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ABSTRACT

This study addresses the central issues of the population explosion and what can be done about it. It relates largely to developing nations. Chapters are presented on: (1) Basic World Population Facts; (2) Changing Patterns of Population Growth; (3) Consequences of Excessive Growth; (4) What Is Being Done; (5) What More Can Be Done; and (6) U.S. International Population Policies. (Author/BB)

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World Population silent explosion

Department of State BULLETIN Fall 1978

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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CONTENTS

Charts

WORLD POPULATION: THE SILENT EXPLOSION

The tremendous growth of world population since World War II has come to be recognized as a critically important problem threatening in the most fundamental way the well-being of mankind.

This study addresses the central issues of the population explosion and what can be done about it. Because population growth is far greater in the developing world than in the developed world, the study relates largely to the former. On the other hand, all nations face varying types of population problems, the United States being no exception, as brought out in the Rockefeller Commission report, Population and the American Future, *in 1972. Most importantly, we are one world. Adverse consequences of excessive population growth in one country ultimately affect all.*

Prepared by Ambassador Marshall Green, the Department of State's Coordinator of Population Affairs, and Robert A. Fearey, Special Assistant to Ambassador Green, this study is an effort to assist in understanding this long-range, but also highly urgent, problem and to indicate what recent experience suggests are the most promising lines of attack on it. The presentation draws on recent U.S. Government and other sources, but some of the opinions expressed are the authors' and do not necessarily reflect government policy. Demographic assistance has been provided by Mrs. Lydia K. Giffler, the State Department's demographer, and by the International Demographic Data Center, Population Division, Bureau of the Census.

Due to the widely varying accuracy and recency of national population data, the figures cited are sometimes only approximations. They, nevertheless, are considered sufficiently accurate to support the conclusions presented.

BASIC FACTS

World Population Growth

It took from mankind's earliest beginnings over a million years ago to the early 1800's for the world to reach a population of 1 billion.

Succeeding decades saw a substantial decline in death rates as increasing agricultural and industrial productivity brought rising living standards, as public sanitation improved, as scientific medicine developed and became increasingly available (notably smallpox vaccination), and as better communications and transport permitted more effective action against famine. The world reached its second billion in about 100 years, by 1930.

With accelerated advances in medicine, including the discovery and widespread use of antibiotics, with malaria control programs in effect in many areas of the world, and with further improvements in the production and distribution of food, the third billion was reached in 30 years—1960.

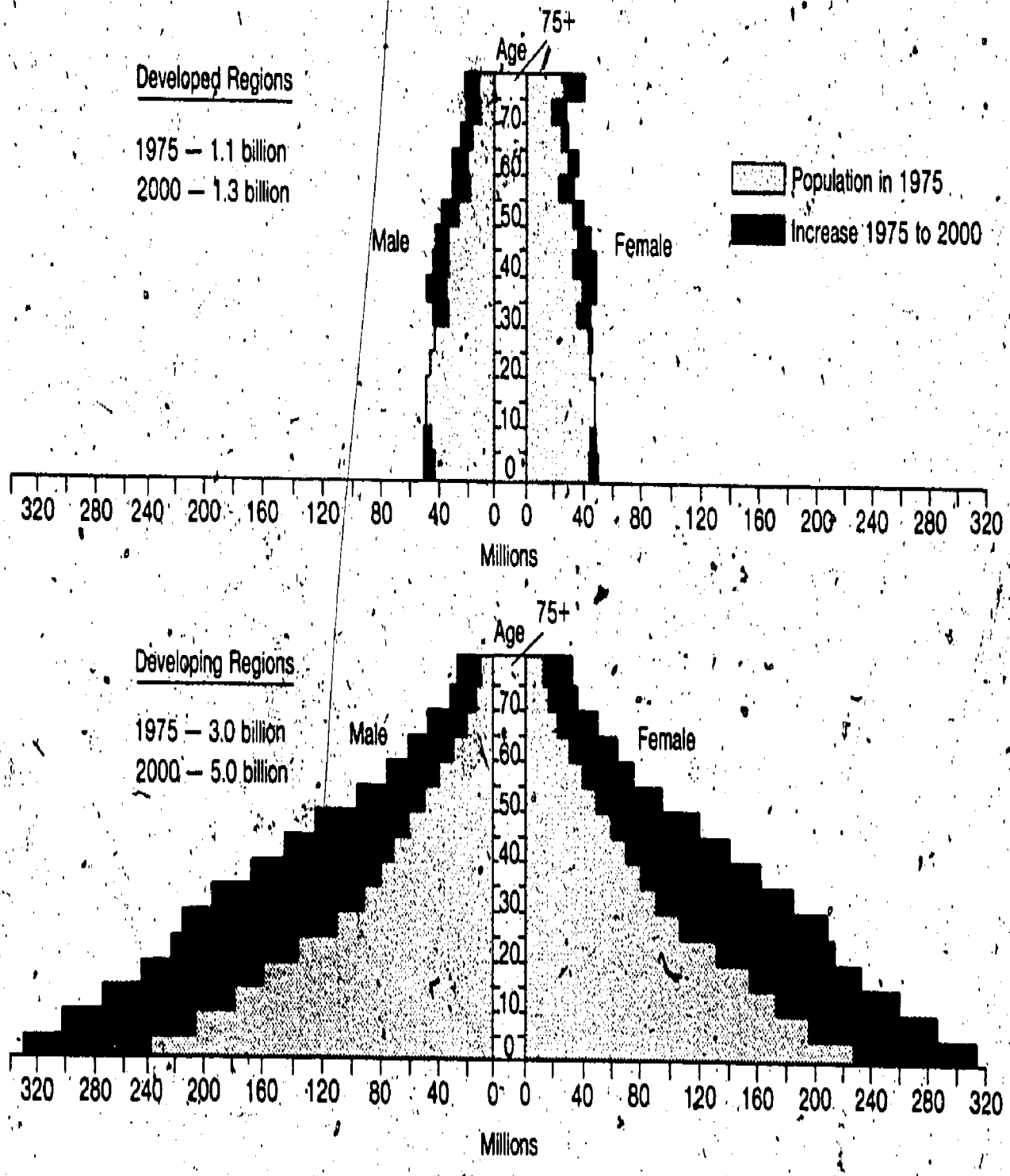
The fourth billion was added in 15 years, by 1975. It had taken only 45 years for world population to double again, from 2 to 4 billion.

Until the early 1960's, governments either evidenced little concern over population growth or such growth was welcomed as a reflection of economic vigor and as a source of military strength. This traditional perception gradually altered through the 1960's as many developing, low-income countries experienced marked increases in the rate of population growth, in population size, and in the flow of surplus rural population to the cities. Many governments recognized that rapid population growth frustrated and negated economic and social development, and they began to formulate policies and programs to reduce high fertility levels. These programs have been reinforced by funding and technical assistance from the United Nations, aid donor governments, and private sources.

The rate of world population growth is believed to have peaked at about 2% around 1970, declining to about 1.8–1.9% by 1977. At this rate—which is expected to continue to fall but at an

Chart 2

Population by Age and Sex (1975 and 2000)



Source: U.S. Bureau of the Census. The data projected for the year 2000 represent the Bureau's medium variant.

unknown pace—world resources and national economies are called upon to support nearly 80 million additional persons every year. Barring widespread famine, nuclear holocaust, or other disaster, world population is expected to number about 6 billion by the year 2000.

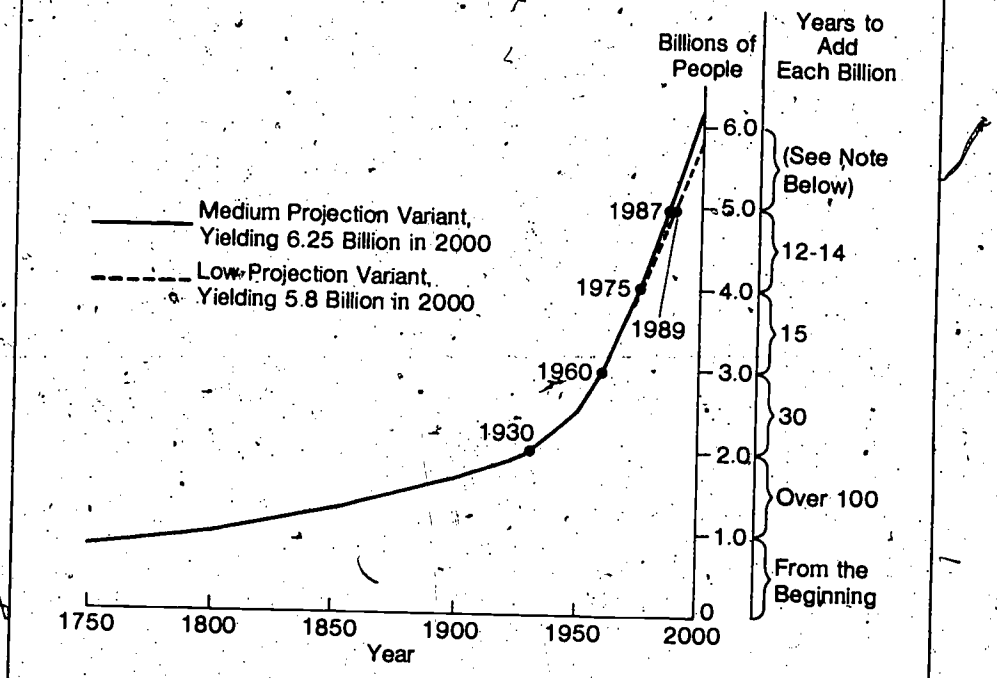
The level at which mankind's total number ultimately will peak appears to lie between 8 and 11 billion, depending on the determination and skill with which the world addresses the problem. With the ecosystems of the world already heavily burdened at 4 billion, there is urgent need for nations, especially those with high population growth rates, to deal with this problem more effectively.

Charts 1 and 2 present graphically the slow historical, and rapid and accelerating current and prospective, growth of world population. Chart 1 shows world population reaching 5.8 billion in 2000 under the U.N.'s low projection variant, which assumes a one-third decline in fertility, on the average, between 1970 and the end of the century. Under the less optimistic U.N. medium projection variant, which assumes a fertility decline of only 24% during this period, world population is shown as reaching 6.25 billion in 2000. The U.N.'s high variant, projecting a population of 6.6 billion by 2000, is not shown because declines which have occurred since the mid-1960's in the birth rates of some 30 developing countries, including China, suggest that that variant is no longer a real possibility.

Chart 2 shows a breakdown of the 2000 medium variant figure by developed and developing regions. With both regions drawn to the same scale, the chart brings out strikingly the far greater present and, even more, future total population of the current developing regions than of the current developed regions; the small anticipated growth of the developed world's population between 1975 and 2000; the tremendous expansion of the developing world's population in that period;

Chart 1

The Growth of World Population Since the Beginning of the Industrial Era



Note: The number of years it will take to add the fifth and subsequent billions will depend primarily on the pace of fertility declines, and to a lesser extent mortality trends, in LDC's.

Source: Based on U.N. estimates and projections, as assessed in 1973.

and the great preponderance of younger, presently or prospectively fertile, age groups in the developing world's population now and, even more, in 2000.

Geographic Distribution

How will mankind's growing numbers be distributed in the year 2000?

The share of people in developing countries, many least able to support larger populations, will continue to rise in the remainder of this century—from 66% in 1950 to 78% in 2000, according to the U.N. medium projection variant. The table below and chart 3 present the prospect numerically and graphically.

The table shows little change between the 1950–55 and 1995–2000 population growth rates for some developing regions. But the figures fail to bring out the anticipated major declines in the birth and death rates making up (along with migration) the overall growth rates. The 1.9% growth rate for the developing regions as a whole for 1950–55 consists of a birth rate of 42 and a death rate of 23 per 1,000 population. The 1.9% growth rate for 1995–2000, on the other hand, projects a birth rate of 28 and a death rate of 9 per 1,000 population. This projection assumes a continued trend toward the modernization (i.e., reduction) of birth and death rates in the developing regions.

Age Composition

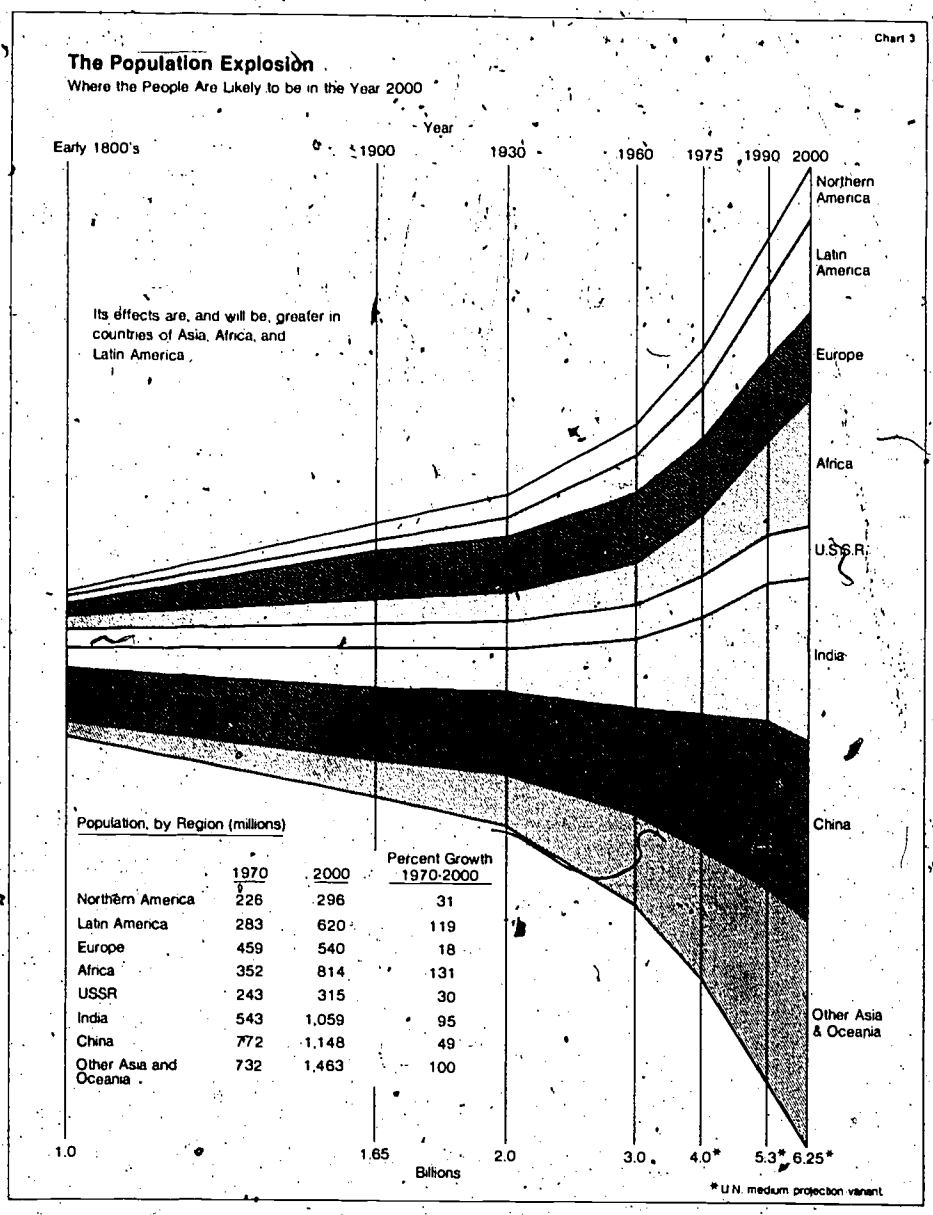
Chart 4 illustrates that developed countries (e.g., Sweden) have many more people of labor-force age (15–64) than they have children less than 15 years old. In developing countries (e.g., Pakistan), the age-sex pyramid is much broader at the base, and the proportion of dependent children (less than 15 years old) usually runs between 40% and 45% of the total population, compared with 25% in the developed countries (1975 estimate). Put another way, there is only about one adult of working age for each child under 15 in the developing world compared with nearly three adults of working age per child under 15 in the developed countries.

There are three major disadvantages to a heavily youth-oriented age distribution of most developing countries.

- The large number of dependent children relative to the size of the labor force increases the burden of child dependency, promotes spending for immediate consumption, restricts private and public saving, and inhibits investment.
- When the excessive number of children reach working age, they swamp the rural and urban labor markets. Large numbers of unemployed and underemployed are both economically wasteful and a potential source of social and political instability.
- The cohort of young men and women entering the years of fertility is much larger—perhaps by three times—than the number of older people growing out of the age of fertility. This is a key factor underlying the high rate of population growth in the developing countries and is certain to accentuate

	Annual Av. Growth Rate (%)			Share of Population (%)		
	1950–55*	1970–75*	1995–2000**	1950*	1970*	2000**
World total	1.7	1.9	1.6	100.0	100.0	100.0
Developed regions	1.3	0.9	0.6	34.3	30.0	21.7
Developing regions	1.9	2.3	1.9	65.7	70.0	78.3
Northern America	1.8	0.9	0.7	6.6	6.3	4.7
Europe	0.8	0.6	0.5	15.7	12.7	8.6
U.S.S.R.	1.7	1.0	0.7	7.2	6.7	5.0
Africa	2.1	2.6	2.8	8.7	9.7	13.0
Latin America	2.7	2.7	2.4	6.6	7.8	9.9
China	1.6	1.7	1.0	22.3	21.4	18.4
India	1.7	2.4	1.8	14.1	15.0	16.9
Other Asia	1.9	2.4	2.0	18.3	19.8	22.9
Oceania	2.25	2.0	1.45	0.5	0.5	0.5

*Estimated
**Projected



	1970	2000	Percent Growth 1970-2000
Northern America	226	296	31
Latin America	283	620	119
Europe	459	540	18
Africa	352	814	131
USSR	243	315	30
India	543	1,059	95
China	772	1,148	49
Other Asia and Oceania	732	1,463	100

overpopulation problems in the decades ahead.

The chart also brings out the greater old-age (65+) dependency burden borne by the developed than by the developing countries. However, the developed countries were able to build their economies, partly through the contributions of the now elderly, before this burden became major. The problems it presents are arousing increasing concern in the developed countries but are less critical than those imposed on the developing countries by their heavily youth-biased age structures.

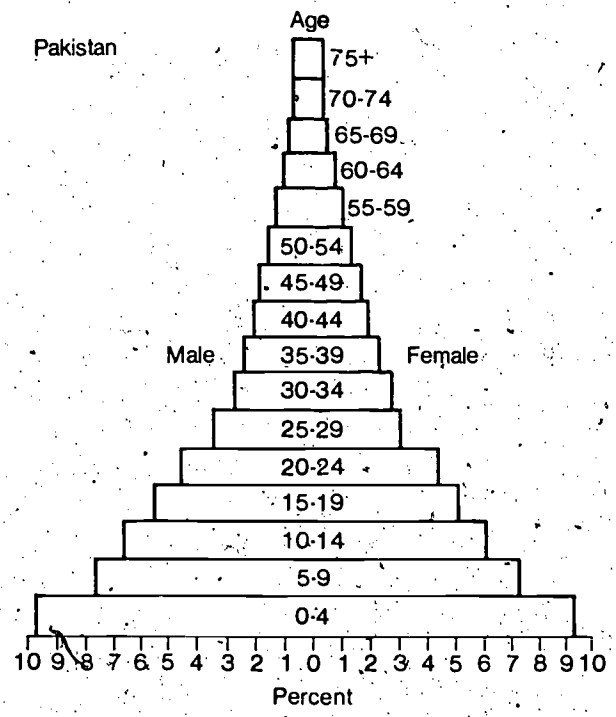
The Momentum Factor

Even if it were possible to attain in the next few decades an average level of fertility worldwide which would merely replace the parental generation (i.e., a net reproduction rate—NRR—of 1, implying an average of 2.1–2.5 children per woman, depending on mortality conditions), population would continue to grow for some 50–70 years thereafter. The size of the eventually stabilized (nongrowing) population would be far larger than at the time fertility dropped to replacement level.

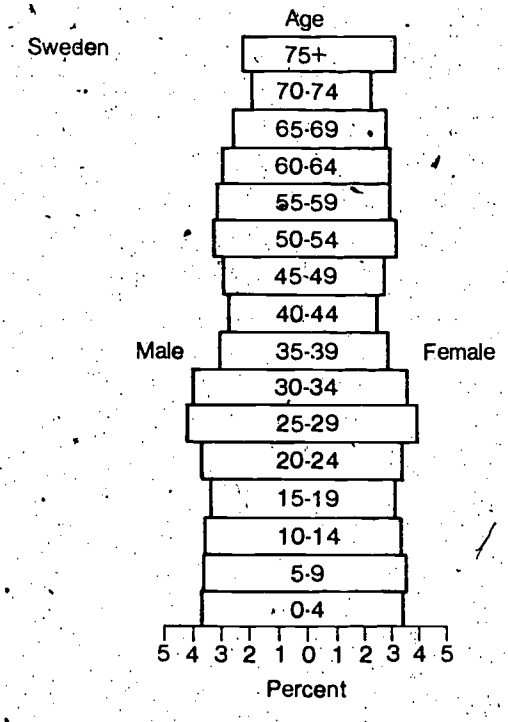
Chart 4

Burden of Dependency

The Burden of Child Dependency Weighs Heavily on LDCs



The Burden of Retirement-age Dependency is Heavier in DCs



Source: Based on U.N. data for 1975

If the world attained an NRR of 1 in*	World population would then stand at	And world population could be expected eventually to stabilize at
1980–85	4.2 billion (1980)	6.4 billion
2000–05	5.9 billion (2000)	8.4 billion
2020–25	8.4 billion (2020)	11.2 billion
2040–45	12.0 billion (2040)	15.2 billion

*The decline in fertility is assumed to begin in all cases with the 1965–70 level. Thus, an NRR of 1 by 2000–05, for example, implies a gradual reduction of fertility over a 35-year period.

NOTE: These projections were developed by Tomas Frejka of the Population Council.

The projections noted in the box (above) are not intended to predict the actual course of world population growth but only to illustrate the enormous potential for growth built into the current youthful age structure of much of the world's population. For every decade of delay in achieving an NRR of 1—replacement level—the world's peak population will be some 15% greater (chart 5).

It is conceivable that at some future point average family size in particular countries or regions, or in the world as a whole, may be less than two children (i.e., that fertility may stabilize at a level below replacement of the parental generation). This would, of course, speed up the cessation of growth and bring stabilization at a smaller absolute size. A sustained fertility level below replacement would eventually lead to a decline in the absolute size of a population. This is not an objective of any government's current population policy, but this situation may change.

Chart 6 illustrates the awesome potential for population growth in a specific developing country—Mexico.

In 1970 Mexicans numbered 51 million. Of this number, 46% were under 15 years of age and 65% were under 25 years. The NRR was estimated to be 2.7 female births per woman. Under assumptions of linear fertility decline, leveling off at replacement level, Mexico's population would reach the following levels.

- If replacement-level fertility is reached by 2000–05, the population will stop growing at about 174 million, or 3.4 times its 1970 size.
- If replacement-level fertility is reached by 2020–25, the population will stop growing at about 269 million, or 5.3 times its 1970 size.

These figures should be modified by net emigration of undetermined magnitude, a large proportion to the United States.

Mexico's demographic situation is typical of dozens of developing countries where, even under optimistic assumptions of fertility decline, the momentum of growth is bound to double or triple present population levels.

In 1972 the Mexican Government initiated a family planning program. By the end of 1977, the birth rate was believed to have declined to below 40 per 1,000 population. President Lopez Portillo has recently indicated a national goal of reducing the rate of growth to 2.5% by the end of his term in office in 1982 and to 1% by the year 2000.

International Migration

In past centuries, millions of people suffering poverty, religious intolerance, or other hardships have emigrated to other countries. From the mid-17th century to the outbreak of World War II, more than 60 million Europeans, according to one estimate, emigrated overseas, mostly to the Americas. The United States alone absorbed some 33 million European immigrants between 1820 and 1940.

In the years since World War II, added millions have moved across national boundaries under a variety of economic and political circumstances. In addition to the traditional intercontinental movements—mostly to the United States, Canada, and Australia—there have been mass transfers of populations following the partitioning of countries (e.g., on the Indian subcontinent); large-scale repatriations of foreign nationals; and

streams of refugees occasioned by political dislocations, particularly in Asia, Africa, and Europe.

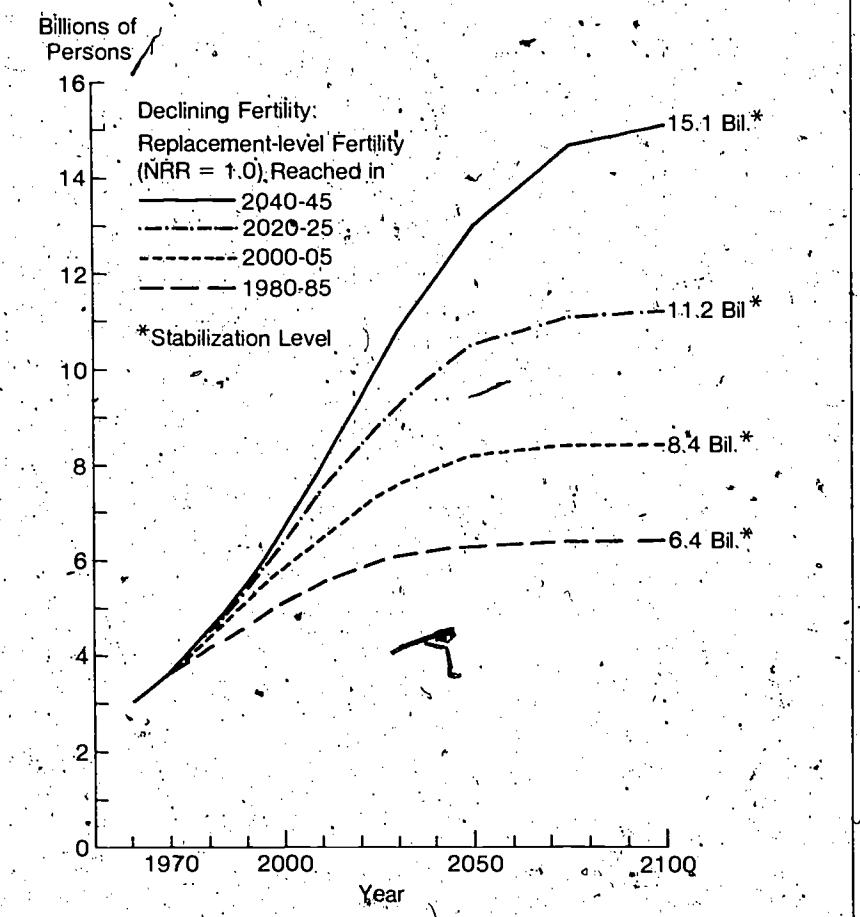
In the 1960's, labor migration became a growing component of postwar international movements. This flow has been primarily directed to Western Europe; in the 1970's, it branched out to oil-rich countries. In 1976 foreign workers in Western Europe—coming largely from southern Europe, north Africa, and Turkey—numbered some 7.5 million, accompanied by 5.5 million dependents.

Increased employment opportunities in the industrialized countries and liberalized immigration laws in some of them have resulted in a sharp increase in the numbers of migrants from developing to developed regions in recent decades. In 1974, according to U.N. estimates, there were some 9.5 million migrants from less developed countries (LDC's) in Western Europe, northern America, Australia, and New Zealand, a threefold increase over 1960.[1] (These figures do not include illegal migrant workers; there are no reliable estimates of their number, but they are in the millions.) Almost two-thirds of the migrants to northern America, Australia, and New Zealand came from Latin America. The largest contingent of LDC migrants in Western Europe came from north Africa (Algeria, Morocco, Tunisia) and Turkey. In 1974 there were 1 million Turks in the Federal Republic of Germany alone. LDC immigrants to the United Kingdom have come largely from the newly independent countries of the British Commonwealth.

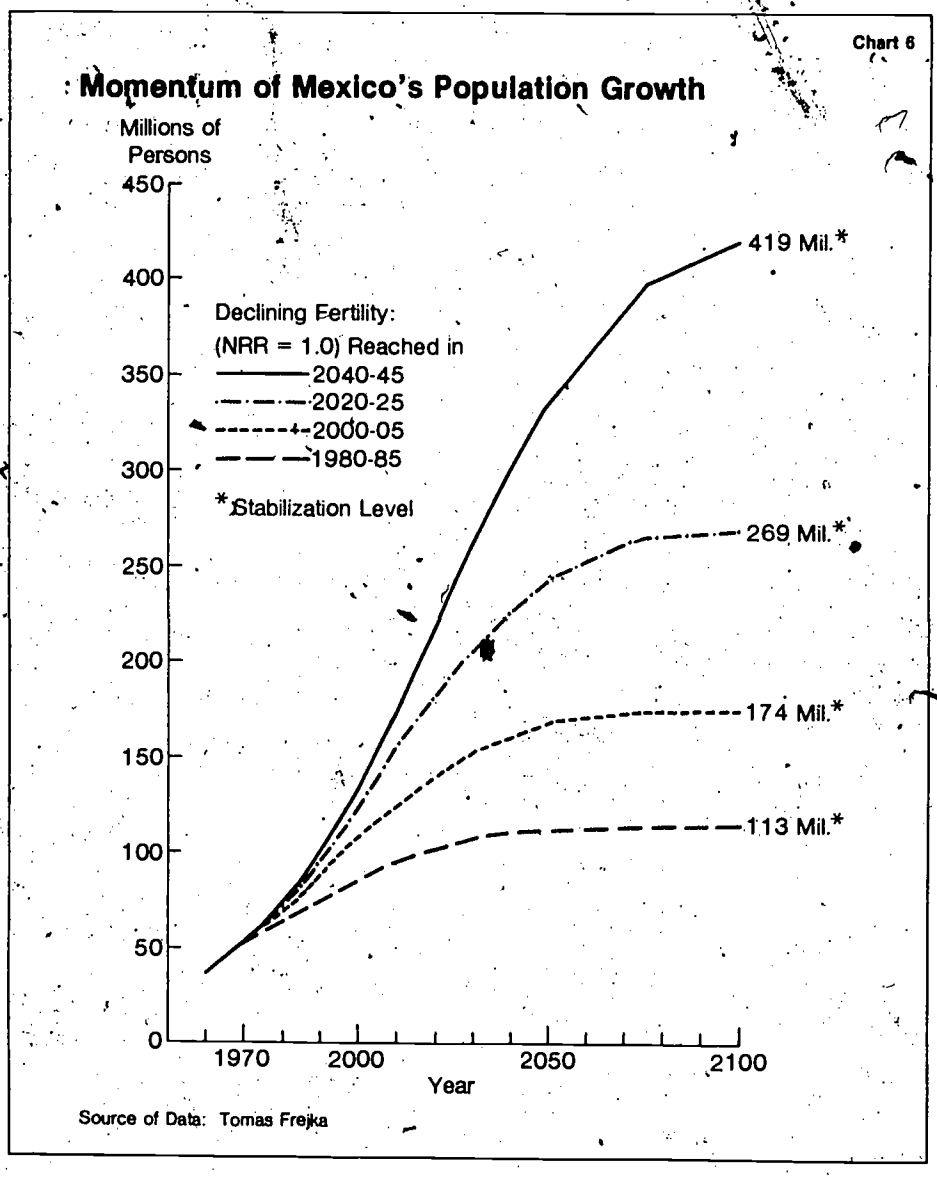
Social problems frequently arise for migrant workers and the host countries. Also, foreign labor markets depend on the economic vitality of the receiving countries and cannot be counted upon to remain open on the required scale. With the economic

Chart 5

Momentum of World Population Growth



Source of Data: Tomas Frejka



slowdown in Europe beginning in 1973, the demand for migrant workers has fallen. Several countries have imposed stricter controls on the recruitment of foreign labor; some have subsidized the return of foreign workers to their native lands. The growth of the working-age population in Western Europe, and increasing participation of women in the labor force, may further restrict employment opportunities for migrant workers well into the 1980's. Resource-rich LDC's have attracted a considerable number of foreign workers in recent years, but these developing countries' potential for absorbing additional migrant labor appears limited. The pressure in poorer LDC's to emigrate, nevertheless, is likely to intensify in the years ahead, owing to the rapid—and in many countries accelerating—growth of the labor force.

Migration to industrialized countries has significantly eased the population pressure of a number of small and medium-sized developing countries—for example, Puerto Rico, Jamaica, Mexico, Turkey, Algeria, Morocco, and Tunisia. In 1974 Algerian workers abroad comprised 12% of the country's economically active population; Tunisian workers abroad—7%; Moroccan and Turkish—5%. (Migrant workers may also bring important financial advantages to their home countries; workers' remittances are an important source of foreign exchange.) But the 9.5 million LDC migrants in industrialized countries in 1974 comprised on the average less than ½% of the population of the sending countries.

There are no areas left on Earth with unused land, job opportunities, and welcome for the tens of millions of emigrants which would be required to significantly ease population pressures in such major, overpopulated, low-income countries as India, Pakistan, Bangladesh, or Indonesia, even if such numbers could be persuaded to leave their homelands.

Emigration, in brief, can assist some small and medium-sized developing countries to meet their overpopulation problems, but it is of negligible help for larger nations.

Doubling Time

One way to grasp the implications of a particular rate of population growth is to consider how long it will take a population to double at that growth rate.

When a sum of money grows at compound interest, the interest rate is applied both to the original principal and to the proceeds of past interest payments, making total growth significantly faster than growth at simple interest. Thus, $1 at 1% simple interest takes 100 years to double, while $1 at 1% compound interest will double in 69 years.

In the same way, when population grows both the original number of people and the numbers accruing from past growth increase. Thus, a population growing at 1% per year will take not 100 years but 69 years to double. A population growing at 2% per year will double in only 35 years.

A quick way to calculate doubling time is to divide 69 by the percentage of growth. For example, if a country's population growth rate is 3% per year, the population will double in 23 years.

The concept of a population "explosion," with the developing countries' populations heading sharply upward, thus derives from the combination of an unprecedentedly rapid drop in death rates, much more slowly falling birth rates, and the compound, or geometric, arithmetic of the resulting population growth.

Annual Growth Rate (%)	Years to Double Population
1.0	69
1.5	46
2.0	35
2.5	28
3.0	23
3.5	20
4.0	17

CHANGING PATTERNS OF POPULATION GROWTH

Classical Demographic Transition Theory

Before the onset of the Industrial Revolution in the late 18th century, European mortality and fertility rates were both high. By the middle of the 1930's, death rates and birth rates throughout the West had plummeted (chart 7). Demographers have sought ever since to clarify the sequence of this transition from high to low vital rates and the means by which it was accomplished.

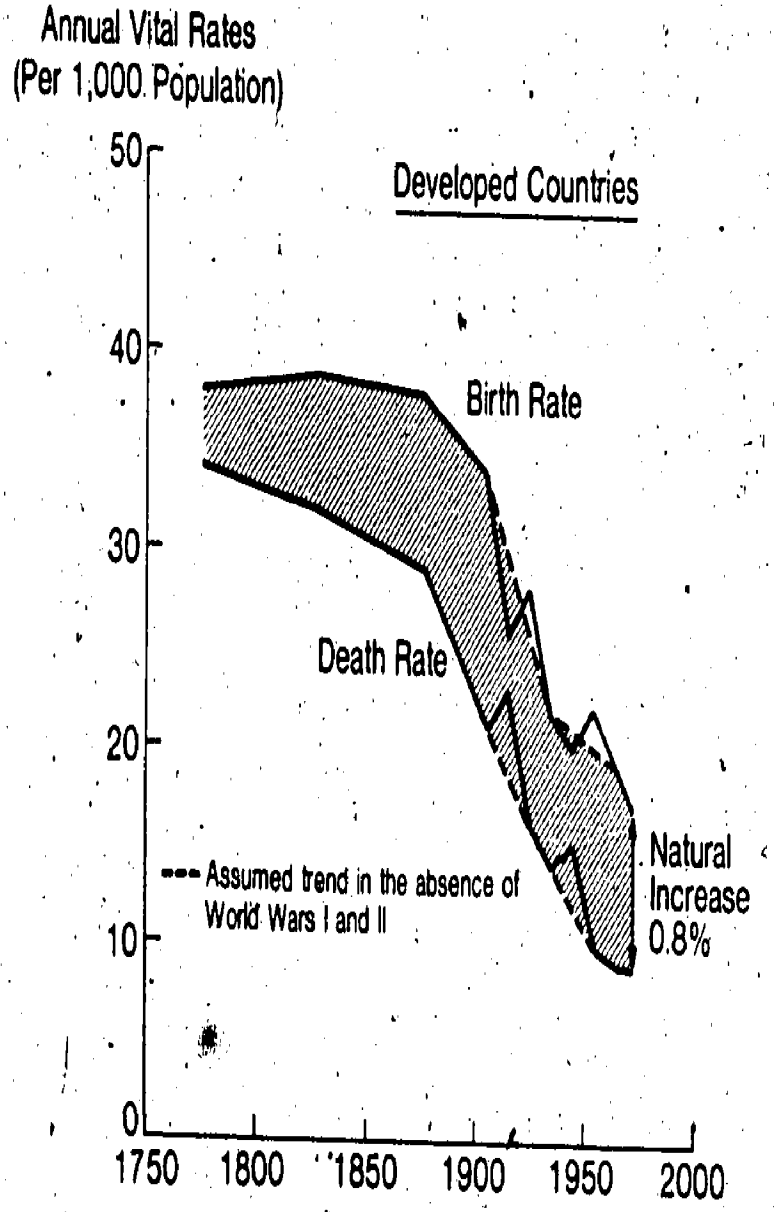
One of the resulting theories of demographic evolution, known as the demographic transition theory, postulates that economic development brings about a fall in mortality, followed—after some time—by a fall in fertility. During the period of transition from high to low death and birth rates, the pace of population growth accelerates markedly. More specifically:

- The initial *stage of high (population) growth potential* evolves from a backdrop of high death and high birth rates. The former reflects the harsh struggle for existence and the latter the need to compensate for high mortality. During this stage, death rates begin to fall, under the influence of modernization, including rising levels of living and new controls over disease. Birth rates remain high, causing a rise in the rate of population expansion.
- During the subsequent *transitional stage*, the rate of growth of the population is still relatively high, but a decline in birth rates becomes well established. The new ideal of the small family arises typically in urban, industrial settings.
- The *stage of incipient decline* is reached when mortality is low and fertility levels hover around replacement level. A stabilization of fertility below replacement level would, of course, lead, in the absence of net immigration, to an eventual decline in the absolute size of a country's population.

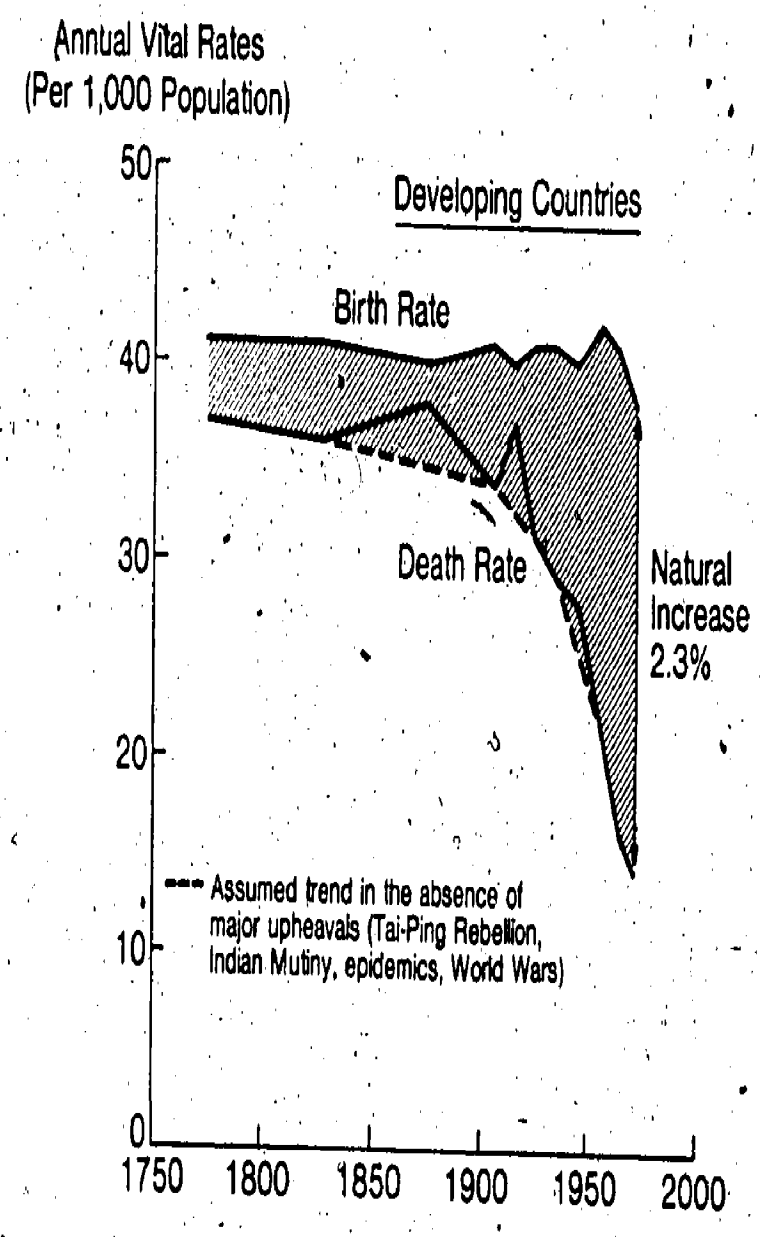
Theory's Relevance for LDC's

The demographic transition theory, particularly its concepts of (1) more or less automatic decline in fertility subsequent to mortality reduction and (2) economic development as the motive power for both declines, has

The Demographic Transition



In developed countries death rates declined slowly beginning in the late 18th century. Birth rates followed closely. Population growth rates rarely exceeded 1.5% per year.



In developing countries birth and death rates remained high through the first decades of the 20th century. Then death rates began to drop. Birth rates stayed high and populations grew at 2.5, 3.0, and 3.5% or higher a year. Since the mid-1960's some countries' birth rates have begun to decline.

Source: Based on U.N. estimates and projections (medium variant)

shaped much of the thinking about population problems in today's developing countries. It has often served as a basis of opposition to government policies and programs aimed at reducing average family size on the premise that economic development will bring a reduction in fertility as a natural consequence of rising levels of living.

The theory's supporters further contend that fertility will not decline in the absence of such prerequisites as rising levels of living, literacy, and declining infant mortality. Family planning services by themselves, it is held, are largely unavailing. "Development is the best contraceptive" was widely proclaimed by Third World government delegations to the 1974 World Population Conference.[2]

Recent reexamination of Europe's population experience has done nothing to disprove the premise that lowered fertility is a correlate of modernization. There can be no doubt of the reality and persistence of fertility declines in modernizing Europe. A more systematic documentation of mortality and fertility changes in Europe from the 18th through the early 20th centuries appears to weaken, however, the validity of some aspects of the demographic transition theory and its usefulness in predicting the future course of birth and death rates in the currently developing countries.

Analysis of Europe's historical data by national subunits (e.g., provinces), undertaken by the Office of Population Research, Princeton University, showed important regional variations in initial mortality/fertility levels, timing of the onset of secular (sustained) declines in these levels, the pace of such declines, and the apparent causes of those declines.

The reexamination showed that fertility levels and trends varied widely among and within 19th century European countries; that fertility declines often preceded or coincided with mortality declines, instead of following them; that regional variations in fertility appeared most closely related to cultural and linguistic rather than developmental factors; and that, overall, fertility levels and trends bore no clear relation to development. Fertility declines occurred in provinces that were rural, very poor, not well educated, and subject to high infant mortality. Nationwide, fertility began to fall in peasant, Catholic France nearly a century earlier than in England, though it was England that was the leader in the Industrial Revolution.

The relevance of the classical demographic transition theory for today's LDC's is also limited by differences in the population trends of present-day LDC's and those of European countries at comparable periods of their economic development.

- The pace of decline from traditionally high mortality levels has been far steeper in the currently developing countries than it was in Europe. Average life expectancy in the West,[3] for example, is estimated to have risen from 41 years in 1840 to 50.5 years in 1900—about 10 years in six decades. The average life expectancy for LDC's as a group has increased from 42 to 51 years in 15 years (between 1950–55 and 1965–70). The rapid decline in LDC mortality has been attributed primarily to technological advances in the prevention and control of disease, employed independently of the socioeconomic setting. Marked improvements in the availability of food also played an important role in sharply reducing death rates.
- Birth rates at the beginning of the developing countries' demographic transition were significantly higher than in preindustrial Europe, due mainly to earlier and more universal marriage. The average birth rate for the LDC's has been estimated at 42.1 per 1,000 population between 1950 and 1955; birth rates in 90 LDC's exceeded this average. By contrast, the birth rate in Western Europe on the eve of the Industrial Revolution is estimated at 30–35 per 1,000.[4]
- Steeply reduced death rates and generally high birth rates have produced natural growth rates in LDC's up to 3.5% a year or higher, two or three times as high as those experienced during Europe's period of most rapid population growth. At the peak of Costa Rica's fertility (1959–61), for example, the country's natural increase reached 3.8% a year; the rate exceeded 3.5% for more than a decade. In Denmark, by contrast, the rate of natural increase never exceeded 1.5%.

The totally unprecedented disequilibrium between birth and death rates in the developing countries since the end of World War II is the reason for the massive burgeoning of world population.

Prerequisites for Fertility Reduction

The reexamination of Europe's historical demographic trends has led the project's senior researcher, Dr. Ansley

Coale, to conclude that the following conditions are necessary for a major fall in marital fertility.

- Fertility must be within the calculus of conscious choice. Potential parents must consider it acceptable behavior to balance the advantages and disadvantages of having another child.
- Perceived social and economic circumstances must make reduced fertility seem advantageous to individual couples.
- Effective techniques of fertility reduction must be known and available, with sufficient communication between spouses and sustained will in both to use them successfully.

It should be noted that neither the classical demographic transition theory nor its subsequent refinements indicate exactly what combination of social, economic, and political conditions give rise to the cited "calculus of conscious choice," to the interest in fertility reduction techniques, or to the "sustained will" or motivation to practice family planning. As noted by Dr. Coale, the weakness of the concept of "transition" lies in the "difficulty of defining a precise threshold of modernization that will reliably identify a population in which fertility is ready to fall."

Europe's demographic history to the mid-1930's did provide two important lessons. It showed that changes in fertility due to the voluntary adaptation of individual families to new personal circumstances evolve very gradually. It also showed that societal sanction of *the idea* of family planning is an important factor in the diffusion of its *practice*.

Both findings argue in favor of effective population policies and programs, without denying the important role of a rising level of living as the most reliable path to declining birth rates. The retarding effect of rapid population growth on improvement of the living conditions of the average family in most developing countries renders it highly important for those countries to accelerate in every practicable way the transition from high to low death and birth rates. Effectively organized family planning programs not only provide birth control information and clinical services but also speed up the diffusion of a basic prerequisite for the use of these services, namely making *the notion* of planned parenthood acceptable.

Birth rate reductions in present day developing countries are often closely correlated with economic and social progress (Singapore, Taiwan, Costa Rica, Hong Kong, South Korea, etc.). Significant declines in birth rates have also taken place, however, in relatively backward economic settings but under conditions of all-out mobilization of political, bureaucratic, and community resources (including womanpower) behind family planning (China and Indonesia).

LDC Birth Rates in Transition: A Modest Beginning

If present-day LDC's have experienced an accelerated pace of mortality decline, some are also showing an earlier onset and a faster rate of decline in birth rates than occurred in modernizing Europe. Since the mid-1960's, some 30 LDC's, containing over two-thirds of the total LDC population, appear to have reduced their birth rates by 10% or more.

Delayed marriages appear to exercise an important role in the reduction of birth rates in many LDC's, particularly in the initial phase of the decline. Rising age at marriage is a product of socioeconomic development that provides women with alternatives to an early marriage and motherhood and/or raises a couple's material requirements for marriage and delays the union until these requirements are satisfied, sometimes with the help of the woman's newly acquired earning power.

Large-scale temporary or permanent migration has also helped to depress the birth rate in a number of LDC's by reducing the proportion of the population in childbearing ages, separating families, delaying marriages, and exposing migrants to cultural values of the receiving (usually developed) countries.

The major cause of the decline in LDC birth rates to date, however, has been reduction in marital fertility, particularly among women over 30 years of age. This decline relates—in various degrees—to a fairly steady growth in the proportion of women of childbearing ages who use modern contraceptive methods. Such use has been significantly accelerated in many LDC's by public provision of family planning information, education, and contraceptive services.

Observed reductions in some LDC birth rates may signal the beginnings of a sustained fertility decline for a large proportion of the LDC population. But this is not assured. The pace of future fertility declines is still unpredictable. The birth rate in Mauritius has risen since 1973; an upward trend in fertility has been observed in Jamaica and Trinidad and Tobago. Nevertheless,

there is basis for cautious optimism that fertility will continue to decline in a broad range of LDC's. Unfortunately, this favorable development must, as we have seen, be viewed in a context of massively increasing world population totals.

CONSEQUENCES OF EXCESSIVE GROWTH

The consequences of excessive population growth are evident across the spectrum of human, animal, and plant life, mainly in developing but also in the developed countries.

Population and Food Supply

The 1974 U.N. World Food Conference resolved that ". . . all governments should. . . accept the goal that within a decade no child will go to bed hungry, that no family will fear for its next day's bread, and that no human being's future and capacities will be stunted by malnutrition."

There is, unhappily, no possibility that this goal will be met in a decade or a good deal longer. Because of rampant population growth, and poverty due in part to that growth, the hungry two-fifths of mankind is no better off today than it was in 1974.

In the industrialized democracies, food production increased an average of 2.7% per year during the decade 1968–77 and population increased 1%, for a per capita food production gain of 1.7% a year. But in the developing world (excluding Communist Asia on which data are lacking), a painfully achieved food production increase of 2.95% a year was largely offset by a population increase of 2.6%. (Recent trends in grain production are shown on chart 8.) Average per capita food intake in the developing world in the 1973–77 period (excluding Communist Asia) was about 2,185 calories per day, compared with 3,340 calories in the industrialized democracies. A 1977 U.N. Food and Agriculture Organization (FAO) survey found that in 23 developing countries, per capita daily caloric supplies, in fact, declined between 1961–63 and 1972–74.

Low as it is, the developing world's per capita food intake figure fails in two respects to reflect the depth of the problem. The starchy, predominantly grains and tubers diet of the developing world is less nutritious than that of the developed countries. And being an average figure, including better-off countries and the better-off people in each country, the figure indicates a considerably larger per capita intake than the impoverished majority actually attains. Nearly 2 billion people in the developing countries are continually undernourished, with resultant low vitality, vulnerability to disease, and low life expectancy. Outright starvation, principally of children and the aged, occurs when drought, flood, or other disaster undercuts even this minimum level of subsistence, unless relief arrives.

The technology of food production continues to advance, but successful applications have been primarily in developed countries possessing the necessary capital. High-yielding green revolution seed varieties require complementary fertilizer, water, and disease, insect, and weed control inputs for full effect, which often are not available to developing country farmers. Per acre yields in most developing countries remain far below those in the developed countries.

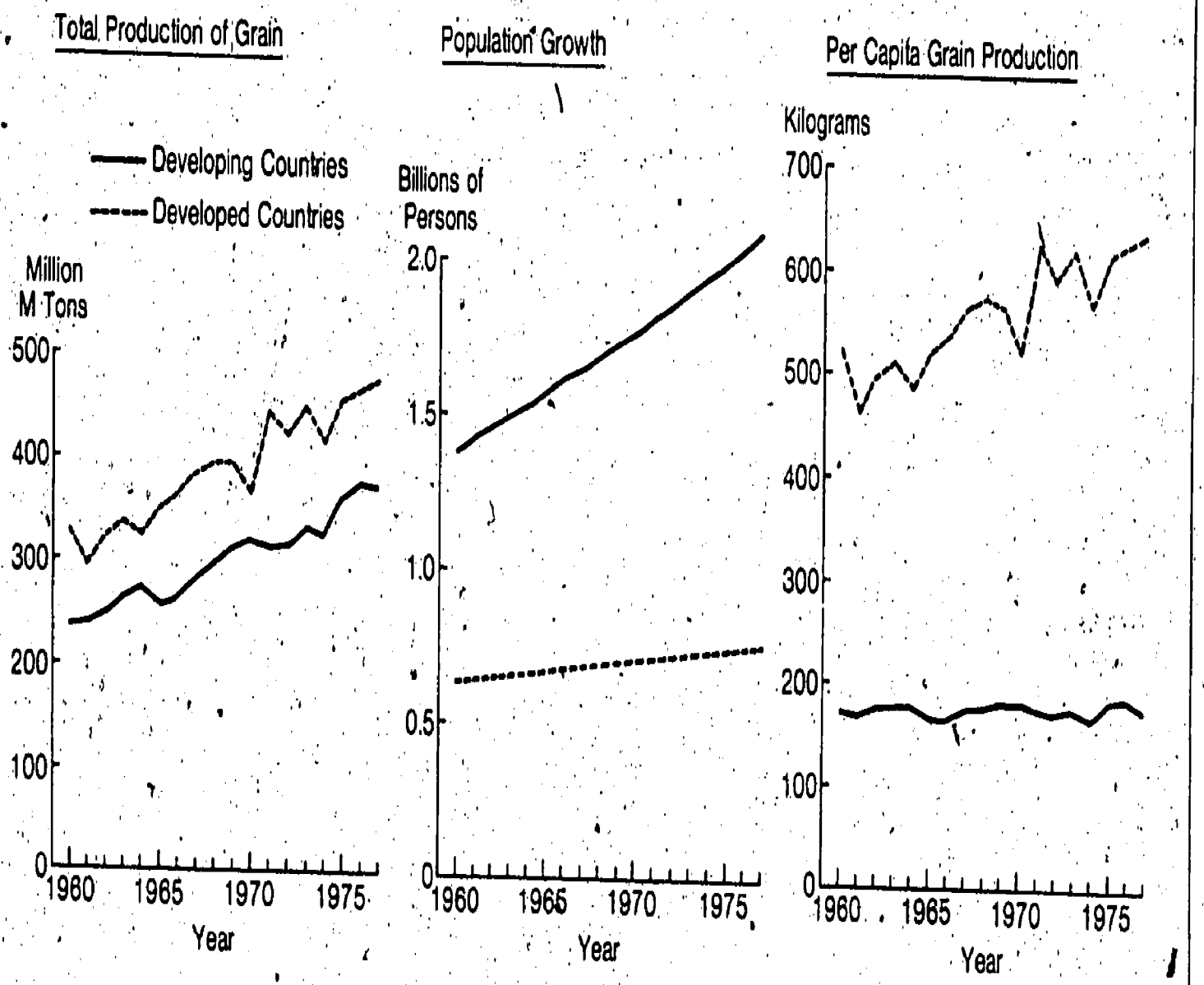
Developing country population growth trends, on the one hand, and realistically anticipated food production increases in those countries, on the other, point to a need for mounting developing world food imports. The prospects are grim, as developing countries become increasingly dependent on such imports, predominantly from the single geographic-climatic zone of northern America. The FAO estimates that food deficits for developing countries (excluding Communist Asia) can be expected to increase fivefold between 1970 and 1990. Meeting those deficits through imports, sources of which cannot be assured, will force many of the developing nations deeper into debt, thus limiting their ability to finance other capital costs of development, including expanding food production. And even if the imported food is somehow available, and the financial problems can somehow be overcome, physical movement of the enormous grain tonnages involved in feeding hundreds of millions of people will present tremendous problems.

Efforts, sometimes desperate, to increase developing country food production through slash-burn farming and overuse of land can have precisely the opposite long-term effect on food production. The U.N. Environment Programe, in a recent report on the state of the world environment, estimates that during the last quarter of this century, twice as many hectares of land will be lost to soil erosion and urban sprawl as will be added by bringing new land into cultivation.

The best hope for raising developing

Chart 8

Grain Production (1960 - 77)*



Note: Grain production comprises on the average 35% of total food production in developed countries and 64% in developing countries.

The greater variations in total and per capita grain production in developed than in developing countries are attributable to greater weather variations in temperate than in tropical farming zones and to more extensive policy interventions by developed than developing country governments in farm acreage and production levels.

Source of data: U.S. Department of Agriculture

*Excludes centrally-planned economies.

country food production lies in increasing productivity of land. But this requires improvements in agricultural technology and infrastructure calling for capital expenditures beyond most developing countries' means, in addition to policies favoring the small farmer, better water management, and other measures presenting difficult political and administrative problems. One must conclude that there is no practical solution to long-term food production problems that does not prominently include accelerated declines in population growth rates.

It is sometimes said that there is no food problem, only a population problem. This is an oversimplification—there would be food problems in many developing countries even if their populations were suddenly much reduced. But, unquestionably, the severe undernourishment of two-fifths of mankind is attributable, in major part, to the handicap of too many mouths to feed. And the number grows daily.

Population and Development

Excessive population growth adversely affects economic progress in many developing nations. Specifically, it:

- Lowers per capita living standards;
- Absorbs resources needed for investment in development;
- Contributes to the income disparity between rich and poor;
- Absorbs scarce foreign exchange for food imports; and
- Intensifies unemployment and underemployment.

Improving standards of living requires that economic growth significantly outpace population growth. Yet while the per capita income of all developing countries increased over the past quarter century at an annual average rate of over 3%, in low-income countries—particularly those of populous South Asia—per capita economic growth was less than half the average rate. The real per capita income of some developing countries actually declined. Despite impressive achievements since the 1950's in building up the foundations for economic and social development, all too many people saw little or no improvements in their conditions of life.

It has been argued that modernization and development produce lower fertility rates. But this is not an automatic process. And where it does occur, the process is likely to require many decades. During that time, rapid population growth slows development and widens the gap between rich and poor nations and between the rich and poor people within nations.

Improvement of the agricultural sector is the key to economic development of most developing nations. But it is in the agricultural areas of these nations that human fertility is usually highest. The result is either outmigration or more and more people on the land (generally a combination of the two), further subdivisions of family holdings, lower productivity per worker, and a perpetuation of poverty.

The discouraging cycle of development handicapped by excessive population growth, and of such growth continuing because of stalled development, can be overcome only through a variety of carefully formulated, vigorously pursued measures adapted to each country's needs. But one of the principal requirements in most LDC's is all too clearly the earliest possible reduction of high fertility rates.

Population and Social Factors

Excessive population growth has serious social consequences, especially in terms of unemployment, urban crowding, and overburdened education, health, and other public services.

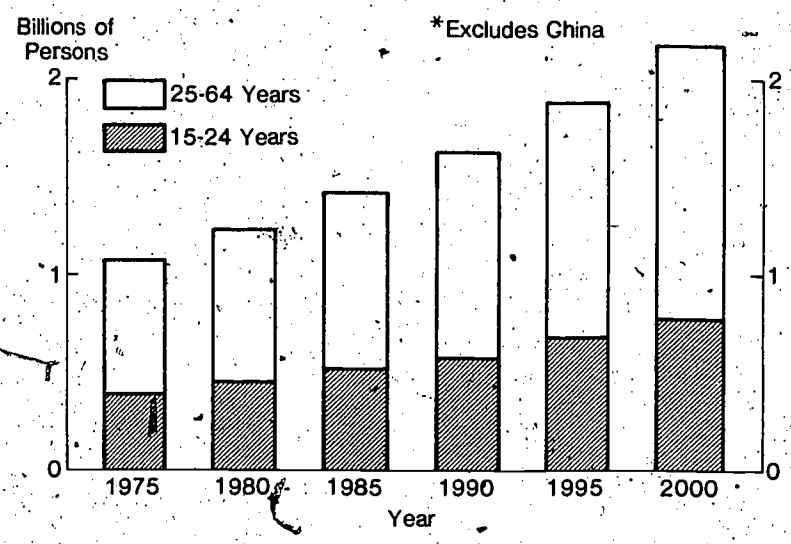
Unemployment/Underemployment. Unemployment, particularly of young people, is a major problem in the developed world. But in the developing countries, the problem is immense and worsening. The number of youths coming into the working-age range is soaring, while job-creating development proceeds too slowly. The result is rising unemployment or underemployment.

Taking the developing regions as a whole (excluding China for lack of adequate data), the population in the 15–64 years age range is projected by the United Nations to grow from 1.1 billion in 1975 to 2.2 billion in 2000, an annual average rate of 2.9% (chart 9). During this period, the socially and politically volatile 15–24 year age group, in which unemployment is particularly high, is projected to grow rapidly, even assuming moderately decreasing fertility.

The International Labor Organization (ILO) has projected that the number of persons in the developing world labor force will grow from 1,011 million in 1970 to 1,933 million in 2000, an increase of 922 million workers, or 91%, in one generation. The ILO has further estimated that 30% of the labor force in the developing world will be either unemployed or underemployed by 1980.

Chart 9

Population of Working Ages in the Developing Countries* (1975 — 2000)



Source: Based on U.N. projections, medium variant, as assessed in 1973.

The Government of Egypt recently estimated that it costs, on the average, about 7,000 Egyptian pounds (US$10,000) to create a new job and that the work force will be growing by about 350,000–400,000 people every year in Egypt. On this basis, astronomical expenditures will be required to provide jobs for the projected 922 million additional workers in the developing world as a whole over the 1970–2000 period.

Urban Crowding. Unemployment/underemployment in rural areas is a principal cause of urban overcrowding. Where there is not enough work in the countryside for burgeoning population, masses of people swarm into already crowded cities looking for jobs, often in vain. It has been estimated that while developing countries' populations are doubling about every 25–30 years, their large cities are doubling every 10–15 years, and their urban slums or shantytowns every 5–7 years (chart 10).

The flow of migrants from rural areas into crowded cities is a matter of concern for many developing countries. The U.N. Population Commission report on its 19th session (January 1977) points out that the governments of 130 developing countries regard this situation as unacceptable. Some cities can no longer be called cities but rather vast urban agglomerations with extensive shantytowns in which living conditions are deplorable; agglomerations where people, other than the urban elite and middle classes, are without adequate water, sanitation, health, education, and other social services; where people are often living five or six in a room, acutely aware of the great disparity in wealth and poverty about them. All this contributes to alienation and frustration on a massive scale.

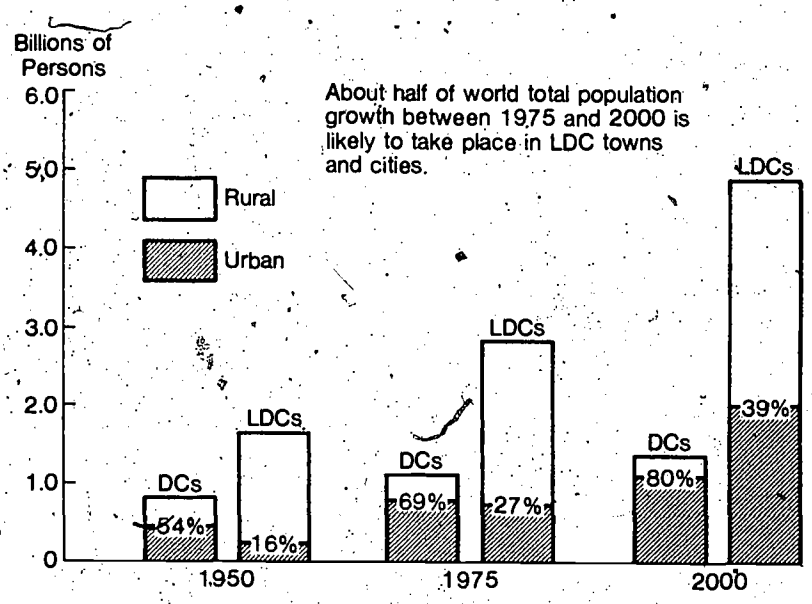
SWELLING CITIES
Estimates and Rough Projections of Selected Urban Agglomerations in Developing Countries (millions of persons)

	1960	1970	1975	2000
Calcutta	5.5	6.9	8.1	19.7
Mexico City	4.9	8.6	10.9	31.6
Greater Bombay	4.1	5.8	7.1	19.1
Greater Cairo	3.7	5.7	6.9	16.4
Jakarta	2.7	4.3	5.6	16.9
Seoul	2.4	5.4	7.3	18.7
Delhi	2.3	3.5	4.5	13.2
Manila	2.2	3.5	4.4	12.7
Tehran	1.9	3.4	4.4	13.8
Karachi	1.8	3.3	4.5	15.9
Bogota	1.7	2.6	3.4	9.5
Lagos	0.8	1.4	2.1	9.4

Source: Based on U.N. estimates and medium variant projections.

Chart 10

Urban Population in Developed and Developing Countries (1950, 1975, and 2000)



Source: Based on U.N. estimates and medium variant projections.

Overburdened Public Services. Many LDC populations are growing faster than educational, health, sanitation, transport, and other public services can be provided.

In education, for example, the pyramidal age structure of population growth, and funding shortages, have left educational systems increasingly incapable of meeting school facility and teacher needs (chart 11). Many governments, once committed to universal education, have quietly abandoned that objective. In 1950 about 44% of the world's adult population—or 700 million people—were illiterate. Since that time, the percentage has declined, but the absolute number of illiterates has grown to about 800 million. Of these, almost two-thirds are women.

Similarly, population growth has outstripped the provision of health facilities. Disappointing economic growth trends in most developing countries, and the long lead times involved in implementing health care services, suggest that attempts to supply fast-growing populations with medical care will fall farther and farther behind demand. Expanded use of paramedical personnel trained to perform routine health services should help to meet some of the need in countries adopting this technique. But unless population growth can be slowed, this approach will still leave vast unsatisfied health care requirements.

In sum, the social consequences of excessive population growth are highly damaging, both for the immediate well-being of a large proportion of humanity and for the prospects of improvement through development. Illiterate, untrained, disease-weakened people are unlikely to contribute effectively to the development process.

Population and the Environment

The population-environment relationship is a crucial one, especially for future generations.

In recent decades, the Earth's vegetation cover (farmlands, forests, and grasslands), fisheries, mineral resources, and atmosphere have suffered a sharply increased rate of depletion and pollution.

In large part this has been the result of intensive industrial and agricultural development by the advanced countries, seeking to improve their already high living standards. When population growth occurs in societies where wealth and technology have led to high production and consumption lifestyles, the added demand

on energy supplies, fisheries, forest products, minerals; natural recreation areas, and water is inordinantly large, as is the resulting pollution. The developed nations are attempting to reduce the environmental damage for which they are responsible through recently initiated, as yet inadequate, national and international conservation and antipollution controls and through falling birth rates.

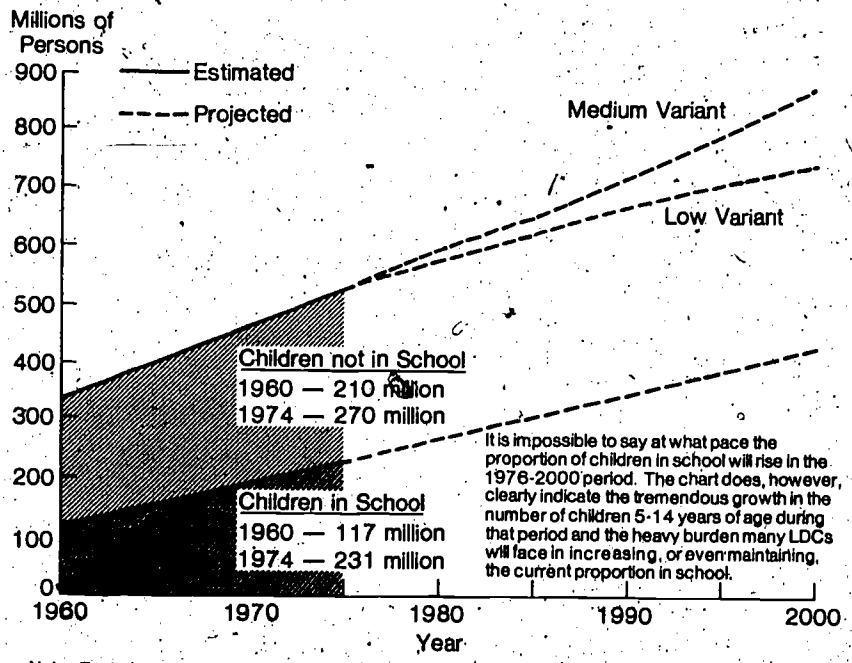
Environmental degradation has also resulted from the desperate efforts of rapidly growing, impoverished populations in the developing countries to increase food production, collect firewood for fuel, and otherwise survive. Vast areas of Africa, South and Southeast Asia, the Middle East, and Latin America have been crippled by slash-and-burn agriculture, overcropping, overgrazing, and consequent wind and water erosion. Millions of acres of forest have been sacrificed to the ever-growing need for cropland, firewood, and timber. Deprived of water-holding cover, millions of tons of virtually irreplaceable topsoil have been washed into the sea. The Sahel, Nepal, Haiti, Java, and many other regions have been described as ecological disaster areas. But the population pressures which caused the damage remain, with ever-growing numbers attempting to subsist from ever-depleting natural resources.

The problem worldwide is evident in:

- Most fundamentally, the destruction of vegetation cover, the source of man's food and oxygen;
- The decline, since 1970, in the world fishing catch, due largely to overfishing and pollution of spawning beds;
- Rapid depletion of oil and gas reserves;
- Similarly rapid depletion of metals resources;
- Overcrowding and impairment of national parks, wildlife preserves, city parks, beaches, and other natural recreational areas;
- Destruction of animal and plant wildlife by farming, timbering, urbanization, pesticide and fertilizer poisoning, and hunting;
- Environmental illnesses (notably emphysema, stroke, parasitic infections, heart disease, and cancer) caused by the introduction of new chemicals into the ecosystem, by air and water pollution, and by crowding;
- Water shortages due to the mas-

Chart 11

School Attendance in Developing Countries



Note: Excludes China, the Democratic People's Republic of Korea, and the Socialist Republic of Vietnam.

Source: Enrollment data from UNESCO, Statistical Yearbook 1976, 1977. Population estimates to 1975 from U.N.; projections from U.S. Bureau of the Census.

sive water requirements of modern agriculture, industry, and consumer living; depletion of underground water supplies; pollution of lakes and rivers; and exhaustion of promising water catchment and irrigation sites; and

- Damaging rainfall and temperature pattern changes brought on by carbon dioxide in the atmosphere from wood and fossil fuels, dust from urban and agricultural activity, and the thermal effects of waste heat and economic activity.

This environmental loss and damage is occurring in a world of 4 billion people. In 25 years the number of human consumers and polluters is expected to be about 6 billion, growing to 8 billion or more. Environmental conservation and purity are belatedly an accepted world goal. But the developed countries are moving far less rapidly than they might to control their heavy consumption of scarce materials and pollution of oceans and air. In the developing countries, where capital for conservation and antipollution measures is scarce and requirements on natural resources for survival are heavy, more determined efforts to slow population growth would be a key contribution to the developing countries' own and the world's environmental protection efforts.

There are those who believe that the world's biosphere, already heavily strained, simply cannot tolerate the combined impact of projected population growth, increasing resource use, and pollution. There is growing concern that mankind's mounting numbers, pressing against finite resources, will overshoot the carrying capacity of the Earth.

Population and Political Factors

The political implications of high population growth are difficult to define for they vary from country to country, are resistant to isolation and analysis, and therefore do not lend themselves easily to generalizations. However, a few are offered.

High population growth rates, often attended by economic stagnation, overcrowded cities, social unrest, and pressures for foreign migration can undermine the internal stability of nations as well as complicate relations among nations. Such conditions also detract from the environment needed to attract foreign capital, vital to achieving increased levels of economic growth.

To the extent excessive population growth frustrates economic development, it is a fundamental factor in perpetuating and even widening the gap between the per capita incomes of rich and poor nations. The politicization of international economic relations and their polarization along "North-South" lines are in themselves creating new challenges and obstacles for improved cooperation between nations. Intensifying population pressures will serve to reinforce these trends.

In centuries past, millions of poor have accepted their lot with resignation and political apathy. This situation is changing, as expanding communications instill greater awareness that there can be a better life. Some can be expected to seek radical prescriptions in violence, including terrorism. There is real danger that violence will grow and spread unless more effective means can be found for improving conditions of life for the masses.

Overpopulation has been an underlying factor in certain international conflicts and major internal disorders. This danger continues and may intensify as populations burgeon and the scramble for scarce raw materials intensifies.

Such pressures seem destined to produce an increasingly turbulent and dangerous international environment for the pursuit of peace, stability, and improved conditions of life for all people.

The overpopulation problem is most often viewed in broad economic, social, and political terms. But it is fundamentally a problem of the frustrations, deprivation, and suffering of millions of individual human beings, predominantly in the developing countries. Millions of women are caught up in a cycle of endless childbearing, wasted health, drudgery, and limited life expectancy. Vast numbers of children are born into a future of undernourishment, physical and mental impairment, and virtually no prospect of advancement and a better life. Multitudes of adults and youths are without meaningful employment.

Population pressures are by no means the only cause of these conditions. Poverty and suffering existed long before there were such pressures. But the central importance of overpopulation in the syndrome of mounting demands on diminishing life support systems, and stationary or declining living standards over most of the developing world, is clear.

WHAT IS BEING DONE?

Growing Awareness of the Problem and of How It Must Be Met

Over the past 10–15 years, there has been an encouraging increase in world awareness of the population problem. Many developing nations now appreciate the need for urgent, far-reaching action to reduce population growth if tomorrow's world is not to be one of potentially disastrous overcrowding, deprivation, and disorder.

Developing countries have seen the situation as a matter of direct national interest if their development efforts were not to be greatly impaired or totally frustrated. At least three-fourths of the people in the developing world live in countries where governments have now adopted population programs related to their economic development plans. Developed nations also have population concerns, although they are different from and generally less serious and urgent than those of LDC's.

To a large extent, far-sighted, public-spirited private individuals and organizations have taken the lead in sounding the alarm and initiating national and international population programs. The United Nations and its concerned specialized and associated agencies, including the World Bank, have become more and more involved. In mid-1974, a U.N.-sponsored World Population Conference was held in Bucharest. The conference adopted a World Population Plan of Action (WPPA) which reflected a consensus of 136 participating governments and which stands today as a charter and beacon for effective, morally, and culturally acceptable population policies and programs. (The Holy See did not participate in the consensus.)

The WPPA emphasizes the fundamental interrelationship of development and population growth. It notes that couples whom development has enabled to attain above-minimum living standards are more likely to desire fewer children and to devote the necessary attention and resources to implementing that desire. But development can proceed only with great difficulty, if at all, in the face of excessive population growth. Accordingly the WPPA advocates a two-pronged approach in which development is pursued in mutually reinforcing conjunction with population programs.

Such population programs have come to center in two broad areas—motivation of couples to desire small families and the provision of modern family planning services.

Motivation for Small Families. At Bucharest and earlier, it was recognized that broad economic and social development, leading to a preference for small families, could not be anticipated in many developing countries for an indefinite period. On the other hand, experience had shown that particular elements of, or approaches to, development are especially effective in bringing fertility declines. Many countries' population policies have accordingly sought to emphasize those elements.

- Reduction of infant and child mortality—When parents expect a higher proportion of their children to survive to adulthood, they have fewer "insurance births." In some countries of Africa, Asia, and Latin America, over 50% of all deaths occur before the age of five. Time and again, as infant and child mortality rates have been brought down, fertility rates have also declined.
- Expansion of basic education, especially for girls—Studies in Latin America reveal that women who have completed primary school average about two less children than those who have not. Schooling tends to delay the age of marriage for girls, thus reducing the number of childbearing years. For both men and women in traditional environments, it broadens the students' view of the opportunities and potentialities of life, inclines them to think more for themselves, and reduces their suspicion of social change, including family planning. Schooling also enhances a girl's prospects of finding employment outside the home that may compete with raising a large family. And parents see children in school as having less immediate economic utility but greater long-term earning capacity; this conduces toward a more compact, well-educated family norm with children better able to care for parents in their old age.
- Increasing the productivity and income of the rural and urban poor—The fertility of subsistence landholders and landless farmers is characteristically high. Land and tenancy reform, assured availability of water, and effective extension of credit and other facilities enable such farmers to increase their productivity and income and thus to attain improved health, education, and living standards. This normally leads to a

decline in birth rates. Government programs to enable urban poor to increase their productivity, earnings, and access to public services tend to be similarly rewarded with reduced fertility rates.

• More equitable distribution of the benefits of economic growth—Economic growth alleviates poverty, thereby contributing to reduced fertility, only if the masses of the people participate in that growth through increased employment, incomes, and consumption of goods and services. But typically in developing countries the upper 20% of the population receive about 55% of the national income, and the lowest 20% receive about 5%. Some 40% of the population are outside the development process. Only when an equitable share of the benefits of growth are secured by the lower income groups does economic growth have substantial beneficial effect on fertility.

• Enhancing the status of women—Programs to enhance the social, economic, and political status of women contribute, perhaps more than any other measure, to reduced fertility. Esteemed—and encouraged to esteem themselves—in their role as mothers, women are typically denied equal access to education, much less to salaried employment. Despite the burdens they carry of childbearing, housework, farming, and marketing, they also tend to have last claim on available food. The role of government in opening the door of opportunity to women in traditional, male-dominated societies is crucial. This is a matter of social justice and humanitarian concern. It will also have the likely effect of lowering birth rates.

In the desperately poor circumstances of wide areas of Africa, Asia, and Latin America parents may be powerfully motivated to have many children. From the perspective of their own private interests, as opposed to wider community, national, and world perspectives of which such parents are little if at all aware, surviving children are highly desirable to help with farm and household tasks, to provide a measure of old-age security, and as a response to ingrained religious and social values, including male dominance and machismo. A U.N. Fund for Population Activities (UNFPA) publication, *The State of World Population 1978*, reports a survey in a section of Java, Indonesia, which showed that children can be net income earners for their families by the age of 9 or 10, performing the following functions: average age 7.9—caring for chickens and ducks; 8—caring for younger children; 8.8—fetching water; 9.3—caring for goats and cattle; 9.5—cutting fodder; 9.7—harvesting rice; 9.9—transplanting rice; 12.9—working for wages; and 13—hoeing. The same UNFPA publication noted that: "According to some estimates, a poor family in rural India has to have six or seven children to be 95% certain of one surviving son." The population growth control-oriented elements of development cited above will not be easily implemented in the vast regions where these conditions and attitudes prevail. But experience indicates they offer the most promising means of enhancing desire for smaller families in the face of such conditions and attitudes.

Family Planning Services. Complementing their efforts in the area of motivation, many governments and government-supported private organizations have undertaken programs to provide parents with readily available, effective, safe, and convenient means of family planning.

The prime determinant of birth rates is the motivational factor—parental desire or nondesire for large families. But the ready availability of modern contraceptive information and supplies is also critically important to world fertility reduction. A 1976 International Planned Parenthood Federation (IPPF) survey indicated that of the approximately 400 million women around the globe (excluding the U.S.S.R. and China) "at risk" of an unwanted pregnancy, two-thirds were not practicing contraception. In the developing countries, nearly 80% of couples "at risk" do not now have access to, or for other reasons do not use, contraceptive methods. At the same time, one out of every three or four pregnancies ends in abortion. Availability of family planning services would prevent many situations leading to abortions or unwanted births.

Some couples' desire to restrict births is so strong that they will achieve their purpose whether modern contraceptives are available or not, through such traditional methods as late marriage, abstinence, withdrawal, rhythm, and abortion. Others' desire for large families is so strong that the availability of contraceptives would have little or no effect. But the experience of recent years shows that couples can be influenced to avoid undesired births by knowledge that effective, safe, and convenient means

to that end exist and by the ready availability of such means.

In sum, the critical importance of the world population problem, and the more promising means of dealing with it, are much more widely understood than they were 10–15 years ago. The awakening process must go on, but the emphasis in much of the world is now on the successful implementation of population programs whose need and importance are recognized and accepted.

Country Programs and Achievements

Nearly 95% of the people of the developing world live in countries whose governments have now adopted family planning programs related to national development plans and/or family health and welfare or whose governments permit—and often support—private activities in this field. Only 8 of the 144 developing countries surveyed by the United Nations restrict in any way access to modern methods of family regulation.

Family planning programs in LDC's vary widely, however, in quality and effectiveness. In the view of W. Parker Mauldin and Bernard Berelson of the Population Council, these programs "... range from vigorous and continuous efforts under skilled management to weak and spotty performance under indifferent administration, on down to no effort at all."

The sharpest declines in LDC birth rates during the 1965–75 period (i.e., reductions of 30% or more) occurred in Singapore, Cuba, Hong Kong, South Korea, Barbados, and Taiwan (chart 12). Reductions of 20–30% are estimated for Chile, Trinidad and Tobago, Mauritius, Costa Rica, Malaysia, Colombia, Tunisia, Thailand, Panama, Fiji, Jamaica, and the Dominican Republic. Countries with a 10–20% decline included the two largest market economy LDC's—India and Indonesia—as well as the Philippines. China's birth rate is unknown, but Chinese media report a steady decline in the country's population growth rate in recent years. China's current goal—vigorously pursued, by all indications—is to reduce its population growth rate to less than 1% by the end of 1980.

All the above-cited countries have instituted programs to reduce fertility, and most have also, over the past 25 years, made measurable, broad-based social and economic progress. Thus, not only have these countries promoted family planning—many of them vigorously—but most have acted to improve health conditions; raise the level of educational attainment; enhance economic, political, and cultural opportunities for women; and, in some cases, achieve a higher and relatively widespread distribution of income. These measures have had the effect of delaying marriage and otherwise contributing to fertility declines.

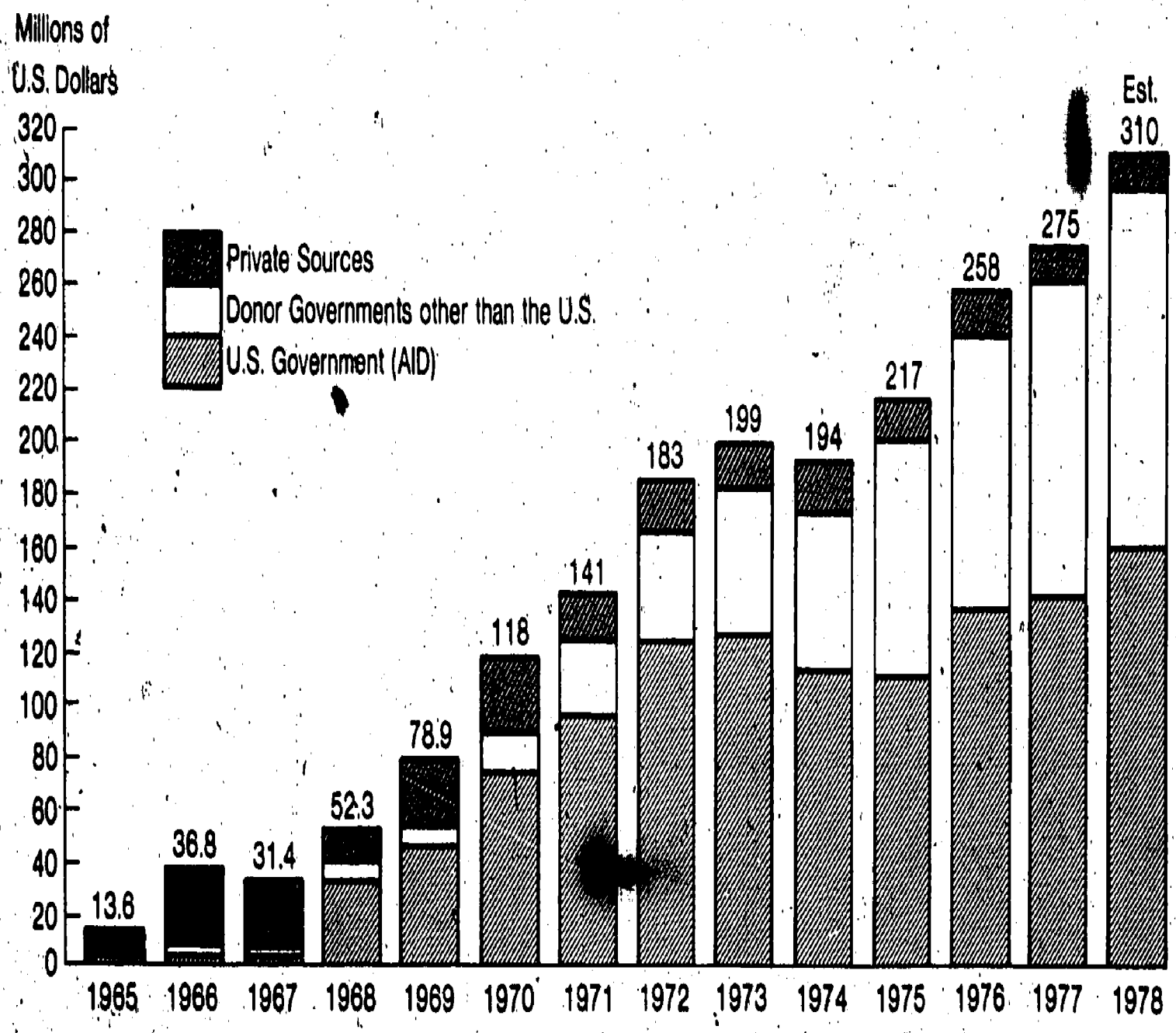
It should be noted that the fertility declines in Singapore, South Korea, Taiwan, and some other countries cited above began before government-sponsored family planning programs had commenced. It is not yet clear whether such programs can initiate a transition from high to low fertility ahead of substantial economic and social progress, as opposed to accelerating a transition to lower fertility in a context of such progress. Among non-Communist countries, Indonesia offers perhaps the most promising testing ground for a number of innovative approaches toward lowered fertility in the absence of substantial social and economic development. An intensive effort is being made to gain the active support of influential village leaders—and village wives' clubs, midwives, and other local groups—in family planning activities and to integrate family planning services into other social and economic development programs at the village level. The program has recorded a remarkable growth in family planning acceptors notwithstanding the poverty of the country. This has suggested to one knowledgeable observer, following a field trip to Indonesia, that "... extreme Malthusian pressures may provide the needed motivation when linked to a strong facilitating [family planning distribution] system which reaches people at the local level." (Professor Ronald Freedman, University of Michigan)

In sum, about 30 LDC's appear to have reduced their birth rates by 10–40% in the 1965–75 period. The reductions have derived from a number of causes but primarily from the mutually reinforcing impact, in unclear proportion, of socioeconomic development and family planning programs. Though the example of these countries' achievement is highly important, the reductions have only moderately reduced overall LDC population growth from 2.6% in the early 1970's to about 2.4% today, leaving aside China.

Chart 13

International Assistance to Population Programs

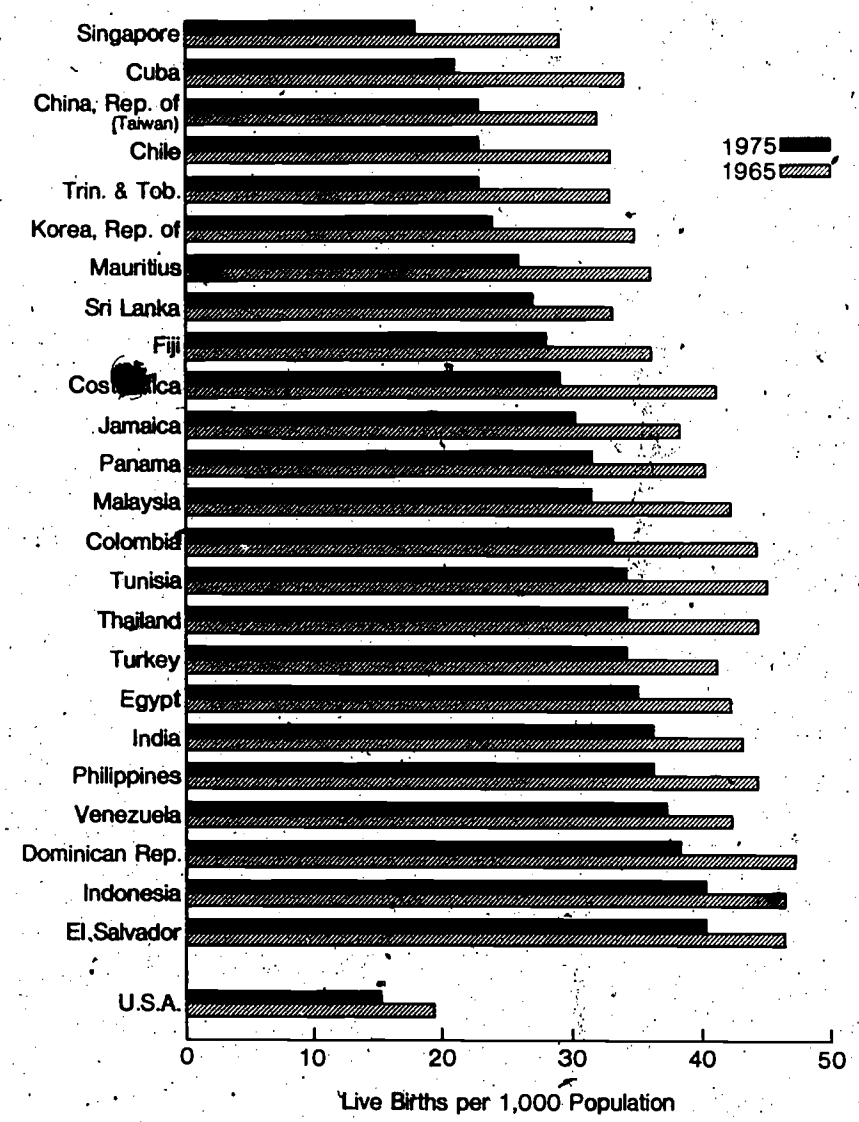
Primary Sources of Grant Funds (1965-78)



Source: Office of Population, Bureau for Development Support, U.S. Agency for International Development. Included in the above figures are national contributions to international population assistance organizations, such as UNFPA and IPPF.

Chart 12

Birth Rates in Selected Developing Countries: 1965 and 1975



Source: Based on estimates by W. Parker Mauldin of The Population Council. New York, 1978.

External Support

In their efforts to deal with their population problems, governments are able to turn to a variety of governmental and nongovernmental organizations for advisory and funding assistance. About two-thirds of the funds devoted by the developing world (except the Asian Communist countries) to population purposes are indigenous and about one-third comes from external assistance. Such external assistance to population programs in 1965–78 totals $2.1 billion (chart 13).[5]

Multilateral Assistance. The U.N. Fund for Population Activities (UNFPA) is the largest multilateral source of external funding for population action programs in developing countries. In its 9 years' existence, UNFPA has provided over $250 million in support of more than 1,200 population projects in more than 100 countries. In 1977 the Fund's annual budget, obtained from voluntary contributions by some 45 donor countries, exceeded $100 million. The major donors have included Canada, Denmark, the Federal Republic of Germany, Japan, the Netherlands,

Norway, Sweden, the United Kingdom, and the United States. The United States in recent years has provided about 30% of total UNFPA funding.

UNFPA assistance is provided only upon the request of governments. The Fund is neutral as regards national population policies so long as the programs it supports are voluntary. The six areas in which the Fund can provide assistance are: basic population data, population dynamics, population policy, family planning, communication and education, and program development. Since the World Population Conference in 1974, requests for UNFPA assistance have considerably exceeded its resources, requiring the Fund to determine allocation priorities.

Most of the projects that UNFPA supports are implemented through organizations and specialized agencies of the U.N. system, acting in their respective fields of competence. Among these are the U.N. Office of Technical Cooperation, the U.N. Development Program (UNDP), World Health Organization (WHO), U.N. Children's Fund (UNICEF), U.N. Educational, Scientific and Cultural Organization (UNESCO), Food and Agriculture Organization (FAO), and International Labor Organization (ILO). Responding to the desire of developing countries, an increasing share of UNFPA support, now about 27%, has been going directly to developing country population agencies.

The World Bank and its soft-loan affiliate, the International Development Association (IDA), entered the population assistance field in 1968. This reflected the Bank's conviction that rapid population growth is a major barrier to the economic and social progress of many developing countries. Supported projects have included a widening range of activities relevant to an effective population program. Assistance is provided on conventional Bank terms or, in the case of especially weak economies, on highly subsidized soft-loan terms.

Bilateral Assistance. The major national donors of population assistance are Canada, Denmark, the Federal Republic of Germany, Japan, the Netherlands, Norway, Sweden, the United Kingdom, and the United States.

The U.S. program, comprising about two-thirds of the total over the 1965–78 period, is administered by the Agency for International Development (AID). It has assisted some 30 developing countries on a bilateral basis and another 50 countries through programs sponsored by private organizations and intermediary agencies such as the IPPF and UNFPA.

The emphasis of the U.S. population assistance program, carried out in close conjunction with health assistance particularly for mothers and children, has been on the provision of contraceptive information and supplies. Recently, while maintaining and increasing this program, added emphasis has been given to programs to enhance motivation for the use of family planning services. Experience has demonstrated that both programs are required for maximum results in a mutually supporting relationship.

Most of the eight non-U.S. donor countries' bilateral aid programs focus on innovative approaches in a limited number of countries of special interest. Several are participants in World Bank consortium projects in Bangladesh and Kenya. The major part of their population assistance, however, goes to the multilateral programs of the United Nations and the IPPF. Over 60% of UNFPA's funding and over 40% of the IPPF budget are provided by these eight countries.

Nongovernmental Organizations. A large number of private, nongovernmental organizations (NGO's) have become involved in various aspects of the population field, including research, training, and the provision of technical, commodity, and financial assistance to developing countries. Funding for these organizations has come from both private and public sources.

The United States has provided substantial financial support, through AID, to a number of NGO's in recognition of the need for many-sided efforts for effective overall population assistance to developing countries. The Ford and Rockefeller Foundations have been major supporters of world population programs since 1965.

NGO's have a unique capacity to undertake innovative or pioneering activities, especially in the areas of contraception service delivery and use motivation. They are also an important vehicle for population assistance to countries lacking an official population policy or program, or where foreign governmental aid is not wanted. This has given NGO's a significant role in many countries, working with private as well as government programs.

The largest international NGO is the IPPF, which provides assistance

to some 90 affiliated national family planning associations around the world. In 1977 the IPPF budget was more than $50 million. The major IPPF contributors are Canada, Japan, Sweden, the United Kingdom, and the United States (about 30%).

Contraception service delivery, including the expansion of sterilization programs and community-based contraceptive distribution projects, is the top priority of IPPF national population policies and programs. Communication and community education receive priority where national programs have taken on broad responsibility for service delivery. Increasing emphasis is given to women's activities associated with family planning and to improvement of the status of women.

Other leading population NGO's are the Pathfinder Fund, Family Planning International Assistance, and Association for Voluntary Sterilization. All provide technical, commodity, and financial assistance to population programs in developing countries.

WHAT MORE CAN BE DONE?

Growth Rates Remain Very High

The progress achieved since the early 1960's in world awareness of population problems and in reduction of birth rates in some countries is highly welcome. Nevertheless, population growth remains far too high in too many developing countries, substantially offsetting economic gains, impairing the health of mothers and children, and limiting prospects for a better life for generations to come. Birth rate reduction in the developing world as a whole, where death rates are also still declining, is too slow to prevent many developing countries, including some of the most populous, from eventually arriving at stationary populations far in excess of acceptable levels. Even with markedly more determined and effective worldwide population programs, replacement-level fertility cannot be hoped for before 2000, with a steady-state population of some 8 billion by about 2070, twice today's total of 4.2 billion.

There are those who believe that, taking realistic account of the factors discussed earlier—insufficient food, impaired development, unemployment, urban crowding, overburdened public services, an overtaxed environment, and likely political and social turbulence—the world will never see another doubling of population. It is indeed hard to visualize a China, India, Pakistan, Bangladesh, Indonesia, or many other countries sustaining twice their present populations. Feedback mechanisms such as inflation, economic deterioration, acute privation, and political and social instability could lead to widespread famine and to fertility levels well below replacement, bringing population growth to a halt well short of about 8 billion. But while not excluding this possibility, suffering and death on such a scale could never be an acceptable solution of the world's overpopulation problem.

A world of 8 billion would be a less desirable world in many ways than our already overcrowded planet. But it might at least be a surviving, operative world, particularly if there were hope of subsequent population reduction. Success in achieving replacement-level fertility by 2000, permitting a later steady-state population of 8 billion, is critically important for those now living and even more for their descendents.

Priority Action Areas

The factors producing fertility decline vary within countries and from country to country and are imperfectly understood. Conceivably, fertility could fall substantially over the next 20 years due to the largely automatic influences of development. Hundreds of millions of couples might recognize the disadvantages of large families and sharply curtail births without government stimulus or assistance, as in the last century in Western Europe.

But this is unlikely. Development is proceeding slowly or not at all in most developing countries. Where it is occurring, it is frequently unbalanced, bringing little benefit to the masses and thus having little impact on fertility. Under these conditions fertility reduction on married couples' own initiative is likely to be a protracted process resulting in stabilization of LDC populations only after long delay and at very high levels.

Governmental programs accordingly have been a key factor behind the fertility reductions achieved by a number of LDC's. Accelerated, further progress requires that more governments act immediately, imaginatively, and determinedly to reduce fertility. Experience suggests the following areas for priority emphasis in raising world population programs to a new level of effectiveness.

Leadership Commitment. Perhaps more than any other factor, leaders of countries with serious population problems must accord those problems

the emphasis their fundamental importance warrants. They must insure development of effective population programs, speak out clearly and firmly in support of those programs; and see to it that they are carried out both at the national and the village or community levels. National and world leaders must keep themselves better informed on population matters and discuss them frankly among themselves.

Rooting Family Planning in Community Development and in Village Life. People, experience shows, are more likely to be responsive to the need for limiting family size if they see the problem in the context of community needs and interests and feel community peer pressures growing out of those needs and interests. The stronger the community, the greater the probability of community awareness of the need for action in limiting population growth, and the greater the opportunities for promoting peer pressures within the community for reduced fertility. Since population programs, to be successful, must continue for many years, the permanence of villages (as opposed to the continued changes in national governments) is added reason why such programs should be rooted in community life.

Expanded Use of Paramedics. In much of the developing world, the bulk of the population will remain beyond the reach of doctors, clinics, and other formal medical services. Some are suspicious of such services, even if available. Large numbers of health workers or paramedics are needed to provide general, simple health services—including family planning—in communities where they are known and trusted. Such workers, able to provide personal family planning advice to each couple in the village, are far more effective in motivating users than billboards, posters, and media appeals, though these have their place.

Improved Status and Active Involvement of Women. Women are key to the success of population programs, both as childbearers practicing or not practicing family planning and as an influence on national and local population and development issues. Population programs are far more effective in countries or communities where women have been freed from traditional subordination in the family and are able actively to participate in national and community life. This is a crucially important population action area.

Research for Better Means of Contraception. Although there have been notable advances in this area in recent decades, all present contraception methods have drawbacks. In order to provide or arrange effective, safe choices that are acceptable to the masses and used by them, there must be intensified efforts in coordinated contraception research which, in turn, will require expanded efforts in basic biomedical research.

Emphasis on Population Goals in Social and Economic Development. Many developing countries continue to emphasize capital-intensive industrial and agricultural development programs. There is insufficient attention to development strategies that will have greater impact on improving conditions for the masses and thus contribute to fertility decline. Village and urban education programs, small handicraft industries, simple farm tools and machinery, cooperatives, and other measures to increase the productivity and income of the poor are all relevant to population control. Wherever there is economic and social progress, and wherever there is upward mobility, there are almost sure to be falling birth rates.

Age of Marriage. One of the most effective ways of reducing birth rates is through advancing the age of marriage. This can be achieved both through laws and regulations affecting the legal age of marriage as well as through social and cultural processes that result in later ages of marriage, especially for women. There is no question but that Sri Lanka's relatively low fertility rates are related to the fact that the average age of marriage for both women and men is among the highest in the developing world, at 24 and 28, respectively. Delayed marriage is also a major aspect of China's birth control policy.

Organization, Management, and Administration. A number of examples could be cited of developing nations whose governments are committed to population programs but where the latter are proving ineffective, largely due to poor organization and lack of adequate managerial and administrative skills. Optimum organization usually entails the establishment of a top-level interministerial group under the prime minister or president, a group which is in a position to insure that the elements of a successful population program (e.g., family planning, education, health, women's status, etc.) are coordinated and car-

WORLD POPULATION CONFERENCE
Bucharest
August 19–30, 1974

Sponsor: United Nations

Participants and Leadership: Representatives of 137 countries, 19 U.N. organizations and specialized agencies, 4 liberation movements, and observers from 11 intergovernmental organizations and 109 NGO's. Chaired by George Macovescu (Romania). Secretary General of the conference was Antonio Carillo Flores (Mexico).

Principal Outcome: Adoption of the World Population Plan of Action (WPPA).

WPPA Principles and Objectives

- "... to expand and deepen the capacities of countries to deal effectively with their national and subnational population problems ...."
- The sovereign right of governments to set their own population policies should take into account "... universal solidarity ... to improve the quality of life of the peoples of the world."
- "All couples and individuals have the basic human right to decide freely and responsibly the number and spacing of their children and to have the information, education and means to do so ...."
- "... this right [should take] into account the needs of ... living and future children, and ... responsibilities toward the community. ..."
- "Women have the right to complete integration in the development process particularly by means of an equal participation in educational, social, economic, cultural and political life. ..."

WPPA Recommendations

- Governments should integrate population measures and programs into comprehensive social and economic plans and programs.
- Countries which consider their population growth hampers attainment of their goals should consider adopting population policies through a low level of birth and death rates.
- Developed countries are urged to adopt appropriate policies in population, consumption, and investment, bearing in mind the need for fundamental improvement in international equity.
- Highest priority should be given to reduction in mortality and morbidity and increase of life expectancy and programs for this purpose should reach rural areas and underprivileged groups.
- Countries should encourage appropriate education concerning responsible parenthood and make available to persons who so desire advice and means of achieving it.
- Countries wishing to affect fertility levels should give priority to development programs and health and education strategies which have a decisive effect upon demographic trends, including fertility. International cooperation should give priority to assisting such national efforts.
- Countries which consider their birth rates detrimental to their national purposes are invited to set quantitative goals and implement policies to achieve them by 1985.
- Policies and programs should be undertaken to reduce the undesirable consequence of excessively rapid urbanization and to develop opportunities in rural areas and small towns.
- Agreements should be made to regulate the international migration of workers and to assure nondiscriminatory treatment and social services for these workers and their families; also other measures to decrease the brain drain from developing countries.
- Research should be intensified to develop knowledge concerning all aspects of population and family planning.
- Medical, paramedical, traditional health personnel, program administrators, senior government officials, labor, community, and social leaders should be trained in population dynamics and administration.
- International, intergovernmental, and nongovernmental agencies and national governments should increase their assistance in the population field on request.
- The WPPA should be closely coordinated with the international development strategy for the Second U.N. Development Decade, reviewed in depth at 5-year intervals, and modified as appropriate.

ried out in unified fashion by all ministries or departments concerned.

Incentives and Disincentives. Some of the most densely populated countries have applied or are now considering applying a range of incentives or disincentives designed to motivate people to have smaller families. Incentives usually have taken the form of inducements or rewards for those accepting sterilization. Disincentives usually have taken the form of administrative measures which have the effect of penalizing those with families larger than the community desires. Incentives and disincentives have been effectively used, but they have also been abused. Potentially, one of the most effective measures to be taken in this field is community incentives: that is, a system of rewarding villages or neighborhoods which have achieved greatest success in meeting demographic goals set by the government. Such an approach, which is now being launched in parts of Indonesia and is planned by certain other governments, has the greatest chances of success in countries where village structure and community concerns are stable and where family planning services are widely available.

Community incentive programs also have merit in terms of increasing flows of needed assistance to villages in ways that will benefit all the villagers, as well as in terms of stimulating motivation, including peer pressures for lowering birth rates. Although less subject to abuse than individual incentives, community incentives require careful administration to be fair and effective.

Of these nine priority action areas, the crucial one is the first—leadership commitment. If more leaders of countries with serious population problems will address those problems with the urgency, determination, and follow-through their importance warrants, there is hope for a substantial curtailment of fertility in the coming decades, with attainment of population stabilization in the next century at far from desirable, but perhaps tolerable, levels.

U.S. INTERNATIONAL POPULATION POLICIES

U.S. international population policies derive from six convictions.

- Excessive population growth is seriously handicapping economic progress in the developing world.
- The problem can be significantly eased if nations take prompt and effective countermeasures along lines recommended in the World Population Plan of Action, but it is up to each nation to determine its population policies and programs.
- We live in one interdependent world—part developed, part developing—requiring that the problem be approached on a cooperative, worldwide basis with the more affluent nations doing all they can to provide population program assistance to requesting developing nations.
- Population programs are to be seen as an integral part of effective social and economic development programs and carried out in that way.
- The essence of population policy is mutually reinforcing programs to enhance parental desire for small families and to provide family planning information and services.
- The problem is both long-range and immediate—it must be approached urgently but also with awareness of its long-continuing nature.

President Carter's May 23, 1977, message to the U.S. Congress included the following on the world population problem.

> Rapid population growth is a major environmental problem of world dimension. World population increased from three to four billion in the last 15 years, substantially cancelling out expansion in world food production and economic growth of the same period.
>
> Without controlling the growth of population, the prospects for enough food, shelter, and other basic needs for all the world's people are dim. Where existence is already poor and precarious, efforts to obtain the necessities of life often degrade the environment for generations to come.
>
> It is, of course, up to each nation to determine its own policies, but we are prepared to respond promptly and fully to all requests for assistance in population and health care programs. At my direction, the Department of State and the Agency for International Development stand ready to cooperate through international organizations, through private voluntary organizations, or through direct contacts with other governments.

In a message to all U.S. diplomatic missions in early June 1977, Secretary of State Vance said:

> Leaders of developing countries should be encouraged in their efforts to promote sound population programs. Where requested and justified, the new Administration will provide continuing and even expanded support to those programs, along with other donor countries and organizations.
>
> The objective of the United States in this

field is to work closely with others rather than to impose our views. In our efforts we should stress the economic and social gains for the poorest nations that result from reduced population growth, maternal and child health. In all these efforts, we should recognize the basic dignity of the individual and his or her right freely to choose family goals and to have the information and means to do so. These basic rights were specifically acknowledged by the nations of the world at the Bucharest conference in 1974.

The Congress, during 1977, took two significant actions reflecting its concern over the world population problem. The first was to add Section 104(d) to the Foreign Assistance Act, requiring that all assistance provided under the relevant chapter of the act "... be administered so as to give particular attention to the interrelationship between (A) population growth, and (B) development and overall improvement in living standards ... and to the impact of all programs, projects, and activities on population growth."

The second action was the establishment by the House of a Select Committee on Population to study and report on all major aspects of the problem, including on how "... the United States Government can most effectively cooperate with and assist nations and international agencies in addressing successfully, in a noncoercive manner, various national, regional, and global population-related issues."

Meanwhile, commencing in late 1975, the U.S. Government's international population policy has been coordinated by an interagency group comprising representatives of some 18 U.S. Government agencies with interests in this field. The second annual report of this group, prepared in early 1978, provides the latest official statement of U.S. policy on this subject. It is unclassified in order to permit widest possible readership and to allow our government to benefit from the comments of nongovernment readers. For a more detailed discussion of U.S. population assistance programs, a statement by the Director of AID's Office of Population before the House Select Committee on Population on April 25, 1978, may be obtained from that office in Washington, D.C. 20523.

The main task in the population area falls on nations most handicapped by excessive population growth, which include the bulk of the developing world. The United States is prepared to play its full part, in cooperation with other donor nations and organizations, to achieve an urgently needed marked expansion of national population efforts. It also seeks attainment of the corollary objective of a more equitable distribution of world resources, production, and consumption as called for in paragraph 19 of the WPPA.

MANKIND FACES ITS GREATEST CHALLENGE

The world faces the crisis of a massive accretion of people, partly older people living longer but mainly youth in the developing countries with their reproductive years still ahead of them. Population growth rates must be rapidly and drastically reduced if the world is not to become grossly, perhaps disastrously, overpopulated in the coming decades.

It is not just the teeming nations, increasingly locked in poverty, that have cause to see population growth stabilized. All nations concerned with peace, economic betterment, and stability have a stake in the outcome.

Gradually over the last 10–15 years, many governments have awakened to the population problem. Birth rates have been reduced in a significant number of developing countries. The United Nations, its concerned specialized agencies, the World Bank, and the United States and other developed nations have expanded their population assistance efforts. The rate of population growth has declined from about 2% around 1970 to about 1.8–1.9%.

But this is small basis for comfort. Barring nuclear or other catastrophe, humanity, growing geometrically, is likely to number about 6 billion by 2000 and at least 8 billion some decades later. In the absence of more effective national and international action than has thus far been demonstrated, it will reach 11 billion or more before leveling off. For every decade of delay in attainment of a net reproduction rate of 1, the world's ultimate stabilized population will be about 15% (1–2 billion souls) greater.

A diminishing but still significant number of governments remain opposed to or ambivalent about population programs. They cite alleged need for more people for their vacant lands and for their labor forces, industries, and domestic markets. In a few resource-rich, sparsely populated countries these arguments may be valid. But for the bulk of the developing world, such beliefs, and the concept that "development will solve

the problem—look at Europe," are myths, though fading myths.

Another myth is that science will take care of the problem. Research and development are proceeding worldwide to expand availability of food, energy, water, minerals, and other necessities. No one knows science's potential, in a finite world of already depleted resources, to make life tolerable for tomorrow's greater numbers. Hopefully, it will be significant. But it would be foolhardy to assume that technological advances will be forthcoming, and will be made sufficiently available in the capital-poor developing world, to enable many new billions of people to sustain themselves when the world is now unable adequately to feed, house, and clothe a third of its present 4.2 billion.

Few would dispute the fact that coping with population growth is the most complex and intractable of problems. The "explosion" is silent and often far off, easily crowded from the attention of busy national leaders. And though the role of such leaders in population control is critical, the problem is ultimately one that must be resolved by the private decisions of hundreds of millions of individuals of widely varying backgrounds and propensities. Many of these individuals have what to them are convincing, practical reasons for having many children, such as a need for many hands to help tend the farm and fetch firewood and water, a need for sons to provide security in old age, and ingrained religious and social beliefs. Such reasoning and attitudes can be changed only over time, and although viewpoints are changing and progress is in the right direction, time is short.

Attempts to gloss over population problems will only aggravate them. The world is already overpopulated—in the developed countries as well as the developing—and it is going to become much more so. We have been far too slow in facing up to the issue, only beginning to take action when a horrendous spectacle of overcrowding, impoverishment, and conflict became inescapable.

We can no longer—except through widespread famine or other disaster—avoid a world of 6, and then 8, billion. But we can still avoid one of 11 billion or more by quickly raising our response to a new level of determined, coordinated, and effective action. Hundreds of millions of couples in the cities, towns, villages, and shantytowns of the world who still believe it in their interest of have four, five, six, or more children must be brought to change that assessment and must be provided the means to do so. Carefully designed, meaningful government incentives and disincentives must almost certainly play an important part in this effort.

Whether world population stabilizes at 8, 11, or more billions, one thing seems clear: There will be mounting pressure on resources and environment everywhere. Awareness of this fact has been slow in coming, but there is now widening recognition that lifestyles are going to have to change. Fortunately, many religions and cultures already reflect appreciation of the intangible and spiritual over the material. But anguishing adjustments remain in store.

The world population explosion impacts on almost all global issues—food, energy, environment, development, North-South disparities, and, most fundamentally of all, improving conditions of life for countless millions of people. Whether the world community can act adequately and in time to stabilize population levels will critically affect the future of mankind.

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[1] Only migrants whose stay in the host country is more than 1 year are included in this figure, comprising both permanent immigrants and temporary (labor) migrants.

[2] For material concerning the World Population Conference, see BULLETIN of Sept. 30, 1974, p. 429.

[3] Based on mortality data for Denmark, England and Wales, France, the Netherlands, Norway, Sweden, and the State of Massachusetts.

[4] In the U.S. and Canada, birth rates in the 18th and most of the 19th centuries were much higher.

[5] The figures in chart 13 are in year-by-year current dollars. In real terms, taking account of inflation, international assistance to population programs declined between 1972 and 1977.

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