



THE POPULATION PROBLEM:  
TIME BOMB OR MYTH

by

Robert S. McNamara

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## I. INTRODUCTION<sup>1</sup>

The thesis which I present in this article, and which I hope will be debated by the representatives of the 160 countries scheduled to attend the World Population Conference in Mexico City in August 1984, is this:

- Population growth rates in most developing countries fell significantly in the 1970's. This has led many to believe that the world in general, and most countries in particular, no longer face serious population problems and that efforts to deal with such problems can therefore be relaxed.
- Such a view is totally in error. Unless action is taken to accelerate the reductions in the rates of growth, the population of the world (now 4.7 billion) will not stabilize below 11 billion, and certain regions and countries will grow far beyond the limits consistent with political stability and acceptable social and economic conditions. Africa, for example, now with less than half billion people, will expand six fold to almost 3 billion; India will have a larger population than China; Bangladesh, already one of the most densely populated areas of the world, will grow from less than one hundred million to over 400 million; Mexico from 69 million to 200 million; and El Salvador from 5 million to 16 million.
- Rates of population growth of this magnitude are so far out of balance with rates of social and economic advance that they will impose heavy penalties on both individual nations and individual families. Nations facing political instability of the kind already experienced in Kenya, Nigeria, and El Salvador—instability in part a result of high population growth rates—will more and more be tempted to impose coercive measures of fertility regulation. Individual families will move to higher levels of abortion, particularly of female fetuses, and higher rates of female infanticide.
- Developed and developing countries have a common interest in avoiding the consequences of current population trends. There is much they can do to change them, both through action to encourage couples to desire smaller families, and by moves to increase the knowledge and availability of contraceptive practices to families giving birth to more children than desired.

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<sup>1</sup> I am indebted to the staff of the Population Council, and to members of the World Bank's Population Study Task Force for assisting me in collecting material for this article. They, of course, bear no responsibility for the judgements and conclusions which I have drawn from the data.

- Unless such action is initiated, the penalties to the poor of the world, individuals and nations alike, will be enormous. And the ripple effects—political, economic, and moral—will inevitably extend to the rich as well.

In developing this thesis I will start by examining recent and prospective population growth trends. This will be followed by an assessment of the consequences of rapid population growth for families and societies, and for the world community as a whole. I will conclude by discussing policies that nations can pursue to deal effectively with rapid population growth, and examine the ways in which international assistance and cooperation can contribute to the success of those policies.

## II. WORLD POPULATION GROWTH

### *Recent Trends*

The long stretch of early human history was characterized by a near-balance of births and deaths. This was not a matter of choice: it was imposed on mankind by precarious existence. High mortality mandated high fertility to assure survival. With the advent of agriculture—about 8000 BC, when the world's population approximated 8 million—the food supply became more dependable and periods when births exceeded deaths by at least a modest margin became more frequent. Still, slowly expanding populations were frequently decimated by recurring crises and average rates of growth remained very low. At the dawn of the modern era—by about the mid 18th century—the world's population had reached 800 million.

Increasing mastery over nature, associated in part with the Industrial Revolution, then led to a spectacular acceleration of the growth in human numbers. Mortality was gradually reduced and the gap between global birth rates and death rates widened. The differences between these two rates, the rate of population growth, increased steadily over the course of the next 200 years. In this period the Earth's population tripled, reaching 2.5 billion by the middle of the 20th century—and grew by an additional 80 percent, adding 2 billion more, in the next 30 years.

Whereas it had taken mankind more than a million years to reach a population of one billion, the second billion required only 120 years; the third billion 32 years; and the fourth billion 15 years.

These global totals obscure wide differences between what are known today as the “developed” countries—the industrial nations of Japan, Europe, and North America—and the “developing countries” of Africa, Asia, and Latin America. During the period from 1750 to 1850, the two groups of countries grew at similar average annual rates: .6 percent for the developed and .4 percent for the developing. From 1850 to 1950, the rates were .9 percent and

.6 percent. But between 1950 and 1970, both rates changed dramatically becoming respectively 1.1 percent and 2.2 percent. Those in the developing countries by 1970 were not only twice as great as in the developed nations, but exceeded by a full percentage point the most rapid growth ever experienced by them.

The experience of the industrial nations, during the last 200 years, reveals a most important lesson of modern demographic history. Higher rates of survival need not lead to ever-expanding populations, hence to the dire consequences envisaged by Malthus: lowered living standards and eventual re-establishment of high death rates. Humankind can also control its fertility. Low rates of growth can be the outcome of an equilibrium achieved through low death rates and low birth rates.

In many of these more economically advanced societies, even before the end of the last century, a spontaneous decline of fertility set in. Millions of individual couples decided to opt for smaller families, and we have since seen that the demographic transition can run its full course to population stability with low mortality. We also know that the behavioral response to the spread of industrialization and urbanization underlying that transition are not limited to Western populations but are much the same the world over.

Yet contemporary patterns of demographic change also demonstrate that the response to "modernization" is not automatic and may occur so slowly as to prevent an orderly approach to the end point of population stability. The process of transition initially generates greater population growth, with death rates falling faster than birth rates. The magnitude of that growth can affect the speed and characteristics of the transition itself. If population growth is very rapid, the socioeconomic transformations that could be counted on eventually to lower birth rates may be retarded. Thus in some cases the Malthusian scenario could, after all, prove to be relevant.

More typically, as I will argue in the next section, the scale of the population growth generated by the transition may be such as to postpone or permanently foreclose desirable patterns of development that could have been attainable with less rapid demographic expansion.

Population trends that have become clearly visible in the second half of this century exhibit characteristics without historical precedent. The global increase in numbers during the past three decades was greater than the world's total population at the beginning of the century. Over 80 percent of this increase took place in the developing countries. The increase in the low-income countries alone—countries with per capita Gross National Product (GNP) of less than US \$410—exceeded 1 billion.

The reasons for such explosive growth are well known and do not need repeating here. I would call attention, however, to two facts. First, the speed at which death rates declined in the developing countries following the end of World War II was much faster than was the case in the equivalent phase

of earlier demographic transitions. The massive application of imported medical and public health technology and improvement in food production largely explain this success. And second, in most developing countries the pre-transition levels of birth rates were higher than was typically the case in earlier Western experience. The birth rate of the developing world as a whole in the early 1950s exceeded 45 per 1000 population. This compares with birth rates of 30 to 35 per 1000 in Western Europe in the 19th century, prior to the onset of the secular decline of fertility.

Thus by the early 1950s many developing countries were experiencing annual growth rates of over 2 percent, some even 3 percent. Between 1955 and 1975, for example, the average annual rate of population growth in the Central American republics was 3.2 percent. Such a rate, if sustained for a century, would increase the population more than twenty-four fold. The growth rate for the developing world as a whole in 1965-69 was 2.6 percent, a rate that would double the population in less than 27 years or increase it more than thirteen fold in a century.

As in earlier demographic transitions, the beginning of an adjustment process eventually became visible. In the 1960s, in the developing world, the average number of children a woman would bear during her lifetime at prevailing levels of fertility was nearly 6.5. By the late 1970s, that figure had declined by almost 30 percent, to 4.6 children. Birth rate trends between 1950 and 1980, summarized in the table below, reflect that decline. Moreover, the decline, slow in the 1960s, accelerated in the 1970s. Estimated figures for 1980-85, shown in the last column of the table, indicate further decline, although at a more moderate pace.

**Table I**  
**Crude Birth Rates by Region: 1950-1985**  
**(annual number of births per 1000 population)**

<i>Region</i>	<i>1950-55</i>	<i>1960-65</i>	<i>1970-75</i>	<i>1975-80</i>	<i>1980-85</i>
Africa	48.1	48.3	47.0	46.9	46.4
Latin America	42.5	41.0	35.4	33.3	31.8
East Asia*	45.0	37.3	33.9	22.3	18.8
South Asia	45.6	45.8	40.6	37.7	34.9
Developing Countries	45.4	42.8	38.7	33.5	31.2
Developed Countries	22.7	20.3	17.0	15.9	15.5
Total World	38.0	35.9	32.7	28.9	27.3

\*Excluding Japan

Source: United Nations 1982 assessment.

During the 1950s and 1960s with the decline of death rates on the whole faster than that of birth rates, rates of population growth continued to increase. But beginning with the early 1970s a slow deceleration of population growth has become evident. For the world as a whole, measured over five-year periods, the growth rate peaked at 2.1 percent in the second half of the 1960s. As Table II shows, the estimated annual rate for the early 1980s is 1.67 percent.

**Table II**  
**Annual Rates of Population Growth by Regions: 1950-1985**  
**(percent)**

<i>Region</i>	<i>1950-55</i>	<i>1960-65</i>	<i>1970-75</i>	<i>1975-80</i>	<i>1980-85</i>
Africa	2.11	2.44	2.74	3.00	3.01
Latin America	2.72	2.80	2.51	2.37	2.30
East Asia*	2.08	1.81	2.36	1.47	1.20
South Asia	2.00	2.51	2.44	2.30	2.20
Developing Countries	2.11	2.30	2.46	2.14	2.02
Developed Countries	1.28	1.19	0.89	0.74	0.64
Total World	1.84	1.96	2.03	1.77	1.67

\*Excluding Japan

Source: United Nations 1982 assessment.

Thus an historic turn-around has occurred in world population growth: after centuries of steady acceleration, overall growth rates during the last decade and a half have turned downward.

This decline in the rate of population growth has led many observers to believe that the world in general, and most individual countries as well, no longer face serious population problems and, therefore, that efforts to deal with such problems can be relaxed. Editorial writers and commentators in the mass media have been quick to take up this theme, announcing the end of the population explosion or declaring rapid population growth to be "another non-crisis."

But this assessment is simply wrong.

The fertility change which has occurred during the last decade or two has been very uneven. In particular the statistical decline for the developing countries as a whole, and indeed for the world, is heavily skewed by the special experience of China. In many other parts of the developing world, including much of Africa, a large part of South Asia, and some countries of Latin

America, no measurable or significant drop in fertility has occurred. The combined current population size of countries and regions that have experienced no appreciable reduction of fertility exceeds 1.1 billion. And as we shall see in the next section, in many of the countries where growth rates have slowed the situation remains perilous.

### *The Outlook for the Future*

What are population growth prospects for the next few decades and for the longer term?

Uncertainties affecting the future argue for some caution in answering. Demographic processes have a built-in momentum that permits relatively accurate forecasts for 15 to 20 years ahead. Beyond that time span, the possibility of error becomes much greater. The question, however, remains highly appropriate, and is answerable with a fair degree of accuracy. We know, for example, that a large majority of the children born in the 1980s will be still alive past the midpoint of the next century.

To answer the question for the longer term, we can spell out plausible assumptions as to the future course of fertility and mortality, and calculate the implications of these assumptions for future population size and other demographic characteristics. Those who wish to challenge the orders of magnitude resulting from such calculations can best do so by challenging the underlying assumptions, and by proposing and defending alternative assumptions that they consider more plausible.

The results of such a projection exercise covering the time span 1980 to 2100, undertaken by the World Bank, are presented in Table III below.

**Table III**  
**Population Projections: 1980 to 2100**  
**(population in millions)**

<i>Selected Countries</i>	<i>1950</i>	<i>1980</i>	<i>2000</i>	<i>2025</i>	<i>2050</i>	<i>2100</i>	<i>Total Fertility Rate-1982</i>	<i>Year in which NRR=1</i>
China	603	980	1,196	1,408	1,450	1,462	2.3	2000
India	362	687	994	1,309	1,513	1,632	4.8	2010
Indonesia	77	146	212	283	330	356	4.3	2010
Brazil	53	121	181	243	279	299	3.9	2010
Bangladesh	44	89	157	266	357	435	6.3	2035
Nigeria	41	85	169	329	471	594	6.9	2035
Pakistan	37	82	140	229	302	361	5.8	2035
Mexico	27	69	109	154	182	196	4.6	2010
Egypt	20	42	63	86	102	111	4.6	2015
Kenya	6	17	40	83	120	149	8.0	2030

**Table III (Continued)**  
**Population Projections: 1980 to 2100**  
**(population in millions)**

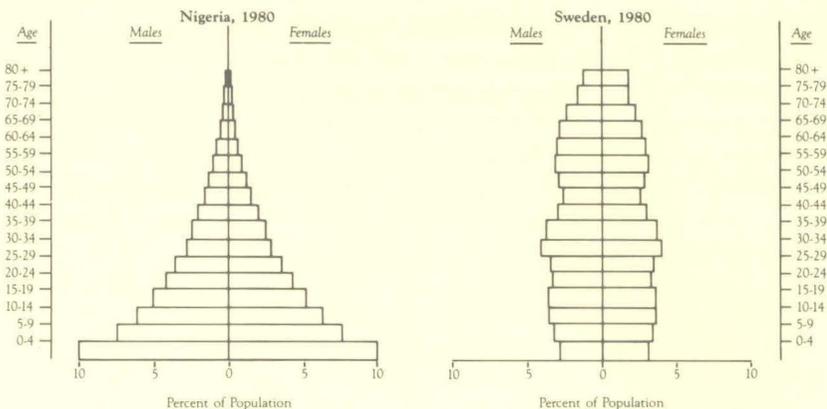
<i>Selected Countries</i>	<u>1950</u>	<u>1980</u>	<u>2000</u>	<u>2025</u>	<u>2050</u>	<u>2100</u>	<i>Total Fertility Rate-1982</i>	<i>Year in which NRR=1</i>
<i>Regions</i>								
<i>Developing Countries:</i>								
Africa	223	479	903	1,646	2,297	2,802	6.4	2050
East Asia	587	1,061	1,312	1,542	1,573	1,596	2.3	2020
South Asia	695	1,387	2,164	3,125	3,810	4,172	4.9	2045
Latin America	<u>165</u>	<u>356</u>	<u>535</u>	<u>732</u>	<u>856</u>	<u>921</u>	4.1	2035
Sub-total <sup>a</sup>	1,670	3,298	4,884	6,941	8,400	9,463	4.2	2050
<i>Developed</i>								
Countries	<u>834</u>	<u>1,137</u>	<u>1,263</u>	<u>1,357</u>	<u>1,380</u>	<u>1,407</u>	1.9	2005
Total World	<u>2,504</u>	<u>4,435</u>	<u>6,147</u>	<u>8,298</u>	<u>9,780</u>	<u>10,870</u>	3.6	

<sup>a</sup>Regional figures do not add to "Developing Countries Sub-Total" due to rounding. Source: 1950: UN Estimates; Other Years: 1984 World Bank estimates and projections.

The projections are based on the estimated population size in 1980 and its sex and age distribution. They incorporate the assumption that mortality improvements in the future will trace the historical experience of the more advanced countries in moving toward higher levels of life expectancy.

The nature of the more crucial fertility assumptions is summarized in the last two columns of the table. Starting with the estimated level of fertility in 1982 (expressed in terms of the Total Fertility Rate, that is, the number of children an average woman would have during her lifetime), the projections stipulate a decline to replacement level fertility (Net Reproduction Rate = 1) by a date that is specified for each country separately. Replacement level fertility means a level of childbearing in which each couple on average replaces itself in the next generation. If sustained over a substantial period, this would result in zero population growth.

But when replacement level fertility is reached in a society, it does not mean that the population immediately ceases to grow. It may continue increasing for decades, depending on the society's age structure. Compare, for example, the current age distribution in Nigeria (which is typical of that in most developing countries) and Sweden.



Source: Carl HAUB and Lindsey GRANT of "The Environmental Fund"

When replacement level fertility is first reached in a country with an age distribution similar to that of Nigeria, the population will still possess a strong growth momentum. It will continue to grow for decades until the very large numbers of females at the bottom of the age pyramid have passed through their reproductive years. Such a nation will not reach a stable population level until 50 or 70 years after it has achieved replacement level fertility. During that period its population will have increased by an additional 50 or 60 percent. The assumptions concerning the future tempo of fertility decline in the developing countries, incorporated in the projections, reflect the judgment—or the hope—that recent declines will not only continue at a rapid pace in the near future but will do so until replacement fertility is achieved. Where fertility is still high—for example in Africa and parts of South Asia—it is assumed that it will start to decline well before the century's end and then the downward trend will be precipitous and sustained.

These are, in fact, heroic assumptions. They require that the move from high fertility to replacement level fertility—which took about a century and a half in the United States—be completed within a drastically shorter time span in today's developing countries. The assumptions envisage no possibility of temporary reversals or pauses on the downward course of fertility. They allow for no "baby booms" such as the West experienced, once replacement fertility has been attained. Yet the populations that must conform to these demanding stipulations are largely poor and rural. They are populations where security in old age is still derived primarily from the support of one's children. Many are populations with religious and cultural values that place a high premium on fertility.

But let us take the assumptions at face value, despite their implicit optimistic bias. The projections in Table III are sobering. For the reasons I referred to,

rates of growth in the developing countries, although declining, will remain high for decades to come.

India will nearly double in the next 45 years, becoming one-third larger than China is today. Bangladesh by the same time will have tripled and will have 266 million people jammed into an area, alternately swept by flood and drought, the size of the state of Wisconsin. Mexico, which today has the most rapidly growing labor force of any large country in the world, will more than double in size. And Kenya, in which 17 million people are already putting heavy pressure on the limited supply of arable land, will have quintupled.

The total population of the developing countries as a group, 3.3 billion in 1980, will rise to nearly 7 billion by 2025, and to 8.4 billion by 2050. Of this total, Africa's population will be 2.3 billion, representing a ten-fold increase during the course of the preceding 100 years. A century from now the world's population will total about 11 billion. So much, then, for the supposed end of the population explosion.

### III. THE CONSEQUENCES OF THE PROJECTED GROWTH FOR FAMILIES AND SOCIETIES

Now what do these projections mean for human society over the coming decades—say, over the lifetime of children born in the 1980s? To what extent will this expansion in numbers absorb the resources that could have improved the quality of life in impoverished nations: What human values are likely to be curtailed in order to sustain that expansion? And how will international relations, both political and economic, be affected in a world with two or three times its present population? Answers to such questions must, of course, involve speculation, but enough is known today about demographic effects to provide some general outlines.

One can begin by grouping the consequences of population growth into two broad categories. First, are the effects that bear on the pace of national economic development and on political stability in the developing countries. These lead to attenuation of human rights and for many in these societies, especially for the rural and urban poor, barely perceptible advancement in material terms. Such effects, seriously detrimental on both counts, loom increasingly large to the governments of most poor countries. And second are the effects on the international system: principally the perpetuation of the gap between rich and poor countries and all that implies for international economic and political relationships.<sup>2</sup>

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<sup>2</sup> Supporting data for this analysis are drawn for the most part from World Bank materials.

## *Effects on National Economic Growth and Political Stability*

At the national level, rapid population growth translates into a steadily worsening employment future; massive city growth; pressure on food supplies; degradation of the environment; an increase in the number of the "absolute poor"; a stimulus to authoritarian government; coercive national policies restricting the freedom of the individual; and brutal family practices. I will discuss each of these in turn.

Over the 20 years from 1960 to 1980, the working-age population (15-64 years) of the world's developing countries increased by 730 million, to reach a total size of 1,860 million. Over the 20 years, 1980-2000, this total will increase by 1,150 million. These are people already born. Their numbers up to the end of this century are not subject to the vagaries of forecasting trends in reproductive behavior. How will they secure economic support?

One way or another, most of them will find at least a foothold in the economy. Unemployment is an option few can afford in poor countries. It is equally apparent that even with optimistic assumptions of renewed vigor in the world economy, modern-sector jobs with high productivity will not be available in remotely sufficient numbers. Indeed the proportion of the labor force in such jobs, a sensitive indicator of development success, may well decline in some countries, reinforcing the dualistic nature of their economies.

Agriculture too cannot indefinitely expand its employment. The ratio between land area and population is already at very low levels. In India between 1953 and 1971, a 66 percent increase in the number of rural households was accompanied by only a 2 percent increase in the cultivated area. The number of holdings of one acre or less more than doubled to 35 million, and the average size fell to .14 acres. Land subdivision eventually yields plots too small for subsistence. The trend, therefore, over recent years has been for agricultural employment to decline in relative terms even in the poorest and economically most stagnant countries.

Under optimal conditions labor-intensive manufacturing would take up the slack, producing both for the domestic market and for export. But the reasons that in practice make for much slower than optimal employment growth in manufacturing are all too familiar.

What labor absorption possibilities are left? The short answer is the service sector. Once regarded as a manifestation of post-industrial affluence, the service economy is now increasingly evident even among the poorest nations of the Third World. Government itself, on both its civil and military sides, is a major employer: in Kenya, in the 1972-80 period, for example, the public sector accounted for two-thirds of the growth of wage employment. Small-scale trade and unorganized services of all kinds serve as a reservoir for the underemployed, yielding marginal private subsistence, but in many situations effectively zero productivity.

Much of this low-grade employment growth goes into urban areas, swelling cities far beyond their real economic base.

Up until the present decade the absolute increases of population in the developing countries have been greater in rural areas: in the decade 1970-80, for example, 340 million persons were added to rural areas, 321 million to urban areas. In the future, the balance is projected to shift. In 1980-90, UN forecasts show 320 million added in rural areas, 481 million in urban; in 1990-2000, the corresponding figures are 219 million and 662 million.<sup>3</sup>

Thus, despite the fact that the rural population of the developing countries will continue to grow well into the twenty-first century, the bulk of future population increases will be channelled into the cities. For several decades these cities have been growing at rates of 4 or 5 percent per year, rates that double their sizes in less than 20 years. In Africa and South Asia this growth is expected to continue unabated beyond the year 2000. In Latin America some slackening of pace may occur, as a result of both urban fertility decline and the drying up of potential rural-urban migrants in what are already predominantly urban societies. Only in East Asia, among developing regions, do aggregate figures suggest that urban growth has been comparatively restrained, but this is a result of China's largely successful efforts to regulate internal movement, and does not apply to other East Asian countries.

Over the last quarter of this century the number of Third World cities with populations above 10 million is projected to increase from 3 to 21. Huge urban agglomerations are, of course, known in the West: the New York-northeastern New Jersey metropolitan area, or Tokyo-Yokohama, both with populations close to 20 million, or Los Angeles and London. These are now, however, growing slowly if at all. They have built up housing stocks, physical infrastructure, and public amenities over many decades of heavy investment—yet their maintenance problems are acute. The giant Third World cities—Mexico City (31 million by 2000), San Paulo (26 million), Shanghai (23 million), Bombay and Jakarta (each 17 million), and so on—will have doubled or more in the last quarter of this century. These sizes are such that any economies of location are dwarfed by costs of congestion. The rapid population growth that has produced them will have far outpaced the growth of human and physical infrastructure needed for even moderately efficient economic life and orderly political and social relationships, let alone amenity for their residents.

These massive urban populations, however impoverished, must be fed. But food production in many parts of the world has not yet kept up with population growth.

It is not technically difficult to increase food production at rates sufficient to maintain per capita consumption, or even to keep up with rising demand as consumer incomes edge upwards. Even in extreme cases such as Bangladesh

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<sup>3</sup> Patterns of Urban and Rural Population Growth, New York: United Nations, 1980.

or the countries of the African Sahel, agronomists can identify ways to raise crop yields. Yet postwar experience has been one of recurrent food crises.

World Bank estimates of trends in per capita food output in the 1960s and 1970s are as follows (in percent per year):

	<u>1960-70</u>	<u>1970-80</u>
Low-income countries	0.2	-0.3
Middle-income countries	0.7	0.9
All developing countries	0.4	0.4

Regionally, the worst performers were Africa where the 1970s saw per capita output decline by 1.1. percent annually, and South Asia, where there was zero growth. For the Low-income countries as a whole—with a population of 2.25 billion—over a twenty year period production failed to keep up with population.<sup>4</sup>

Part of the reason for this poor performance lies in the social organization of agriculture: regressive tenancy arrangements; inadequate credit, storage, and marketing systems; inordinate government regulations; and so on. In addition, however, and underlying many of these constraints, there is the basic conflict between pricing policies designed to enhance agricultural productivity and policies designed to cater to the immediately pressing demands of urban consumers. In this conflict, blunted farm-level incentives are the typical outcome.

Agronomy tends to take for granted the stability of ecological systems. Yet good agricultural practices are very evidently threatened by the inexorable build-up of rural populations. As agricultural land is expanded to its geographical limits, but still at bare subsistence levels of production, ecological vulnerabilities are exposed.

In particular, high rates of population growth have been a major factor increasing the demand for firewood, which has led to widespread deforestation in developing countries. In these countries, 1.3 billion people who depend on firewood for fuel are cutting firewood faster than it is being replaced, with resultant damage to flood control, arable lands, power production, and household economics. Silting up of dams, caused by clearing of waterlands, is reducing their useful life by 50 percent. In Tanzania, firewood has become so scarce that each household spends 250-300 working days per year simply gathering its wood supply. In China, 70 million of 170 million households—300 million people—suffer serious fuel shortages for up to 6 months a year. In much of West Africa, families that traditionally cooked two meals a day can now cook only one a day or one every other day.

<sup>4</sup> World Development Report, Washington, D.C.: World Bank, 1982.

During my tenure as President of the World Bank I coined the term "absolute poverty" to refer to a condition of life so characterized by malnutrition, illiteracy, and disease as to be beneath any reasonable definition of human decency. It is a term that can be applied across countries, irrespective of differences in country-specific definition of the poverty level. In 1980 the Bank estimated that 780 million persons in the developing countries (excluding China) lived in absolute poverty. As a proportion of the total population this was estimated to have decreased over the preceding two decades (except in sub-Saharan Africa), but the absolute numbers had increased.

High population growth rates severely limit the progress that can be made in reducing the number of absolute poor. In sub-Saharan Africa, expected population growth would increase the absolute poor by two-thirds between now and 2000. But with a more rapid fertility decline the increase could be held to 20 percent.

A major concern raised by poverty of this magnitude lies in the possibility of physical and intellectual impairment of children. Parental investments of both money and time are critical in the early years of development if a child is to reach its full potential. The distribution of family size by family income in many countries is such that the great majority of children are born into poor families, and hence are disadvantaged in these respects. In Colombia and Malaysia, for example, the number of children in the poorest 20 percent of the households was 3 times as great as in the richest 20 percent.

Surveys have shown that millions of the children in these low-income families receive insufficient protein and calories to permit optimal development of their brains. Additional millions die each year, before the age of five, from debilitating disease directly attributable to nutritional deficiencies. The capacity to learn, of tens of millions of those who do live, is reduced for the same reason.

The penalizing effects at the family level are compounded by weak educational systems. High-fertility countries, such as Kenya, face a doubling or tripling of their school age population by the end of the century. This is bound to lead to a reduction in the quality of education. In Latin America, when the school age population expanded dramatically between 1970 and 1978, public spending per primary school student fell by 45 percent in real terms. And the resources available for education in most developing countries are already low: Bolivia, El Salvador, and the Ivory Coast, for example, spend less than \$2 a year on classroom materials for each primary school child compared to \$300 per student in Scandinavian countries. A culture of poverty is being transmitted down the generations, sacrificing human resources and impeding social mobility.

Rapid population growth, in sum, translates into rising numbers of labor force entrants, fast expanding urban populations, pressure on food supplies, ecological degradation, and increasing numbers of "absolute poor." All are rightly viewed by governments as threats to social stability and orderly change.

Even under vigorous economic growth, managing this demographic expansion is difficult; with a faltering economy it is all but impossible. Perceived political threats, actual or anticipated, elicit a strengthening of administrative control over the population. I am not asserting that population growth is the dominant force behind the trend towards authoritarian government in the contemporary world, but I do see it as a major contributor.

This contribution is especially evident where population growth is associated with ethnic or communal differences. Many communal tensions are rooted in expectations of adjustment in political representation as demographic change occurs. The politicization of census-taking in Nigeria is a relatively benign example. The recent killings of Bengali migrants in Assam shows the problem in its extreme form. In such cases an authoritarian response by government is to be expected.

In addition to the administrative consequences of rapid population growth, the absolute size of a population also has administrative implications. Today's most populous developing countries are ten times or more the size of the larger of the now developed countries at the beginning of their industrialization. France had a population of some 30 million around 1800; Japan was about the same size in 1850; Britain in 1800 had fewer than 10 million people; the United States in 1850 about 24 million. The legacy of administrative technology left by such countries may have little to offer even medium-size developing countries in the contemporary world. Simon Kuznets in his 1971 Nobel Prize acceptance speech pointed out that Third World countries face "a long period of experimentation and struggle toward a viable political framework," and that economic advance for them was contingent not only on adapting to their own needs the available stock of material technology but also, and even more, on "innovations in political and social structure."<sup>5</sup> The political formats emerging from contemporary efforts to mobilize and govern vast national populations have long-range implications not only for the course of economic growth but also for the kinds of societies that result.

Authoritarian responses can be addressed to the causes of rapid population growth—continued high fertility—as well as to its consequences. China is the preeminent example here. Since 1970 it has devoted a part of its considerable administrative capacities to promoting a drastic decline in family size. It is currently endeavoring to institute one-child families. I shall say more about the costs of these policies below. For the present I would simply note that they represent the outcome of a deliberate assessment of the urgency of dealing with rapid population growth. In effect China's leaders have concluded that the political difficulties of undertaking those actions were outweighed by the anticipated adverse consequences of delay or by adoption of more gradualist voluntary measures.

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<sup>5</sup>Simon Kuznets, "Modern Economic Growth: Findings and Reflections," *American Economic Review* Vol 63 (1973), p. 256-7.

There is accumulating evidence that rapid population growth is leading toward more all-pervasive regulation of social life in many societies. Curtailed freedom of movement<sup>6</sup> within countries is one such constraint that may well be more widely practiced in the future, as governments gradually acquire the means to impose it. And restraints on reproductive freedom may similarly become more common in cases where governments through incapacity or unawareness have allowed demographic pressures to build to extremes. I am not speaking here of government measures aimed at creating greater social responsibility in the reproductive decisions made by families, but of coercive government intrusions into the decisions themselves—forced sterilization for example.

These will almost certainly lead to or be accompanied by increasingly harsh actions by families themselves: higher rates of abortion following the birth of the third or fourth child; use of pregnancy tests to determine the sex of an unborn child, followed by abortion of female fetuses; and rising rates of female infanticide. In November 1982, for example, the *China Youth News*, alluding to reports that under pressure from the birth-control program parents were once again killing their girl babies, stated: "Some of these unfortunate children are left by the roadside or abandoned on street corners while others are even drowned—If this phenomenon is not stopped quickly, then in twenty years a serious social problem may arise; namely that a large number of men will not be able to find wives." The paper went on to note that in certain rural areas three out of every five surviving babies were male.<sup>7</sup> If such reports are correct they would indicate that one-third of the female infants had been killed.

With a continuation of present growth trends, I expect such coercive measures by governments and such brutal actions by families to be common by the end of the century.

### *Effects on the International System*

The greater part of the adverse consequences of rapid population growth are the effects I have described, those felt by individuals, families, and national governments. These effects, of course, may be reason enough for concern by the broader international community, simply on humanitarian grounds. But the international order is also affected in more tangible ways. The continuing shift in the world's demographic center of gravity toward developing countries, and toward the poorer among them, has important implications for economic relations between states. Political instability within nations not infrequently spills over into the wider international arena. Just as certain desirable

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<sup>6</sup>China has employed direct mobility controls, restricting movement from rural to urban areas, since 1950.

<sup>7</sup>Orville Schell "A Reporter at Large" *The New Yorker*, January 23, 1984, pp. 81-82.

development options that once were open to particular countries are ruled out as population numbers mount, so a similar narrowing of possibilities may confront the international system.

At the level of the international economy, differential demographic growth contributes significantly to maintaining and even widening the income gap between rich and poor countries. Between 1955 and 1980, for example, per capita income in the US, in constant 1980 dollars, grew from \$7,000 to \$11,500. In the same period in India, it grew from \$170 to \$260. What had been a gap of \$6830 in 1955 almost doubled in a quarter century to \$11,240 in 1980. In 1980 the developed countries, with 25 percent of the world's people, produced 77 percent of the world's output. Eighteen percent of the output was earned by the 28 percent of the people living in the middle-income developing countries (Brazil, Turkey, etc.). And only 5 percent of the world's output was shared by the 47 percent of the people living in the low-income countries (India, China, Sub-Saharan Africa, etc.).

To maintain income, capital per person must be maintained; a lesser rate of population growth releases resources for increasing capital per person. Here again, the contrasts between developed and developing countries are large. If all investment in Bangladesh, during 1980, had been allocated to new workers, each person would have had less than \$1700 invested on his behalf. The comparable figure for the US was \$190,000.

The prospective growth patterns I have described make virtually certain that the existing economic differentials will continue well into the next century.

Contrasting growth trends in the population of labor-force age accentuate the differences in employment opportunities and in the relative prices of the factors of production between developing and developed countries. During the rest of this century, the population in the critical young-adult age group (20-40 years) in the developing countries will be expanding at the rate of 2.6 percent per year, while the corresponding figure in the developed world will be one-tenth of that rate. The contrasts in absolute numbers are even more telling. Between 1980 and 2000, the developing countries will see the number of young adults increase by more than 630 million; the developed countries, by merely 20 million. The corresponding figures during the preceding two decades were 350 and 60 million.

These demographic trends in developing countries will exert a powerful force toward keeping real wages down. If political stability is maintained, they will tend to keep the labor force docile and pliable. In countries that succeed in combining such conditions with effective educational and health systems, the resultant abundant supply of labor will constitute a formidable asset in competing with the industrialized countries in international markets for mass-produced goods. Under conditions of relatively free trade and international mobility of capital and entrepreneurship, industry would tend to shift production to low-cost areas. The result could be massive and rapid structural

change in the world economy through the relocation of entire branches of industry from the developed to the developing countries, with far-reaching employment consequences.

The developed countries obviously would not permit such an outcome, however compelling the global economic logic that supports it. Instead it is likely that the principles of free trade and capital mobility, principles which have served the world economy well in the postwar years, would increasingly be called into question.

I discussed earlier the strains put on national development efforts by rapid population growth. Amplified by the rising expectations that result from increased exposure to the outside world, dissatisfaction of significant segments of the population with their status is now growing in many countries. The weakening and eventual breakdown of social institutions that have accommodated poverty, and mediated between conflicting interests in the traditional society, lead to sharpened class conflicts and regional antagonisms. The political turbulence that results is exacerbated by the demands on government made by the steadily growing numbers of those seeking access to the modern economy. Not infrequently this turbulence spills over into the international arena.

In any proper accounting of the forces making for international strife in the contemporary world there are always interwoven layers of causality: domestic political forces, economic interests, the intrusion of Great Power rivalries, and so on. Changing demographic configurations must similarly be factored in here. The current conflict in Central America is a prime example in which demographic pressures have played such a role—one explicitly recognized, for example, in the Kissinger Commission's report.

One highly visible international outcome of political instability is migration. I do not refer here to the international movement of labor or of permanent settlers, regulated by governments. Rather, I mean the large but sporadic refugee movements that have punctuated modern history, and that may well occur on an even larger scale in the future. Sheer numbers here overwhelm national borders and administrative capacities. As a striking case in point, approximately 10 million Bangladeshi refugees entered India in 1971 at the time of Bangladeshi's war of independence.

A final point on the international consequences of rapid population growth follows from these considerations. Popular writings often foresee a world future of general affluence, with modern communications joining all into a "global village." But the persistence of wide differences in national economic and social development, caused in turn partly by differential population growth, works strongly against any such trend. Convergence toward an integrated human society is not a realistic option under such circumstances. Development paths that would have been open to a world of, say 3 billion persons—the world's total in 1960—will not be open to a population four times that size.

#### IV. POLICIES TO REDUCE THE RATE OF POPULATION GROWTH

If the preceding analysis is anywhere near the mark, policies capable of reducing rapid population growth—effectively yet humanely—deserve the highest priority in the governments of those countries now confronted with that problem. Such policies largely come down to those aimed at reducing fertility.

What can a government do if it wishes to reduce fertility? Seven years ago, in an address at the Massachusetts Institute of Technology, I sought to answer that question.<sup>8</sup> I pointed out that the range of possible interventions divides into two broad categories:

- Those designed to encourage couples to desire smaller families; and
- Those designed to provide parents with the means to implement that desire.

Both approaches are necessary. The first sets out to alter the economic and social environment that promotes high fertility, and by altering it to create among parents a new and smaller norm of family size. This generates a demand for birth control. The second endeavors to meet that demand, helping to make the new norm attainable. Family planning services are important, but in the end can be effective only to the extent that a demand for lower fertility exists.

I proceeded in my address to spell out a number of policy actions that governments can take to help stimulate demand for fertility control. My list, I believe, remains as valid today as it was seven years ago. Among other possible measures, I emphasized the reduction of infant and child mortality; the expansion of basic education; the more equitable distribution of income; and above all else, the raising of the status of women socially, economically, and politically.

Such measures, I argued, should be complemented by programs to promote a social consensus favoring small families; by the introduction of, or at least experimentation with, incentives and disincentives encouraging low fertility; and, last but not least, by vigorous government efforts aimed at improving access to modern means of fertility control.

My MIT address discussed in detail the rationale and the essential components of such a program. I need not repeat them here. Much of what I said was beginning to be reflected, even then, in the policy directions pursued by the leading international development agencies concerned with population

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<sup>8</sup>"The McNamara Years at the World Bank: Major Policy Addresses of Robert S. McNamara 1968-1981" Johns Hopkins (1981) pp. 397-435.

matters. It had also been incorporated into the formal policy declarations of some of the major developing countries endeavoring to reduce population growth.

Has the policy worked? Can it be counted upon to deliver the result—the rapid and accelerated reduction of fertility, the urgency of which I have argued for in this essay?

The questions have no simple answer. During the last decade or two the developing countries have exhibited a great diversity of development policy approaches and demographic patterns. There is diversity too in their historical background, cultural and ethnic characteristics, and attained levels of development, all of which confound efforts to trace the causal relationship between policy and outcome. On the basis of recent experience, however, one can distinguish at least four types of situations:

First, in a number of countries in the middle income group—epitomized by Brazil—rapid fertility decline has begun and is proceeding apace, even though the policies pursued by the government have little resemblance to the policy package outlined here. One might be tempted to conclude that in such countries the classical mechanisms of the developed nations' demographic transition are at work, obviating the need for an activist population policy.

There are, on the other hand, a number of societies which have followed the policy prescriptions summarized above and in which fertility rates have fallen. South Korea, Taiwan, and Sri Lanka are perhaps the best examples. There is an element of circularity in interpreting their record in reducing fertility as validating the policy package in question, since to a significant extent the policy itself was fashioned from analyzing that record. Still, it can be persuasively argued that measures that worked there will yield similar success at least in those countries of the developing world that possess administrative capacities approaching those of Korea, Taiwan, or Sri Lanka.

A third example is the special case of China where reduction has been achieved through active government intervention that goes well beyond the kind of policy package I proposed at MIT. The Chinese policies have achieved notable progress in changing traditional social norms regarding large families, and in providing effective family planning services. Nevertheless, the spectacular reduction of fertility in China was greater than could reasonably be expected from the provision of family planning and the overall process of development. Such policies could hardly be expected to result in a spontaneous demand for and substantial achievement of the one-child family, the central objective of current Chinese policy. The compulsion and coercion added to the Chinese family planning program demonstrates that in the judgment of the Chinese government the standard policy package was simply not enough. Strong sanctions, the government concluded, were absolutely necessary if the demographic objectives it had formulated in the name of the collective interest were to be achieved.

In the preceding section, I suggested that the felt necessity of intrusive interference by government with parental decisions on childbearing is one of the deleterious consequences of population pressures inherited from the past. Whether or not the Chinese government has correctly assessed the nation's demographic predicament, Chinese policies do in fact underscore the limitations of the policy package I have proposed. Thus current Chinese policies may be a prototype of what is likely to be attempted in the future by other governments that conclude that the "normal" protracted process of stabilizing their population must be drastically shortened.

A fourth group of countries—and from the point of view of the world's demographic future the most important—is made up of those in which the onset of fertility decline has not yet occurred. I noted earlier that these countries, which include most of the world's poorest populations, comprise some 1.1 billion people in Africa, South Asia, and Latin America. What are the prospects that the policies I advocated at MIT will work in these nations?

The evidence of past performance seems discouraging. In some of the countries in this group—Pakistan, for example—the principal ingredients of the policy package have been avowed government policy for decades. Countless official declarations endorse the objectives of: achieving an equitable income distribution; the emancipation of women; child and maternal health; universal basic education; and free access to family planning services. Programs are presumed to be in place to give meaning to such words. Elsewhere—as in Kenya or Zaire, for example—the endorsements and programs are more recent but equally emphatic.

The words are in place, but on the evidence to date the programs are not working. Fertility is unaffected. Why is that so?

It is important to get a grip on the correct answer to this question. Otherwise, policies that have failed to bring results in three decades, say, in Bangladesh, may be recommended to, say, Nigeria, only to find, thirty years from now, that the transplant, too, was unsuccessful.

Part of the answer lies in lack of political will by governments to accord population policy the priority it deserves on the national agenda. What amounts to virtually the same thing, sensitivity to the gravity of the adverse consequences enumerated above may simply not have penetrated to the top echelons of government. Anyone with experience at these levels is familiar with the difficulty of focusing on medium- and long-term issues in the face of a host of more immediate problems clamoring for attention. The most tangible effects of this year's high fertility rate will not begin to show up for fifteen or twenty years—a lifetime away in the time-scale of political life.

Political will alone, of course, is not enough. An effective fertility reduction program clearly requires an appreciable degree of administrative capacity. Experience has shown that this can best be achieved by greater decentralization of responsibility for the management of the program.

Effective results in the promotion of a social consensus favoring a smaller family norm, and in the provision to families of the modern means of fertility regulation to achieve it, almost require, as a precondition, the development of a more coherent community voice at the local level. This clearly has been an important element in the striking successes in family planning in recent years in such societies as Indonesia and Thailand.

The administrative burden on national government can also be eased by placing greater emphasis on non-governmental efforts in distributing contraceptive supplies, both non-profit and commercial. It is too readily taken for granted that governments must necessarily assume the major operational responsibility for distribution of family-planning services—even in those settings where they have obviously been unable to deliver a wide variety of other basic services.

These observations suggest ways in which the obstacles in the way of progress toward low fertility might be overcome in countries which have yet to experience significant reduction or where early successes have faded.

But the most important single step that any nation can take to reduce its rate of population growth is to establish a frame or a plan within which all of these measures can be formulated and against which progress can be periodically evaluated.

Each nation experiencing a rapid rate of population growth should, therefore, examine past trends and future prospects and come to a judgment of whether projected population levels are optimal in terms of the social and economic welfare of its people. If they are not, what are acceptable quantitative goals and how can they be reached?

If nations had established such goals 10 years ago, no major developing country, with the possible exception of China, would now be satisfied with its demographic progress during the past decade. Even China, which has set a target of stabilizing its population at 1.2 billion people, would have to recognize that it is likely to grow to a total of at least 1.4 billion.

The problem today is not one of a failure of governments to agree that population growth rates must be limited if social and economic development is to be maximized. Instead, it is an unwillingness to recognize that insufficient progress is being made in reducing fertility and that if this failure is to be overcome, additional political and financial capital must be spent in pursuit of that objective.

As a foundation for such action, country fertility targets must be set for specific time periods. Realistic policies can then be introduced which will lead to desired family sizes consistent with those targets, and family planning services can be provided to permit couples to achieve them. Reports to the nation each year—analagous, in some ways, to the World Development Report published by the World Bank—on the degree to which the overall targets, and the necessary supporting actions, are being realized would provide an assessment of the progress achieved. Such reports would introduce a discipline

that would lead, over a reasonable period—say five years—to an effective fertility reduction program.

The reports would indicate where greater program efforts were needed, and would identify those signal successes—and most countries have them—that could be mined for program insights helpful elsewhere. The managerial value, at both local and national level, of comparing accomplishments of local government units against each other and against absolute standards, is hard to exaggerate.

A special word should be added about formulating national population plans in sub-Saharan Africa. This area has a unique set of problems. It has the highest population growth rate of any region in the world, the lowest capability for absorbing such growth, and the weakest programs for limiting it.

During the 1970s, population in the area increased at 2.7 percent per year compared to 2.5 percent in the 1960's. Growth rates are likely to accelerate even further in the 1980's. Excluding Nigeria, per capita income declined during the seventies and has declined by 2 percent per year in the eighties. Life expectancy at birth was only 49 years in 1979; fewer than four out of every ten adults are literate; and only one out of three children survive to adulthood in the poorest countries. Only 5 percent of married women of reproductive age are using modern contraception, and yet politicians have been reluctant to propose limiting family size because the demand for children is extremely high (desired family size is 6 to 9 children).

Sub-Saharan Africa's 1984 population of 440 million will double in the next 20 years. The important question is whether in the next half-century the population will merely triple, or whether it will swell to five or six times its present size. What the governments and people of these countries must face, in their consideration of national population goals, is that failure to act quickly to reduce fertility voluntarily is almost certain to lead to widespread coercive measures before the end of the century. And in the meantime, social and economic distress will increase and be widespread.

These then are the critical components of the role of national governments in this issue. These governments bear a heavy responsibility, and rightly so, in fashioning any effective and humane solution to the world's population problem.

There is also, of course, an important role for the international community. The most important help that community can give is to increase its support for high rates of economic and social advance throughout the developing world and, in particular, in the low-income countries.

This will require: far stronger resistance to the increasing pressure for protectionist barriers to the exports of the developing countries; a longer-term approach to the debt crisis and to the future financial requirements of the middle-income countries; and a much greater recognition of the need of the low-income countries for larger flows of concessional aid. The greatest obstacle

to the latter, at present, is the refusal of the United States government to join the thirty other contributors to the International Development Association—the largest single source of financial assistance to the poorest countries—in supporting a lending program for that institution for the next three years of \$12 billion instead of \$9 billion.

I have addressed all of these issues before and I will not expand on them now. Instead I want to suggest that the role of the international community, with specific reference to the population problems, is a three-fold one.

First, it is to help provide technical and material assistance to population programs in high-fertility countries. The assistance must be on a scale adequate to ensure that these programs, at least in their early years, are not constrained by lack of resources and can in fact operate with a reasonable degree of efficiency. Clearly, realism dictates that the limited volume of such assistance likely to be available for population issues not be spread thinly on peripheral programs that only indirectly influence fertility levels. Family planning and associated health and nutrition programs should be the major beneficiaries.

Second, the international community should continue to work toward easing the inconvenience and enhancing the safety of fertility regulation, through continued support of contraceptive research and development. Programs relying on coercion need pay little attention to either. But for the voluntary programs we are concerned with here, a wider choice among safer and more effective methods will surely enhance program results.

These two are the traditional areas of international assistance in population—the dominant concerns, for example, of the major donor agencies in the field such as the UN Fund for Population Activities, the US Agency for International Development, and the World Bank. However, there is also a third area, in its own way perhaps as important as these. It is the development and transmission of relevant research and analysis: interpretations of the accumulated lessons of historical and contemporary experience; proven techniques of demographic and policy analysis; and appreciation of the ways that particular institutional settings influence program performance. It is at least arguable that this area promises the highest returns for an international contribution to the resolution of the population problem in today's high-fertility countries.

## V. CONCLUSION

Let me return in closing to the issue of urgency that I emphasized at the outset. The fuzziness of policy instruments and the delay in obtaining results have dulled the sense of urgency that the population problem generated twenty, or even ten years ago. Elsewhere, the evident signs of progress in many places have instilled a self-congratulatory mood, likely to be much in evidence at

the Mexico conference this August. If permitted to prevail, both these unrealistic attitudes will weaken national population efforts and undercut international support for them.

The demographic penalties for procrastination and delay are inexorable. For example, as is illustrated in the table below, if Nigeria were to begin to introduce now those policies which would permit it to achieve replacement level fertility by the year 2000—instead of the year 2035, as is projected in Table III—its population would level off at about 227 million instead of 594 million. Similarly, were Bangladesh and Kenya to reach replacement level fertility in 2000, these populations would ultimately stabilize at 200 million and 54 million respectively, instead of the 435 and 149 million projected in Table III.

**Table IV**  
**Effect on Ultimate Population Size of Reaching**  
**Replacement Level Fertility (NRR=1) in the Year 2000**  
**Instead of as Projected in Table III.**  
**(population in millions)**

Country	Pop. in 1980	Ultimate Pop. Size if NRR=1 in Yr 2000	Ultimate Pop. Size per Table III		Difference Due to Delay in Reaching NRR=1 % of 1980	
			Pop.	Yr.NRR=1	Pop.	Pop.
India	675	1,316	1,632	2010	316	47%
Nigeria	85	227	594	2035	367	162
Bangladesh	89	200	435	2035	235	117
Kenya	17	54	149	2030	95	176
Central America	22	55	80	2030	25	114
Total-ALL LDC's	3,298	6,784	9,463	2050	2,679	81

It is clear that immediate and much more effective action to bring about declines in fertility levels—by encouraging the desire for smaller families and providing the means to implement that desire—would make an enormous and decisive difference. Policy decisions today must be seen in terms of a choice between a difficult but barely tolerable national and global population status and one that is intolerable in terms of human welfare and world peace.

In the end, population growth in most countries will surely be halted substantially below the levels shown in either Table III or Table IV. That will happen either because of humane and voluntary measures taken now, or because of the old Malthusian checks. Or perhaps even more likely, in tomorrow's world, it will occur as a result of coercive government sanctions and the recourse by desperate parents to both frequent abortion and clandestine infanticide.

For the great majority of mankind still experiencing high rates of population growth, action now to initiate, or to accelerate, fertility decline is imperative.

**Annex I**  
**Population Projections by**  
**Country and Region: 1950-2100**

	Population (millions)					TFR <sup>a</sup>		GNP/capita	
	1950	1980	2000	2025	2050	2100	1982	NRR=1 <sup>b</sup>	1982
<i>Low-income economies</i>									
Afghanistan	8	16	25	41	55	71	8.0	2045	..
Bangladesh	44	89	157	266	357	435	6.3	2035	140
Benin	2	4	7	12	18	22	6.5	2035	310
Bhutan	1	1	2	3	3	4	6.2	2035	..
Burma	18	33	53	79	99	111	5.3	2025	190
Burundi	3	4	7	14	20	26	6.5	2040	280
<i>Central African</i>									
Rep.	1	2	4	7	10	13	5.5	2040	310
Chad	3	5	7	12	17	21	5.5	2040	80
China	603	980	1,196	1,408	1,450	1,462	2.3	2000	310
Ethiopia	16	31	57	110	164	220	6.5	2045	140
Ghana	4	12	24	47	66	81	7.0	2030	360
Haiti	3	5	7	10	13	14	4.6	2025	300
India	362	687	994	1,309	1,513	1,632	4.8	2010	260
<i>Kampuchea, Dem.</i>									
Rep.	4	6	10	14	17	20	..	..	..
Kenya	6	17	40	83	120	149	8.0	2030	390
Lao, PDR	2	3	6	10	14	19	6.4	2040	..
Madagascar	5	9	16	30	42	52	6.5	2035	320
Malawi	3	6	12	23	35	46	7.8	2040	210
Mali	3	7	12	21	31	40	6.5	2040	180
Mozambique	6	12	24	45	63	80	6.5	2035	..
Nepal	8	15	24	40	55	67	6.3	2040	170
Niger	2	6	11	20	29	38	7.0	2040	310
Pakistan	37	82	140	229	302	361	5.8	2035	380
Rwanda	2	5	11	22	34	45	8.3	2040	260
Sierra Leone	2	3	5	8	11	15	6.5	2045	390
Somalia	2	4	7	12	16	21	6.5	2045	290
Sri Lanka	8	15	21	27	31	32	3.4	2005	320
Tanzania	8	19	36	67	93	113	6.5	2030	280
Togo	1	3	5	9	13	16	6.5	2035	340
Uganda	6	13	25	47	67	85	7.0	2035	230
Upper Volta	3	6	10	18	25	33	6.5	2040	210
Viet Nam	24	54	88	128	154	168	5.0	2015	..
Zaire	14	29	55	99	136	165	6.3	2030	190
Sub-total	1,214	2,183	4,098	4,270	5,073	5,677			

<sup>a</sup>Total fertility rate

<sup>b</sup>The year in which NRR (net reproduction rate) is projected to equal 1

..Data not available

	Population (millions)					TFR <sup>a</sup>		GNP/capita	
	1950	1980	2000	2025	2050	2100	1982	NRR=1	1982
<i>Lower middle-income</i>									
Angola	4	8	13	23	32	41	6.5	2040	—
Bolivia	3	6	9	14	18	21	6.3	2030	570
Cameroon	5	9	17	34	50	63	6.5	2035	890
Colombia	12	26	38	50	57	61	3.6	2010	1,460
Congo, People's Rep.	0.8	2	3	6	8	10	6.0	2025	1,180
Costa Rica	0.9	3	3	5	5	5	3.5	2005	1,430
Cuba	6	10	12	14	14	15	2.0	2010	—
Dominican Republic	2	5	8	12	14	15	4.2	2010	1,330
Ecuador	3	8	13	19	24	27	5.4	2020	1,350
Egypt	20	42	63	86	102	111	4.6	2015	690
El Salvador	2	5	8	12	15	16	5.6	2015	700
Guatemala	3	7	12	18	22	25	5.2	2020	1,130
Honduras	1	4	7	11	14	16	6.5	2025	660
Indonesia	77	146	212	283	330	356	4.3	2010	580
Ivory Coast	3	8	17	32	44	56	7.0	2035	950
Jamaica	1	2	3	4	4	5	3.4	2005	1,330
Korea, Dem. Rep.	10	18	27	37	42	45	4.0	2010	—
Lebanon	1	3	3	5	5	6	3.8	2005	—
Lesotho	0.8	1	2	4	5	7	5.8	2030	510
Liberia	0.7	2	4	7	10	12	6.9	2030	490
Mauritius	0.5	1	1	2	2	2	6.9	2040	1,240
Mongolia	0.8	2	3	4	5	5	4.8	2015	—
Morocco	9	19	31	47	59	68	5.8	2025	870
Nicaragua	1	3	5	8	10	12	6.3	2035	920
Nigeria	41	85	169	329	417	594	6.9	2035	860
Papua New Guinea	2	3	5	7	8	10	5.0	2030	820
Paraguay	1	3	5	7	8	8	4.2	2010	1,610
Peru	8	17	26	37	44	48	4.5	2020	1,310
Philippines	20	49	73	100	116	125	4.2	2010	820
Senegal	3	6	10	19	26	34	6.5	2040	490
Sudan	9	19	34	61	86	107	6.6	2035	440
Thailand	20	47	68	90	102	110	3.6	2010	790
Tunisia	4	6	10	14	17	19	4.9	2015	1,390
Turkey	21	45	65	88	101	109	4.1	2010	1,370
Yemen Arab Rep.	3	7	12	23	32	41	6.8	2040	500
Yemen, PDR	1	2	3	6	9	12	6.9	2040	470
Zambia	3	6	11	21	29	35	6.8	2030	640
Zimbabwe	2	7	16	34	49	61	8.0	2030	850
Sub-total	<u>306</u>	<u>642</u>	<u>1,021</u>	<u>1,573</u>	<u>1,989</u>	<u>2,313</u>			

	Population (millions)					TFR <sup>a</sup>		GNP/capita	
	1950	1980	2000	2025	2050	2100	1982	NRR=1	1982
<i>Upper middle-income</i>									
Algeria	9	19	39	71	97	115	7.0	2025	2,350
Argentina	17	28	36	45	50	54	3.4	2010	2,520
Brazil	53	121	181	243	279	299	3.9	2010	2,240
Chile	6	11	15	18	20	21	2.7	2005	2,210
Greece	8	10	10	11	12	12	2.3	2000	4,290
Hong Kong	2	5	7	8	8	8	2.1	2000	5,340
Jordan	1	3	6	11	14	16	7.4	2040	1,690
Iran	14	39	70	109	139	158	5.6	2020	—
Iraq	5	13	26	43	57	67	6.7	2025	—
Israel	1	4	5	7	8	8	3.1	2005	5,090
Korea, Rep. of	20	38	51	62	67	70	2.7	2000	1,910
Malaysia	6	14	21	27	31	33	3.7	2005	1,860
Mexico	27	69	109	154	182	196	4.6	2010	2,270
Panama	0.8	2	3	4	4	4	3.5	2005	2,120
Portugal	8	10	11	12	13	14	2.3	2000	2,450
Singapore	1	2	3	3	3	4	1.7	2000	5,910
South Africa	14	29	52	82	106	121	5.1	2020	2,670
Syrian Arab Republic	4	9	17	28	37	42	7.2	2020	1,680
Trinidad & Tobago	0.6	1	2	2	2	2	3.3	2010	6,840
Uruguay	2	3	3	4	4	4	2.6	2005	2,650
Venezuela	5	15	26	37	43	46	4.3	2010	4,140
Yugoslavia	<u>16</u>	<u>22</u>	<u>25</u>	<u>28</u>	<u>28</u>	<u>29</u>	2.0	2010	2,800
Sub-total	<u>220</u>	<u>467</u>	<u>718</u>	<u>1,009</u>	<u>1,204</u>	<u>1,323</u>			
<i>High-income oil exporters</i>									
Oman	0.4	1	2	3	3	4	7.1	2020	6,090
Kuwait	0.2	1	2	4	5	5	5.7	2010	19,870
Libya	1	3	7	12	17	20	7.2	2025	8,510
Saudi Arabia	3	9	19	36	49	61	7.1	2030	16,010
United Arab Emirates	<u>0.07</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>3</u>	<u>4</u>	6.0	2015	23,770
Sub-total	<u>5</u>	<u>15</u>	<u>32</u>	<u>58</u>	<u>77</u>	<u>94</u>			

	Population (millions)						TFR <sup>d</sup>	NRR=1	GNP/capita
	1950	1980	2000	2025	2050	2100	1982		1982
<i>Industrial market economies</i>									
Australia	8	15	18	20	21	21	2.0	2010	11,140
Austria	7	8	8	8	8	8	1.6	2010	9,980
Belgium	9	10	10	10	10	10	1.6	2010	10,760
Canada	14	24	29	33	33	33	1.8	2010	11,320
Denmark	4	5	5	5	5	5	1.5	2010	12,470
Finland	4	5	5	5	5	5	1.6	2010	10,870
France	42	54	58	61	62	62	1.8	2010	11,680
Germany, Fed. Rep.	50	61	60	57	54	54	1.4	2010	12,460
Ireland	3	3	4	5	6	6	3.2	2000	5,150
Italy	47	56	58	58	58	58	1.6	2010	6,810
Japan	83	117	128	132	129	128	1.7	2010	10,080
Netherlands	10	14	15	16	15	15	1.4	2010	10,930
Norway	3	4	4	5	4	4	1.7	2010	14,280
Spain	28	37	43	48	50	51	2.2	2000	5,430
Sweden	7	8	9	9	8	8	1.7	2010	14,040
Switzerland	5	6	6	6	6	6	2.2	2010	17,010
United Kingdom	51	56	57	58	58	59	1.8	2010	9,660
United States	152	227	259	286	288	289	1.8	2010	13,160
Sub-total	<u>527</u>	<u>710</u>	<u>776</u>	<u>882</u>	<u>820</u>	<u>822</u>			
<i>East European nonmarket economies</i>									
Albania	1	3	4	5	6	6	2.2	2000	—
Bulgaria	7	9	10	10	10	11	2.1	2010	—
Czechoslovakia	12	15	17	18	19	20	2.2	2000	—
Germany, Dem. Rep.	18	17	17	18	18	18	1.9	2010	—
Hungary	9	11	11	11	11	12	2.0	2010	2,270
Poland	25	36	41	46	48	49	2.3	2000	—
Romania	16	22	25	28	30	31	2.4	2000	2,560
USSR	180	266	306	339	358	376	2.4	2000	—
Sub-total	<u>268</u>	<u>379</u>	<u>431</u>	<u>475</u>	<u>500</u>	<u>523</u>			
Total World	<u><u>2,504</u></u>	<u><u>4,435</u></u>	<u><u>6,147</u></u>	<u><u>8,298</u></u>	<u><u>9,780</u></u>	<u><u>10,870</u></u>			

SOURCE: 1950 UN estimates. Other Years: World Bank 1984 estimates and projections. The developing countries are grouped by average GNP per capita (1982 dollars).

