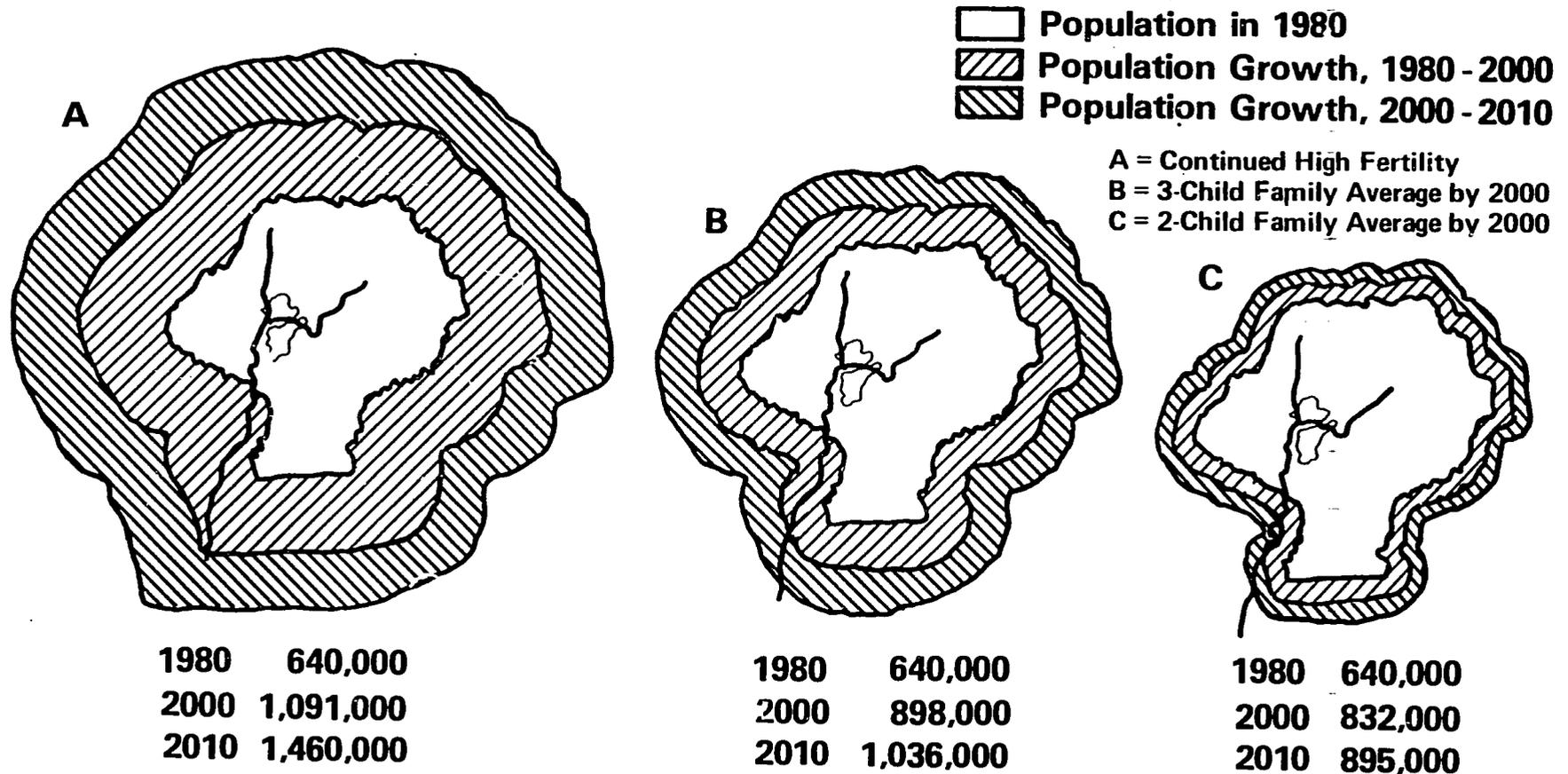
Lower fertility, then, would relieve population pressures in both the Hills and Mountains and the Terai.

THE KATHMANDU VALLEY

According to the last two censuses and recent demographic surveys, the population of the Kathmandu Valley is growing at about the same rate as the overall population. Should Nepal repeat the pattern established in other Asian nations, migration to Kathmandu and the other urban areas in the Valley would eventually lead to an even higher rate of population growth. However, even if the population of the Kathmandu Valley continues to grow at the same pace as the rest of the country, the number of persons living in this part of Nepal will increase dramatically.

With continuing high fertility, the population of the Valley would be 1,091,000 in 2000 and 1,460,000 in 2010. That number would be reduced to 898,000 persons in 2000 and 1,036,000 in 2010 with a 3-child family average by 2000 and to 832,000 and 895,000 persons in 2000 and 2010 respectively with a 2-child family average by 2000. Lower fertility would make it more feasible for the Government to provide enough modern jobs and adequate social services to accommodate this rapidly expanding population in the Kathmandu Valley.

NEPAL
Population of the Kathmandu Valley,
1980 - 2010
Under Three Fertility Assumptions



The Achievement of Fertility Decline

**Demographic, Economic, and Social Determinants
Effects of a Delay in Reducing Fertility**

DEMOGRAPHIC, ECONOMIC, AND SOCIAL DETERMINANTS

The preceding analysis suggests that continued high fertility will hinder development efforts in Nepal . His Majesty's Government has already recognized the need to slow population growth, and the expansion of family planning programs will be an important goal of the Sixth Plan. The experience of both more developed and less developed countries which have undergone significant fertility declines suggests that a wide variety of factors determine the birth rate in a country. Demographic, social, and economic determinants all play a role, but it is possible to identify certain phenomena which historically have had a major effect on reducing fertility. Three of these phenomena are changing marriage patterns, social and economic development, and the increased knowledge and practice of family planning methods.

In Nepal, where marriage is nearly universal, and where extramarital pregnancies are not common, the age at which women marry is of great significance. As much as 50 percent of the fertility declines experienced in the last 20 years in some developing countries can be attributed to a rising age at marriage. A later average age at marriage means that a smaller percentage of women at highly fecund ages are exposed to the risk of pregnancy.

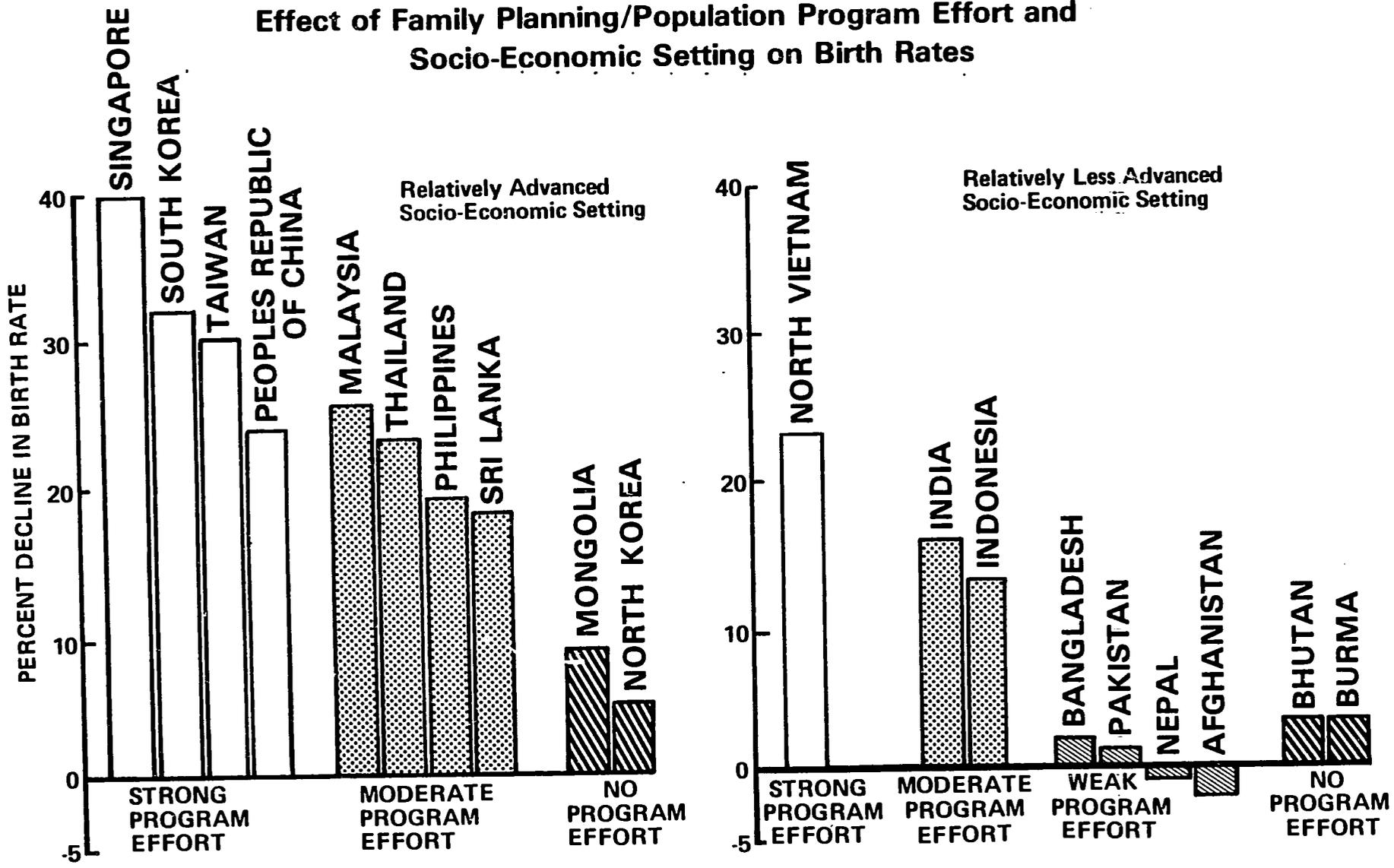
The average age at marriage for Nepalese women was reported to be 15 to 16 by the 1976 Nepal Fertility Survey. Nonetheless, although approximately 60 percent of women aged 15-19 are married, the low fertility rates for the 15-19 age group indicate that Nepalese women experience a period of sub-fecundity in their adolescent years. However, if women's health and nutrition are improved, they will become more capable of bearing children at early ages, so that even a few years increase in age at marriage could be important to lowering fertility. Increased age at marriage cannot be brought about in Nepal by simply raising the legal age at marriage; rather, it is essential that women be given more educational and employment opportunities outside the home.

Social and economic development are integrally related to the demographic transition from a rapid population growth society to a slow or zero growth society, as the more developed countries are now. Gains in health, education, and economic well-being inevitably change people's family size aspirations, but the process can be long and delayed unless the government takes a strong initiative. Because development is hindered by rapid population growth, the most effective way to achieve both reduced fertility and socio-economic development is to integrate population policy with every development program. In this way the closely correlated problems of poverty and rapid population growth are approached simultaneously and pervasively.

Given a concerted effort on the part of His Majesty's Government to develop a society where the incentive to have a small family is high, then the birth rate will come down as people attempt to maximize their economic and psychic welfare. Nevertheless, a strong family planning program effort which makes the knowledge and practice of contraceptives widely available can be a major contributor to declining fertility. A recent study by W. Parker Mauldin and Bernard Berelson showed that among Asian developing nations with relatively advanced social and economic conditions, birth rates declined an average of 27 percent between 1965 and 1975 in countries with moderate or strong population/family planning programs, and only 7 percent in countries with no population/family planning efforts. The same pattern prevailed among countries with a relatively less advanced social and economic setting: birth rates declined an average of 17 percent where there was a strong to moderate family planning program. Where there was a weak or no program effort, the average birth rate decline was only 0.9 percent--in some countries there may actually have been a rise in the birth rate.

Asian Countries 1965 - 1975

**Effect of Family Planning/Population Program Effort and
Socio-Economic Setting on Birth Rates**



Mauldin and Berleson's findings are part of an emerging consensus among policymakers and scholars that a strong development effort and a commitment to a population/family planning program must be pursued concurrently. In Nepal, traditional attitudes favoring large families must be transformed to a general desire for a two or three child family. To do this Nepalese policymakers may have to consider building a system of economic incentives and disincentives into the development program while at the same time making the means to safely and conveniently control family size widely available.

EFFECTS OF A DELAY IN REDUCING FERTILITY

Because the population is growing so rapidly, and because of the growth momentum built into the age structure of the population, even a few years' delay in reducing the rate of growth will significantly increase the future size of the population. Assuming that a program to reduce the fertility rate from 6.3 to 3.0 will take 20 years to meet this target, the demographic effects of such a delay in implementing the program may be illustrated as follows:

If the program begins in 1980 and an average family size of 3 children is achieved by 2000, the population will be 20 million in 2000 and 28 million in 2025.

If the program begins in 1985 and reaches its goal by 2005, the population in 2000 will be 22 million and in 2025 it will be 32 million. The five year delay will make a difference of about 4 million people by 2025.

If the program begins in 1990 and achieves its target by 2010, the population in 2000 will be 23 million and in 2025 35 million. As a result of the ten year delay, Nepal's population would be increased by an additional 7 million people by 2025.

Should a strong development effort and population/family planning program be instituted with the aim of reducing fertility from 6.3 to a 2-child family average within 20 years, the population growth rate would be considerably slowed and the future population size would be much smaller. However, a delay in starting the program would have the following effects:

If the fertility decline begins in 1980, the population will be 18.5 million in 2000 and 21.7 million in 2025. The size of the population will eventually reach more than 22 million.

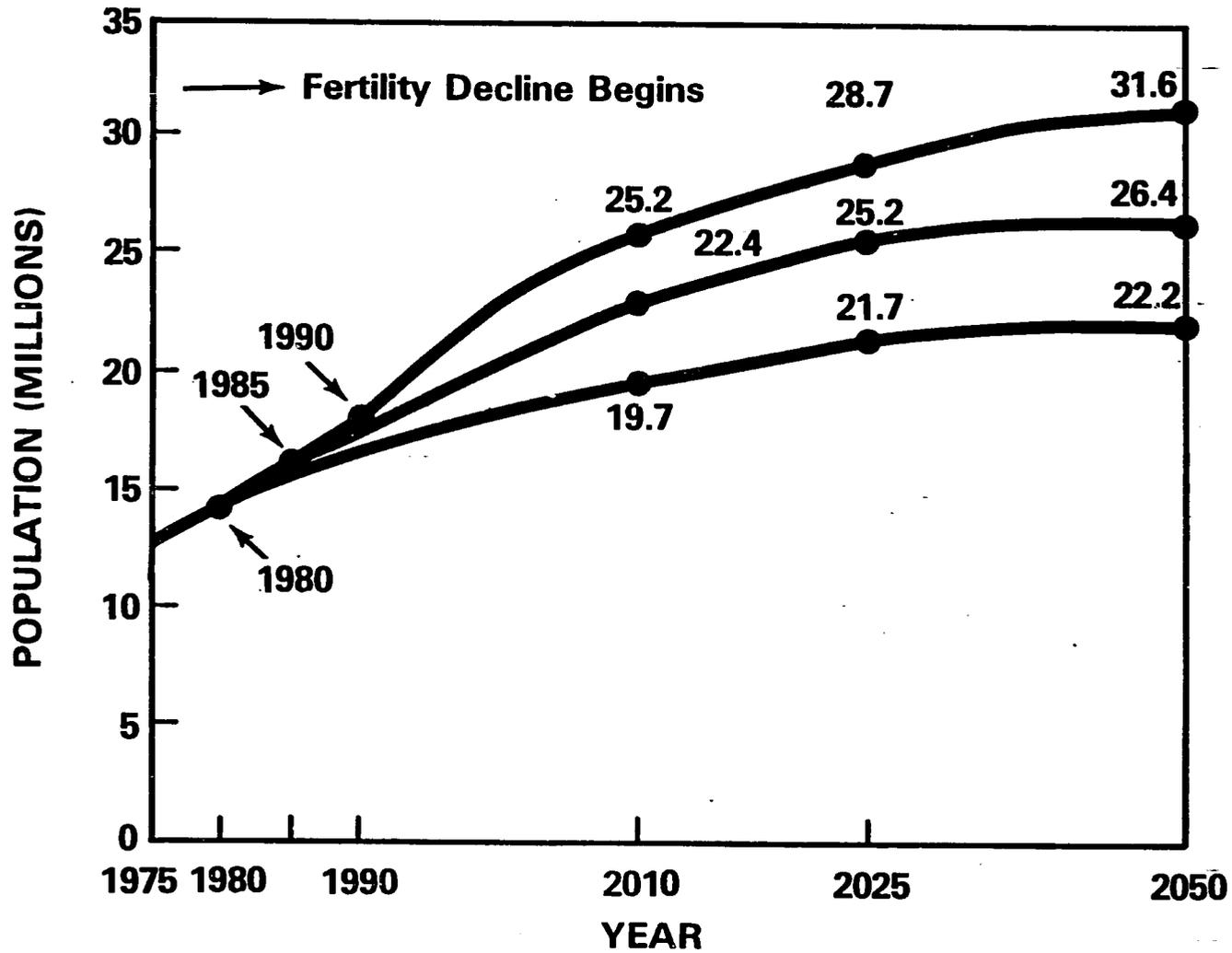
If the fertility drop begins in 1985, the population will be 20.7 million in 2000 and 25.2 million in 2025, and will not stop growing until it reaches more than 26 million.

If the fertility decline begins in 1990 and a 2-child family average is reached in 20 years, the population will be 22.7 million in 2000, 28.9 million in 2025, and will continue to grow until it reaches more than 32 million. A delay of only 10 years will make a difference of more than 9 million people in the size of the population of Nepal.

It is clear that the timing and degree of fertility reduction have a dramatic impact on the rate of growth and size of

NEPAL

Effects of a Delay in Reducing Fertility (Fertility Decline to a 2-Child Family Average in 20 Years)



CONCLUSIONS

High fertility and declining mortality have given Nepal a rapidly growing population. The high rate of growth, the disproportionate number of dependents in the population, and a high population density may all hinder social and economic development. The situation is aggravated by Nepal's less developed social and economic setting and uniquely fragile environment. A substantial reduction in the average number of children per family could alleviate the difficulties of resource mobilization and production and facilitate the achievement of development goals. An effective program to bring down fertility within the next 20 years would have the following results:

The population would continue to grow until the mid to late 21st century, but at a much slower rate. If a 2-child family average were achieved, the population would stabilize in the mid 21st century at around 22 million people.

Workers would have to support fewer dependents as the proportion of children in the population decreased.

The labor supply would cease to be overabundant, so that productivity and income could increase.

Fewer jobs would have to be created each year, so more time and money could be spent improving the quality of the labor force.

More resources may be available for savings and more investment could be devoted to productive enterprises.

Costs to maintain the current level of social services would be reduced so that it would be possible to expand and upgrade services.

Population pressure on arable land will be eased; more domestically produced foodgrains would be available and the need to import food would be reduced.

Maternal and child health and nutrition would improve as it would be possible to extend good preventative and curative medical care to a greater proportion of the populace.

The goal of universal primary education would be easier to attain. Quality education could be assured for more people.

The strain on Nepal's delicate environment would be alleviated: topsoil could be conserved, flooding controlled and reforestation projects would be more successful.

More capital and trained personnel could be tapped to exploit natural resources such as Nepal's hydroelectric potential.

As the economy developed, the modern sector would expand, so that migrants from the Hills and Mountains could be absorbed into industrial jobs.

While a fertility decline would not in itself guarantee social and economic development in Nepal, population factors are so important to a successful effort that population planning should become an integral part of the development process.

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