

Department of International Economic and Social Affairs

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In some tables, the designations "developed" and "developing" economies are intended for statistical convenience and do not necessarily express a judgement about the stage reached by a particular country or area in the development process.

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## PREFACE

The purpose of the *Population Bulletin of the United Nations*, as stipulated by the Population Commission, is to publish population studies carried out by the United Nations, its specialized agencies and other organizations with a view to promoting scientific understanding of population questions. The studies are expected to provide a global perspective of demographic issues and to weigh the direct and indirect implications of population policy. The *Bulletin* is intended to be useful to Governments, international organizations, research and training institutions and other bodies that deal with questions relating to population and development.

The *Bulletin* is prepared by the Population Division of the Department of International Economic and Social Affairs of the United Nations Secretariat and published semi-annually in three languages—English, French and Spanish. Copies are distributed widely to users in all member countries of the United Nations.

Although the primary source of the material appearing in the *Bulletin* is the research carried out by the United Nations Secretariat, officials of governmental and non-governmental organizations and individual scholars are occasionally invited to contribute articles.

## EDITOR'S INTRODUCTION

Fifteen years ago (1974), the World Population Plan of Action was adopted. The Plan requires that every five years there should be a comprehensive and thorough review and appraisal of progress made towards achieving its goals and recommendations. The Population Commission carried out the third review and appraisal at its twenty-fifth session, in 1989.

As a complement to that process, this issue of the *Population Bulletin* is devoted to a review of experience in critical areas of the field of population, with special emphasis on the past five years, since the International Conference on Population was held at Mexico City. The *Bulletin* invited a panel of eminent specialists to discuss the selected issues from their points of view. As the reader will discover, the authors responded generously and constructively. The nine articles will add new depth and greater insight to the understanding of the population issues that face the international community as it now enters the fourth quinquennium since the World Population Plan of Action was adopted.

The order in which the articles are presented follows the order of topics in the report of the International Conference on Population.

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### Explanatory notes

Symbols of United Nations documents are composed of capital letters combined with figures. Mention of such a symbol indicates a reference to a United Nations document.

Reference to "dollars" (\$) indicates United States dollars, unless otherwise stated.

The term "billion" signifies a thousand million.

Annual rates of growth or change refer to annual compound rates, unless otherwise stated.

A hyphen between years (e.g., 1984-85) indicates the full period involved, including the beginning and end years; a slash (e.g., 1984/85) indicates a financial year, school year or crop year.

A point (.) is used to indicate decimals.

The following symbols have been used in the tables:

Two dots (..) indicate that data are not available or are not separately reported.

A dash (—) indicates that the amount is nil or negligible.

A hyphen (-) indicates that the item is not applicable.

A minus sign (-) before a number indicates a deficit or decrease, except as indicated.

Details and percentages in tables do not necessarily add to totals because of rounding.

The following abbreviations have been used:

CELADE	Centro Latinoamericano de Demografía
CICRED	Comité international de coopération dans les recherches nationales en démographie (Committee for International Co-operation in National Research in Demography)
CMEA	Council for Mutual Economic Assistance
ESCAP	Economic and Social Commission for Asia and the Pacific
ECE	Economic Commission for Europe
ECLAC	Economic Commission for Latin America and the Caribbean
ESCWA	Economic and Social Commission for Western Asia
FAO	Food and Agriculture Organization of the United Nations
ISI	International Statistical Institute
IUSSP	International Union for the Scientific Study of Population
OECD	Organisation for Economic Co-operation and Development
UNDP	United Nations Development Programme
UNFPA	United Nations Population Fund
WFS	World Fertility Survey

# POPULATION AND SUSTAINABLE DEVELOPMENT

*Pravin Visaria\**

## SUMMARY

This paper assesses the feasibility of sustainable development for various low-income countries in the context of prospective population growth. In that context, development that is sustainable is development that does not endanger the natural systems that support life on earth. Since such a short time has elapsed since the Mexico City Conference, not all the development goals highlighted at that meeting could be reviewed. Emphasis in this paper is placed on an assessment of recent trends in food production and availability, employment and poverty issues, with a focus on India, China and a few other Asian countries on which the author had access to information. In the view of the author, the key to sustained development in the face of likely continued population growth up to almost the end of the twenty-first century lies in technological change and effective use of the human and physical resources in developing countries. Adequate planning and judicious adaptation of the institutional framework can help to avoid the suffering and misery of the millions of people currently alive and also those who will be born during future decades.

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The World Population Plan of Action was first outlined at the World Population Conference held at Bucharest in 1974;<sup>1</sup> it was refined at Mexico City in 1984.<sup>2</sup> According to the Plan, the major challenge and the major problem in the area of population of particular relevance to the economic and social progress of the developing countries are the task of reducing poverty, expanding employment and assuring the right to work by encouraging economic growth, which includes measures for the just distribution of wealth; and the disequilibrium between rates of change in population and changes in resources, environment and development (United Nations, 1986). The recommendations for action adopted by the 1984 Conference included giving high priority to the following development goals:

- (a) eradication of mass hunger;
- (b) achievement of adequate health and nutrition levels;
- (c) eradication of mass illiteracy;
- (d) improvement in the status of women;

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- (e) elimination of mass unemployment and underemployment;
- (f) elimination of inequality in international economic relations.

It was recommended that population trends should be taken fully into account when formulating development plans and programmes (United Nations, 1986).

During the same period, there has been growing concern around the world about ensuring sustainable development, which is interpreted to include "meeting the basic needs of all" and "extending to all the opportunity to satisfy their aspirations for a better life". The emphasis on sustainability is to ensure that, "at a minimum", development "must not endanger the natural systems that support life on earth: the atmosphere, the waters, the soils and the living beings", on grounds of intra- and intergenerational equity (World Commission on Environment and Development).

To assess and evaluate the feasibility of such sustainable development in the context of prospective population growth for various low-income countries is a difficult task. It is also not possible to review effectively the implementation of "recommendations for action" since 1984, partly because the usual time lag in the availability and dissemination of data limits the scope for analysis. Yet, some critical variables can usefully be examined. For various reasons, we shall concentrate mainly on food production and availability and on employment, since food is the most basic of basic needs and the purchasing power acquired through work is vital for the satisfaction of all needs. Also, because of the author's location, much of the discussion focuses on India, China and certain other Asian countries; countries of Africa and Latin America receive relatively less attention.

The macro dimensions of the situation are best captured in some key statistics presented in the table below. The statistics, based on *World Development Report, 1988*,<sup>3</sup> relate to 39 low-income countries with a per capita income of \$425 or less in 1986. The 39 countries include 26 in Africa, 12 in Asia (mainly South and Southeast Asia) and only one (Haiti) in Central America. They include China and India, which together had a total population of almost 2.5 billion, or nearly 50 per cent of the total population of the world and about 66 per cent of the population of developing countries (3.76 billion) in mid-1986. Countries other than China and India are grouped together into one category to simplify the presentation.

It is evident that the low-income countries other than China and India experienced a significantly higher rate of population growth and lower and more slowly growing GNP and GDP per capita over the two decades between 1965 and 1986. They also had lower life expectancy at birth and higher infant mortality rates in 1986. The average index of food production during 1984-1986 in those countries was almost stagnant at the level recorded during 1979-1981. China and India, on the other hand, increased their food production by 23 and 12 per cent, respectively. Cereal imports have virtually disappeared in India, remained constant in China (*Far Eastern Economic Review*, 1988),<sup>4</sup> but increased in the other low-income countries. The latter also experienced a



TABLE. SELECTED STATISTICS ON 39 LOW-INCOME<sup>a</sup> COUNTRIES

Characteristic	All	China	India	Other countries <sup>b</sup>
1. Number of countries .....	39	1	1	37
2. Population (millions) in mid-1986 .....	2 493	1 054	781	658
3. Rate of population growth (percentage)				
1965-1980 .....	2.3	2.2	2.3	2.7
1980-1986 .....	1.9	1.2	2.2	2.8
1986-2000 <sup>c</sup> .....	1.9	1.4	1.8	2.8
4. Urban population as percentage of whole, 1985	22	22	25	20
5. Average annual growth of urban population (percentage)				
1965-1980 .....	3.6	2.6	3.6	4.9
1980-1985 .....	4.0	3.3	3.9	5.4
6. Per capita GNP in US dollars, 1986 .....	270	300	290	200
7. Rate of growth of per capita GNP, 1965-1986 ..	3.1	5.1	1.8	0.5
8. Rate of growth of GDP				
1965-1980 .....	4.8	6.4	3.7	3.1
1980-1986 .....	7.5	10.5	4.9	2.9
9. Life expectancy at birth (years), 1986 .....	61	69	57	52
10. Infant mortality rate				
1965 .....	122	90	151	150
1986 .....	69	34	86	106
11. Average index of food production				
1984-1986 .....	114	123	112	101
(1979-1980=100)				
12. Daily calorie supply per capita				
1965 .....	2 046	2 034	2 100	1 998
1985 .....	2 329	2 620	2 126	2 100
13. Cereal imports (millions of tons)				
1974 .....	21.9	7.5	5.3	9.2
1986 .....	18.0	7.5	..	10.5
14. Average rate of inflation				
1965-1980 .....	4.6	0.0	7.6	11.3
1980-1986 .....	8.1	3.8	7.8	19.1

Source: World Bank, *World Development Report, 1988* (Washington, D.C.).

<sup>a</sup> Those with estimated per capita GNP less than \$US 450 per year in 1986.

<sup>b</sup> Afghanistan, Bangladesh, Benin, Bhutan, Burkina Faso, Burma, Burundi, Central African Republic, Chad, Democratic Kampuchea, Ethiopia, Ghana, Guinea, Haiti, Kenya, Lao People's Democratic Republic, Lesotho, Madagascar, Malawi, Mali, Mauritania, Mozambique, Nepal, Niger, Pakistan, Rwanda, Senegal, Sierra Leone, Somalia, Sri Lanka, Sudan, Uganda, United Republic of Tanzania, Togo, Viet Nam, Zaire, Zambia.

<sup>c</sup> Projected.

much higher annual rate of urban population growth and of inflation than either China or India during 1965-1980 and 1980-1986.

The prospective demographic scenario also indicates marked differences between countries. China succeeded in sharply lowering its birth rate and also its rate of population growth during 1980-1986, relative to 1965-1980. The echo effects of the large cohorts born during the mid-1960s and 1970s are likely to raise the rate of population growth during 1986-2000. Yet, Chinese

population growth would be substantially lower than that in India, where the policy to slow down the rate has so far succeeded only marginally, with its contribution limited to preventing any increase in the rate as a consequence of the decline in mortality. The Indian rate of population growth is nevertheless projected to decline during 1986-2000. In the rest of the low-income countries, however, the average rate of population growth is likely to remain virtually unchanged up to the end of the twentieth century.

That demographic perspective is predicated on reasonable assumptions about the likely continuation of the effective Chinese policy to restrict family size, an enhanced effectiveness of the Indian policy to encourage family limitation and relatively limited success among the rest of the low-income countries in slowing down their rates of population growth. In several countries of Africa, the average rates of population growth are actually likely to be higher during the rest of the twentieth century than during 1965-1980 or 1980-1986 (because the prevailing high death rates are expected to decline faster than the birth rates). Besides, the momentum of growth built into the very young age distribution of population in most countries of Africa makes a continuation of high rates of growth an unavoidable feature of the prospective demographic situation in that continent.

#### FOOD AND AGRICULTURE

How have the 39 countries fared in terms of feeding their growing populations? India has successfully overcome the challenge of a most severe drought during 1987-1988. Rainfall was deficient in 21 of the 35 meteorological subdivisions of the country, accounting for 62 per cent of the gross cropped area (*Monthly Review of Indian Economy*, 1987). The sizeable stocks of foodgrains maintained by India for nearly a decade have proved a valuable asset in meeting a drop of nearly 4.7 per cent in food production. The fact that the drop was less than 5 per cent, despite an extensive drought, reflected the strength of Indian agriculture, where productivity in irrigated areas has risen remarkably. Quite probably, India will import some foodgrains during 1988-1989 to replenish the depleted stocks, but the latest monsoon (during June-September 1988) has turned out to be probably the best since 1901, and food production is expected to rise by almost 22 per cent, to a record figure of 170 million tons. Of course, Indian agriculture has not attained its full potential for growth and development. Judicious policies for increasing use of modern inputs and harnessing the full irrigation potential of surface and underground water resources are expected to lead to a substantial increase in foodgrain production, adequate to meet the additional demand generated by prospective population growth and rising incomes.

China has reported a relatively rapid increase in food production since the adoption in 1978 of the contract responsibility system, which has offered effective material incentives for raising productivity. Under that system, each household is free to sell its products above the agreed quota to the state (at a higher price than is payable for the quota) or on the "free market". The rapid increase in foodgrain production over the past decade has been considered a

response by the farm workers to the incentive of better rewards. Simultaneously, the Chinese are encouraged to leave their farmland, though not their villages, and to shift to non-agricultural activities, mainly rural industry. According to one estimate, the value of the output of rural industries grew at an average annual rate of 28 per cent from 1978 to the 1987 record of \$219.5 billion. In 1987 the value of the output of township and village enterprises in China reportedly exceeded the value of total agricultural output for the first time (*Far Eastern Economic Review*, 1988). Extensive use of farm machinery and of modern inputs such as fertilizers helped to increase the farm yields, even though land under cultivation decreased from 100 million hectares in 1982 to 96 million hectares in 1987.<sup>5</sup> The general consensus points to China's large potential to increase the efficiency and production of its agriculture, provided that the technical requirements of production and the decision-making of farmers are properly understood and served.

In sub-Saharan Africa, on the other hand, per capita production of food-grains reportedly declined by 7 per cent during the 1960s and 25 per cent during the 1970s, with the rate of decline accelerating up to the catastrophic crop failures of 1983 and 1984. Rising food imports and generous food aid did not prove fully effective in reaching the isolated hinterlands (Williams, 1985). The underlying causes of the low productivity include highly variable weather and inappropriate price policies (Ouattara, 1985).

Since 1980, nine southern and eastern African countries have arrived at a collaborative agreement through the Southern Africa Development Co-ordination Conference to protect themselves against hunger and to reduce their dependence on external markets for food (Hay and Mandivamba, 1988). However, political rather than technical constraints have limited the pace of progress towards a more efficient production pattern consistent with long-run comparative advantage.

The diverse experiences reported above highlight the important role of policies pursued by Governments in raising agricultural output. It is evident that the incentive, or stimulus, for increasing food output provided by a higher rate of population growth (as in Africa) does not necessarily lead to a higher rate of agricultural growth. The problem is not just that any such incentive operates basically in the long run. More important is the fact that known technology promises to bring about a substantial increase in agricultural productivity only if state policies can facilitate the availability of inputs at prices (relative to prices of output) that would be attractive enough for the producers. From a long-run perspective, the planning authorities must ensure that gains in agricultural production are not obtained at the cost of threats to basic factors of production such as land and water.

## POVERTY

There is considerable controversy about the concept of poverty appropriate for different countries. While relative poverty is easier to define and is likely to exist in every country, absolute poverty—implying less than adequate

nourishment or food intake and insufficient availability of other essentials of life such as clothing, shelter, health and medical care—is the centre of general concern. The poverty lines used in different countries necessarily differ, and their validity over time is often questioned. However, the time trend in poverty during the recent period of acceleration in population growth may indicate the possibility of improving the living standards of people despite such growth.

In India, the Planning Commission has estimated a sharp decline in the incidence of poverty, from about 51 per cent to 40 per cent in 1984-1985 in rural areas and from 38 to 28 per cent in urban areas between 1977-1978 and 1984-1985 (Planning Commission, 1985). While the assumptions underlying those estimates have been questioned, even more meticulous calculations indicate a decline in the incidence of rural poverty between 1972-1974 and 1983-1984, from 56-57 per cent to 45 per cent, respectively. The incidence of urban poverty declined from 47-50 per cent to 38 per cent over the same period (Kansal, 1988). The estimate of rural poverty in 1977-1978, according to the latter calculations, was about the same as that estimated by the Planning Commission, but the incidence of urban poverty was significantly higher (43 per cent). In an economy where almost 70 per cent of the work force finds employment in agriculture but only a quarter of the land under cultivation enjoys the benefit of irrigation (and a good part of it from non-perennial rivers which dry up), the incidence of poverty fluctuates with the adequacy of rainfall (Ahluwalia, 1978). In fact, the high estimates of poverty during 1972-1974 are attributable to the acute scarcity during the period, particularly during 1972-1973.

In China, extreme poverty is believed to have been eradicated by a Government possessing both the will and the capacity to implement wide-ranging programmes to eliminate at least the worst effects of poverty on the quality of rural life (Perkins and Shahid, 1984). Yet, in 1984, about 110 million persons with a per capita income below 200 yuan, constituting approximately 14 per cent of total rural population, were considered poor. They were located in "14 poor tracts in Northwest, North, Central, Southwest and South China", in areas with unfavourable natural conditions, very low agricultural productivity, deficient communication facilities and relatively low educational development (Hugo and others, 1988).

The population of Indonesia, the third most populous country of Asia (with a population of 164 million in 1985), grew at an average annual rate of 2.1-2.3 per cent during 1961-1985. The incidence of poverty (defined as the minimum required monthly expenditure on food: 1.25 times the price of 16 kg of rice) remained high (around 40 per cent) in 1980, but was substantially lower than in 1970 (59 per cent). Nearly 61 per cent of the population of Indonesia is concentrated on the island of Java, with a density of 735 persons per sq km (almost nine times the average for the country). Partly because of a programme of transmigration to the outer islands, the rate of population growth on Java was lower (2.0 and 1.7 per cent, on average, during 1970-1980 and 1980-1985, respectively) than in Indonesia as a whole (2.3 and 2.1 per cent, respectively). Yet, the incidence of poverty was higher on Java (46 per cent) in 1980 than in the country as a whole.<sup>6</sup> The relatively abundant re-

sources available on Sumatra and Kalimantan presumably helped to accommodate higher population growth with a much lower incidence of poverty than prevails on Java.

For Africa, the estimates by the Food and Agriculture Organization of the United Nations (FAO) of the percentage of population suffering from undernourishment or with a food intake below the "minimum critical level" during 1972-1974 was 28, ranging between 8 for Côte d'Ivoire and 54 for Chad, with Kenya reporting no less than 30 per cent (FAO, 1977). More recent estimates of rural poverty in selected African countries, prepared by the International Labour Organisation (ILO), in terms of the ability to secure the most frugal consumption basket, suggest poverty in the range of 25-45 per cent in the 1970s or 1980. Since the agricultural wages and incomes of the self-employed in rural areas have fallen during the 1980s, the incidence of rural poverty is presumed to have increased (ILO, 1987).

The diversity of experience reported above confirms that the trends in poverty are a function more of the policies pursued by Governments than of rates of population growth. Yet, slower population growth is likely to facilitate the implementation of any anti-poverty policies. The critical question is whether (and how) the poor would recognize the externalities of their reproductive behaviour soon enough, as death rates, particularly infant and child mortality rates, decline to unprecedentedly low levels.

#### UNEMPLOYMENT

One of the most serious consequences of the acceleration in population growth is the difficulty of generating adequate employment opportunities for the growing labour force. Assuming that food can be grown, its equitable distribution is best ensured by providing opportunities for work to all who seek it.

In India, three quinquennial employment and unemployment surveys, conducted since 1972-1973, have collected data according to three alternative concepts:

- (a) usual status or activity of the year preceding the date of survey;
- (b) current status or activity of the reference week preceding the survey date;
- (c) activities on each day of the survey week (Visaria, 1981).

Of the three concepts, the last one is a relatively more inclusive concept of unemployment (which includes both unemployment for the entire reference week and underemployment or unemployment on specific days of the reference week among those classified as employed on the basis of the "priority rule"). According to the available data, the period from 1972-1973 to 1983 was marked by only a modest increase in unemployment among men and a noteworthy decline in unemployment among women in both rural and urban areas (Sarvekshana, 1988).

However, the rates of unemployment (with a reference period of the previous week generally used in many countries of the world) in urban India

during 1983 were on the order of 7-8 per cent for men and women and even higher for high-school graduates or those who had more than seven years of schooling. Those high rates have led to a widespread clamour for employment-generating schemes, particularly in the public sector but to some extent in the organized private sector as well. The pressures threaten to fragment the India labour market and potentially threaten the survival of a united India. The terrorist movement for a separate state of Punjab is partly a consequence of the frustrations of a growing labour force encountering a slowing down of the pace of the "green revolution" and virtual closure of opportunities for emigration to developed countries such as the United Kingdom or Canada.

India's serious problems of survival as a unified country are evident in neighboring Sri Lanka, where the 1981 census of population recorded unemployment rates on the order of 41 and 28 per cent for young men aged 15-19 and 20-24, respectively. The corresponding unemployment rates were even higher—51 per cent—for women in the same age groups (Sri Lanka, Department of Census and Statistics, 1985). The more recent data, for 1985-1986, show the average situation during the year, assessed through 12 monthly rounds when the situation during the week preceding the date of survey was ascertained. Those data indicate unemployment rates on the order of 29 and 23 per cent among young men and 38 and 42 per cent among young women, in the age groups 15-19 and 20-24, respectively (Sri Lanka, Department of Census and Statistics, 1987). When youth unemployment rates are so high, ethnic strife of the type being seen in Sri Lanka is not really surprising.

The heavy pressure of population on land in China has created considerable underemployment. The Chinese planners seek to limit the pace of urban growth by encouraging rural people to stay in their villages. The country's seventh five-year plan (1986-1990) continues to encourage peasants to leave the land but not the village, drawing surplus labour out of agriculture by developing forestry, animal husbandry, fishery and township enterprises. It aims to ensure "basically full employment" in cities and towns by 1990 by exploring "all possibilities of employment, especially in collective and individual production" and by developing tertiary industries (China, 1986). It is hoped that the growth of rural non-farm activities would both reduce underemployment and increase rural incomes.

For Indonesia (which is not a low-income country as defined above<sup>7</sup>), there is no evidence that rates of open unemployment have risen, and average productivity and levels of remuneration have definitely risen. Also, "the upsurge in the labour force" during the 1970s was "mainly absorbed into employment" (Hugo and others, 1988).

Admittedly, data on unemployment in developing countries are not expected accurately to indicate changes in rural employment. It has been argued that "little can be read from . . . generally low and fairly stable" rural unemployment rates published for those countries (ILO, 1984).

While the three large Asian countries have succeeded in increasing food production and mitigating poverty, serious problems have been encountered in

the supply of products based on natural resources and in regard to the over-exploitation of land, water and forest resources and to air pollution. For want of space and time, only a few issues can be listed here. In India, the primary source of energy used for cooking by about 77 per cent of rural households and 46 per cent of urban households happens to be firewood and chips. The proportion of households using firewood is higher among the lower-income groups (India, National Sample Survey Organisation, 1988). According to some estimates, India consumed an estimated 150 million tons of fuel-wood in 1985-1986, while the annual growth of fuel-wood would be about 75 million tons. Partly as a result, there has been extensive deforestation and degradation of the quality of forests.

Although the forestry department of the Government of India reported that about 74 million hectares of land were under forest cover, the Government's National Remote Sensing Agency of the Department of Space estimated the total forest area during 1980-1982 at about 37.4 million hectares, or 21 per cent lower than during 1972-1975 (48 million hectares). Recently, the official agencies have estimated India's forest cover during 1980-1982 at 64.2 million hectares, or 19.5 per cent of the geographical area. The upward revision is attributable mainly to a higher estimate of "open" forests, possessing a crown cover of between 10 and 40 per cent. Evidently, the area earlier estimated to have a crown cover of less than 10 per cent—and therefore considered to be unfit for classification as forest—has been reclassified as an open forest. Alternative estimates of the rates of depletion of forest suggest that the "closed" forest area, with a crown cover of 40 per cent or more, had probably declined by 1987 to around 25 million hectares, or less than 8 per cent of the geographical area (Vohra, 1988).

A study in 41 major urban centres has shown a rapid increase in the price of fuel-wood, much faster than the general consumer price index or the increases in the prices of foodgrains (Boulder, 1988). In rural areas also, the growth of population has made the common-property land resources scarce, and the rural market in fuel-wood is increasingly monetized. Besides cutting fuel-wood illegally, the poor tend to use agricultural by-products (which could be better used as fodder or fertilizer) in place of fuel-wood. Other developing countries face similar problems.

According to one estimate, 129 million out of 329 million hectares (or 39 per cent) of the land in India around 1980 was "degraded" by salinity, alkalinity, wind or water (or was a degraded forest) (Bhumba and Khare, 1988). A National Wastelands Development Board was set up during 1985-1986 with a mandate to reclaim each year 5 million hectares of degraded land into fuel-wood- or fodder-producing land. During 1987-1988 it reportedly brought 1.7 million hectares of land under afforestation, and the target for 1988-1989 is 2.0 million hectares.<sup>8</sup>

It is argued that a comprehensive policy of appropriate administrative, economic, technical and institutional measures could stop deforestation and ensure an adequate supply of fuel-wood. Unfortunately, the managerial capacity to implement such measures is limited. While a concerted programme has

been launched to encourage "social forestry" and the development of agroforestry on wastelands and degraded land, immense efforts will be required to reverse recent trends.

It is arguable that the wasteful pattern of consumption is a more important determinant of the growing scarcity of resources than is population growth. If a well-defined policy were effectively implemented, better management of primary resources could lead to a substantial improvement in the present situation. It may be possible to find feasible alternative approaches to avoid aggravation of economic problems.

When the average annual rates of population growth are translated into absolute numbers of persons added to the population of low-income countries during the period under consideration, they add up to more than 1 billion persons. Some two decades ago, one wondered how several of those countries would be able to accommodate the prospective large additions to their populations that appeared inevitable as the decline in the birth rate continued to lag behind the decline in the death rate. It turns out that many of them have not only maintained levels of per capita income and per capita production of foodgrains over the period but have actually been able to raise them. Their experience seems to confirm the essential validity of the classic assertion of John Stuart Mill that every mouth is born with a pair of hands. Further, except in a few countries, the current low levels of agricultural productivity imply that the application of known, proven technology can raise foodgrain production enough to feed the growing population up to the end of the twentieth century and beyond. The critical questions, however, concern the cost of applying modern technology in terms of its impact on the environment, including the quality of soil, water, air and other elements of nature. The awareness of possible problems on that score and timely preventive and remedial actions could prevent an accentuation of the current problems. However, for that optimistic scenario to be realized, determined action would be essential, and any such action would be easier with slower population growth. An indefinite continuation of the high growth rates of more than 2 per cent recorded in most South Asian countries (except Sri Lanka) for more than a quarter of a century is impossible.

Several analysts feel optimistic that, because of the prospects of what is called "technological change", the threat of a scarcity of exhaustible natural resources is not likely to prove an obstacle to development. Yet, one cannot really bank on free international transfer of technological advances, and countries like India need to invest adequate resources in developing indigenous technology that would be appropriate in their respective economies. The key to sustained development in the face of a likely continuation of population growth up to almost the end of the twenty-first century lies in technological change and effective use of the human and physical resources of developing countries. Adequate planning and judicious adjustment to the institutional framework can help to mitigate the suffering and misery of the millions of people currently alive and of those who will be born during the decades to come.



## NOTES

<sup>1</sup> See *Report of the World Population Conference, Bucharest, 19-30 August 1974* (United Nations publication, Sales No. E.75.XIII.3), chap. 1.

<sup>2</sup> See *Report of the International Conference on Population, Mexico City, 6-14 August 1984* (United Nations publication, Sales No. E.84.XIII.8 and Corr.1 and 3).

<sup>3</sup> Washington, D.C., World Bank, 1988.

<sup>4</sup> During 1987, China reportedly raised its grain imports to 8.6 million tons (*Far Eastern Economic Review*, 1988).

<sup>5</sup> The decline is attributed to the construction of factories, roads and housing projects on fields. Irrigated area is also reported to have declined. Per hectare of arable land, consumption of plant nutrients in 1985 was reported to be 169 kg in China and 50 kg in India; the corresponding figures for 1970 were 38 and 11 kg, respectively (*Far Eastern Economic Review*, 1988).

<sup>6</sup> The decline in fertility does not show large interregional differences in relative terms (Hugo and others, 1988).

<sup>7</sup> Per capita GNP of Indonesia in 1986 was estimated at \$490, although life expectancy at birth in 1986 was estimated at 57 years, the same as in India. See World Bank, *World Development Report, 1988* (New York, Oxford University Press, 1988), p. 222.

<sup>8</sup> Information supplied by the Minister of Environment and Forests to the Rajya Sabha (upper house of the Indian Parliament) on 1 December 1988 (*Indian Express*, 2 December 1988), p. 5.

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# WOMEN, POPULATION AND DEVELOPMENT TRENDS SINCE 1984

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## SUMMARY

This paper reviews progress over the past five years with respect to the six recommendations adopted at the International Conference on Population 1984, which specifically address the situation of women. They include:

- (a) integrating women into development;
- (b) women's economic participation;
- (c) education, training and employment;
- (d) raising the age at marriage;
- (e) the active involvement of men in all areas of family responsibility;
- (f) the ratification of the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW).

Several important areas potentially relevant to population issues which were omitted from the Conference recommendations are identified and discussed—namely the situation of special categories of women (in particular, older women, women who are the sole supporters of families, and women and migration) and the situation of women in times of severe economic adversity. Finally, progress made with respect to data on women is highlighted, and caution is advised with respect to continued calls for new data.

In contrast to the Nairobi Forward-looking Strategies for the Advancement of Women, the recommendations are noted for implying an almost unresolvable conflict between women's biological and economic roles. However, it is pointed out that the goals of the Convention on the Elimination of All Forms of Discrimination against Women for full equality of men and women would require that the same choices be available to both sexes with respect to labour-force participation. While it is too soon to have a clear perspective on the pace and direction of change during the past five years, the author finds it impossible to be optimistic about current trends because, in too many areas, progress regarding women has either stagnated or moved into reverse gear. The disappointing record is partially attributed to the tendency for policy-makers to see the promotion of economic growth through sound economic policy and advancing the status of women as competing rather than complementary goals.

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Five years is a very brief period of time in which to evaluate changes in an area that is as subject to cultural inertia as the position of women. Rare revolutions apart, cultural change is essentially a gradual process punctuated by landmarks, such as the introduction of legislation, which as much reflect change that is already under way as initiate new developments.

The World Conference to Review and Appraise the Achievements of the United Nations Decade for Women, held at Nairobi in 1985, was one such landmark.<sup>1</sup> The Conference and the women's forum of associated non-governmental organizations were vast gatherings, with some 6,000 women participating. Staging the Conference in Africa helped to stress the very significant role that African women have always played in development. Inevitably, the impact of the Conference in individual countries varied greatly. In many cases women were successful in pressing for legislative and administrative changes because their Governments wished to be able to report significant advances at Nairobi.

One striking feature of the Conference was the limited attention given to women's reproductive and nurturing roles. (One delegation which was seeking support for its resolution on improving the compatibility between "motherhood" and paid employment was somewhat startled to find that many delegates from industrialized countries wanted to replace "motherhood" by "parenthood".) Essentially, the lack of debate reflected the degree of consensus that "the ability of women to control their own fertility forms an important basis for the enjoyment of other rights".<sup>2</sup>

The Conference produced a major plan for the future: the Forward-looking Strategies for the Advancement of Women. The Strategies are set out in 372 paragraphs covering equality, development, peace, areas of special concern, and international and regional co-operation. They were adopted by consensus by all of the 157 countries represented at the Conference. Inevitably such a document represents a compromise—the common elements upon which all could agree. For a compromise it is a very far-reaching document: no one country has achieved all the objectives put forward. Indeed it will provide goals for national and international plans for the rest of the century.

Specifically on population issues, the Strategies (paras. 156-159) build on the World Population Plan of Action, adopted at Bucharest in 1974,<sup>3</sup> and the recommendations for the further implementation of the Plan, adopted at Mexico City in 1984,<sup>4</sup> to present women's right of access to family planning services. They stress that family-life education should be addressed to both men and women and that Governments should develop policies to encourage delay in the commencement of child-bearing by raising the age of marriage and by educating both male and female adolescents.

Clearly, in the year between Mexico City (1984) and Nairobi (1985), international opinion on those aspects of the role and status of women that are most directly linked to population issues had not changed. Six of the Mexico City recommendations (Nos. 5-10) specifically address the situation of women, and it is worth reviewing progress on them before examining certain other issues outside their scope.

## INTEGRATING WOMEN INTO DEVELOPMENT

In urging Governments to integrate women fully into all phases of the development process, including planning policy and decision-making, the Mexico City recommendations acknowledge that women have not been fully integrated to date. Indeed the preamble to the recommendations directly refers to "the slow progress made since 1974 in the achievement of equality for women". Governments are urged to the more aggressive pursuit of action programmes aimed at improving and protecting the legal rights and status of women through efforts to identify and remove institutional and cultural barriers to women's education, training, employment and access to health care. Governments are also encouraged to launch mass educational programmes to assist women in attaining equality with men in the social, political and economic life of their countries, especially with the collaboration of non-governmental women's organizations.

The integration of women into development is a very broad concept in which four different ideas are interlinked. They involve ensuring that:

(a) women's existing contribution to development is recognized, measured and acknowledged;

(b) women have access to the tools and resources to effect development—e.g., education, training, land, credit;

(c) women's concerns are incorporated into specific development programmes and projects;

(d) women have access to the fruits of development as they are achieved—e.g., that labour-saving technologies are used for "women's" work as well as for economic production that is more directly in the marketplace.

In part because much of the readily available literature recording achievements and failures to date has been created in the industrialized world, greater attention has been devoted to ideas (a) and (c) and less to the other two, which are more the responsibility of national Governments.<sup>5</sup> Donors of development assistance have been especially conscious of a failure to practise what they have preached.<sup>6</sup> Even in the early 1980s it was clear that the rhetoric of "integrating women into development" was a commonplace, with "women in development" something of a "mini-growth industry within the field of international aid".<sup>7</sup>

The integration of women into specific development projects has had limited success for three basic reasons:

(a) Many development projects are not directly addressed to the needs of people in any case (e.g., the building of infrastructure such as dams and roads);

(b) Whatever their objectives, many development projects assist the relatively better-off rather than those, such as women, who have very few resources to start with (e.g., agricultural projects that help only those who have land and give more to those with most land);

(c) Such interventions are inevitably piecemeal and do not change the cultural and social context in which women live. Integrating women into development in the full four senses outlined requires a high degree of political commitment by all levels of government.

One sign of the existence of such will is the establishment of specific machineries to ensure that women's concerns are integrated into all areas and levels of government. There has been considerable debate as to the siting of such machineries and whether there should be specific ministries of women's affairs.<sup>8</sup> A good case can be made for having a women's adviser who has status in her own right in the office of the most powerful figure in the Government (prime minister, president or other) and then creating women's bureaux in each ministry and governmental department to be responsible to that figure through the adviser yet to be fully integrated into the functional departments. Whatever mechanisms are adopted, two things are essential: women's areas must have budgets of their own so that they can initiate pilot projects to demonstrate the practicability of what they are arguing for, and the finance, planning or other ministry which has responsibility for the overall co-ordination of governmental spending must be on the side of and convinced of the economic value of integrating women into development.

Reformers who approach Governments in times of financial stringency are frequently told of a willingness to implement all sensible ideas—provided that they do not cost money. In such a situation women logically turn to legal reforms which are “cost-free” from the Government's point of view but which could bring great benefits to women—for example, by securing their right to hold land or their position after the death of a husband or the breakup of a marriage. At that point women often find that they are, indeed, opposed to strongly entrenched interests which can put up very effective rear-guard actions. There is a direct interaction between women's political power and their ability to secure legal reforms. Understandably, those who are already in an advantaged position are reluctant to give up their privileges, and women have to press hard to secure changes. In their lobbying to date women have relied too much upon arguments relating to equity and have done too little to present the sound economic argument that discrimination against women carries very heavy efficiency costs, since their half of the population, with the greatest scope for making additional contributions to the economic productivity of society, is provided with inadequate resources to do so.<sup>9</sup> This is not because women do not work, for around the world almost all women do work, whether outside the home or within it. It is because women's work is so under-resourced and under-capitalized that much of it remains love's labour lost.

#### WOMEN'S ECONOMIC PARTICIPATION

Women's participation in traditional sectors of the economy (notably in agriculture, craft production and petty trading) is so erratically recorded in standard statistics that it would be a wasted effort to attempt to discern trends during the 1980s. However, it is possible to suggest some known influences which are likely to have resulted in some diminution in women's participation

They would include increasing landlessness among the rural poor (women are more likely to work on family lands than on those of others), the displacement of craft production by industrial production, and legal and transport changes that have outlawed or displaced petty traders.

In promoting women's freedom to participate in the labour force, the Mexico City recommendations appear to be focused on employment in the modern sector, which would be expected to have a much greater impact on fertility levels than traditional work, which may indeed encourage high fertility to provide additional workers. Here, the statistics are much more reliable. According to a recent study, women's economic participation in the modern sector in Asia and the Pacific increases with economic development and per capita GDP but levels off just below 50 per cent once countries become industrialized. But there are still regional patterns—the participation of South Asian women is somewhat lower, apparently due to their lack of education and relatively high fertility. Conversely, in East Asian countries, women have higher levels of participation in the manufacturing sector, apparently owing to demand for their labour in light industry and the lack of institutional barriers to such labour.<sup>10</sup>

The increase in the participation of women in the formal economy certainly does not betoken gender equity in the workplace or in earnings. The degree of occupational segregation between the sexes is greatest in some of the industrialized countries. Women earn only a fraction of men's wages in all the countries for which data are available, and there is as wide a variation in the earnings differential by sex in industrialized countries as in developing countries. (The woman/man earnings ratio in manufacturing ranges from 45 in India and 53 in Japan to 73 in Sri Lanka and 72 in Australia.) Women's lower earnings are related to educational differentials as well as work experience, labour-market forces and social attitudes. Any plan for the advancement of women that does not examine the question of direct access to income, whether from self-employment, participation in a family enterprise or wage employment, is inevitably incomplete.

#### EDUCATION, TRAINING AND EMPLOYMENT

The Mexico City recommendation on education, training and employment states that:

“Governments should provide women, through education, training and employment, with opportunities for personal fulfilment in familial and non-familial roles, as well as for full participation in economic, social and cultural life, while continuing to give due support to their important social role as mothers. To this end, in those countries where child-bearing occurs when the mother is too young, Government policies should encourage delay in the commencement of child-bearing.”

This appears to be an awkward attempt to move in two directions at once, emphasizing both women's familial and non-familial roles. (The second sentence would appear to belong with the recommendation on age at marriage,

unless it is a euphemistic reference to discouraging pregnancy among school-girls.) It is a measure of the difference between the Conferences held at Mexico City and at Nairobi that the latter was not subject to convoluted compromises in that area.

Adult literacy rates reflect the situation in the past. They show that there are still some 18 countries where a woman's chance of being literate is less than half that of a man. A number of Muslim countries with a tradition of female seclusion present a more extreme contrast, with three or four literate men for every literate woman. Only one country has significantly more literate women than men: that is Lesotho, where young boys work as cattle herders while their sisters go to school. (Elsewhere sisters help with the housework and look after younger siblings while their brothers are in school.) The figures on children in primary school show a considerable improvement: in only five countries are there two or more boys in school for every girl and in the clear majority of countries (70/132) the female enrolment ratios are at least 90 per cent of the male ratios.<sup>11</sup>

In the developing countries, at the secondary-school level, the proportion of girls who enrol is significantly lower than that of boys. That reflects the fact that girls leave school earlier owing to a perception that they are needed at home or have less use for prolonged education, or because of teen-age pregnancy. In the industrialized countries a pattern in which enrolment ratios are actually higher for girls is common. That is because boys leave school in order to enter the work-force, while girls, who face higher unemployment rates and less parental pressure to "start earning a living", stay on at school. In Europe, it is only at the post-high-school level that men still have an advantage, which is rapidly declining.

In terms of actual achievements, in recent years women have done reasonably well in having the principle of equal access to education accepted, although movement on the practice has been cut short or even thrown into reverse by difficult economic conditions in which female education has sometimes been portrayed as a luxury. The most significant issue for the future, however, relates less to access to education than to its content. Girls are still heavily ghettoized in the non-scientific and non-technical areas. The consequences of educational segregation flow on into training and employment. Around the world girls get to be apprentices as hairdressers, not as motor mechanics or machine-tool makers. That is an issue which needs to be addressed urgently for two reasons. First, once a tradition builds up that girls are not scientific and cannot do mathematics, it is much harder to destroy it than it would have been to avoid such a bias in the first place. Secondly, in future, being scientifically illiterate is going to be a more and more crippling handicap to women in a world governed by technological imperatives.<sup>12</sup>

#### RAISING THE AGE AT MARRIAGE

It is intuitively very attractive to welcome raising the age at marriage as a means of slowing the rate of population growth and improving the status of



women. However, it is understandably rare for such a simple legislative intervention to have a marked impact upon human behaviour in the absence of prior social change. In cultures where girls still marry very young, it is unusual for those involved to have birth certificates or other records of exact age, and parents who wish to circumvent the law will either falsify their daughters' ages or arrange unions that are marriages unrecognized by the law. The purpose of very youthful marriages is often to avoid any risk that pregnancy will precede marriage and, as the legal age is raised, it is usually considered advisable to have some escape clause to allow for the marriage of under-age but pregnant girls. In cultures where sexual intercourse before or outside marriage is generally accepted (if not approved of) for women, then legislation in any case will not have any marked impact. Raising the legal age is chiefly effective inasmuch as it marks a clear governmental commitment to improving the status of women rather than reducing fertility rates. It needs to be backed up by a range of active measures to encourage girls to stay in school and to make it possible for single young women to make a significant economic contribution to their households. In terms of the status of women, it may well be that the young age at which girls marry has less negative impact than other associated factors.<sup>13</sup>

The most important element is probably the age gap between spouses. Many cultures go to considerable lengths to ensure that within marriages the man will have the higher status through greater age and experience. The acceptability of wives' being significantly older than their husbands is a good indicator of women's status in a society. Another factor is the residence of the couple immediately after marriage: living with the husband's family will have an impact very different from that of living with the wife's family or in a newly established separate household.

#### THE ACTIVE INVOLVEMENT OF MEN IN ALL AREAS OF FAMILY RESPONSIBILITY

Little formal statistical information is available on men's participation in family life.<sup>14</sup> Time budget studies from developed countries continue to suggest that while fathers now spend more time playing with their children, they still devote very little time to the more mundane aspects of child care. In the Scandinavian countries, where either parent may take parental leave, it is still the mother who does so in the great majority of cases. That is indeed logical if her earnings are lower than the father's.

In some developing countries men have little to do with very young children but play a greater role in the socialization of older children, especially boys, than in other countries where all children spend close to a decade in school and training for employment is formalized rather than acquired on the job by watching and doing. In extended family systems, where loyalty to the family is highly valued and less weight is placed upon individual freedom, fathers are likely to play a greater role in their children's lives than in nuclear families. As work moves away from the family farm or the family business to the more removed and more institutional setting of wage employment, there

may be a stage when the father is employed at a distance while the mother's work is in the home setting. It is in that context that the mother's familial role is most likely to eclipse that of the father. In the classic middle-class nuclear family of the industrialized countries in the years between the two World Wars, children often saw remarkably little of their fathers, while their mothers were almost constantly at home. It is rarely appreciated how unusual the situation of the "housewife" with no economic role has been in world history. As women move out into paid employment, it might be expected that the mother's role would be in relative decline and parenthood tasks be more evenly shared, but all available evidence suggests that movement in that area has been very slow. Most employed mothers still face a triple shift—the working day, housework and child care—with little male help in the home or with the children.

One area where statistics are available relates to the sex distribution of responsibility for fertility regulation: to date, condoms, vasectomy and withdrawal are the only methods used by men, whereas the wide range used by women extends from the examination of mucous cycles to abortion. The popularity of a given method varies considerably from country to country and indeed from district to district, depending on cultural factors and the methods promoted by family-planning programmes.<sup>15</sup>

There is a trend in the highly industrialized countries for at least some men to question whether, in leaving the bulk of child-rearing to women, they are not in fact missing out on something of considerable value. Statistics on the sex of primary-school teachers are one indicator of the advance of that idea in Western societies. A more extreme indicator is the rising (but still small) proportion of child-care workers who are men.

Although the Mexico City recommendation states that Governments should promote and encourage the involvement of men in the family, Governments can play only a facilitating role in that area. Employment legislation can make it possible for fathers to stay home to care for young children, but it cannot oblige them to do so. Until male and female earnings are the same, there will be strong economic reasons bolstering up cultural traditions that define the family as a predominantly female sphere while the public sphere is seen as male.

The one aspect of child-rearing that is biologically restricted to women is breast-feeding. However, the impact that breast-feeding has on women's lives varies. After a long period in which artificial feeding was seen as liberating to women and healthy for babies, it is now recognized that, in areas with limited possibilities for obtaining clean water and for keeping supplies, bottles and artificial nipples sterile, the breast is best. There is also the increasingly powerful argument that infant formula is expensive and frequently a drain on scarce foreign-exchange reserves. The result has been increasing emphasis on the promotion of breast-feeding for health and economic reasons.<sup>16</sup>

The issue for women has been one of possible conflict between breast-feeding and full participation in the labour force. In many traditional cultures there is no conflict between breast-feeding and work outside the home, because mothers can take their babies with them to the fields or the markets. The

conflict comes with industrialization and the exclusion of babies from the office and the factory in the absence of child-care facilities on the premises. As Eastern European experiences have shown, women in industrialized settings can breast-feed, but their children need to be close at hand and the mothers need to have sufficient nursing breaks. ILO Convention III, which dates back to 1919, provided for two nursing breaks daily of half an hour each during the working day, extended in 1952 to a total of one and a half hours. It also provided for 12 weeks of paid maternity leave. An emerging problem has been that, if those provisions are enforced, employers have an incentive not to employ women (especially in high-fertility societies). The question then becomes whether the costs of such arrangements should be borne by society as a whole or whether, in the short term at least, women may need to accept a less-than-ideal situation in which the costs of hiring male and female labour are not the same. In some situations piece-work rates, combined with the provision of workplace nurseries for a modest fee, may be the solution. These issues have usually received relatively little attention from the union movement, presumably because of the limited participation of women in many trade unions.

Another issue which has received increased attention in the 1980s concerns the impact which breast-feeding (and especially 24-hour breast-feeding on demand) has on birth intervals.<sup>17</sup> While lactation is certainly not a perfect contraceptive, it can have a very marked impact upon birth intervals in the absence of any other form of fertility regulation. That is one reason why fertility can rise with modernization, resulting in a very common pattern whereby women with primary-school education have higher fertility than women who have never been to school.<sup>18</sup> At the very least, there should be educational campaigns in the higher grades to inform both girls and boys about the advantages and disadvantages of breast-feeding and artificial feeding.

The general disregard of breast-feeding as a subject of serious consideration, from the medical profession to the trade-union movement, is further evidence of the fact that matters of primary concern to women are routinely ignored by hierarchies in which men play the dominant roles. In nineteenth-century England the fact that women breast-fed was put forward as an argument for why they should not—or indeed could not—be members of Parliament. Women have now won the right to sit in parliaments around the world, but those parliaments do not have associated nursery facilities.

#### RATIFICATION OF THE CONVENTION ON THE ELIMINATION OF ALL FORMS OF DISCRIMINATION AGAINST WOMEN

Women are not accustomed to looking to international conventions to protect their rights, yet the Convention on the Elimination of All Forms of Discrimination against Women is a very valuable and broad shield in those countries that have ratified it. It was drawn up in 1979 and came into force in September 1981, after the twentieth ratification, and by 1988, in a very rapid display of support, there were 94 parties to it. One issue which has been widely discussed is what should happen when a ratifying country lodges reservations

that would appear to be incompatible with the object of the Convention or when its report to the Committee is highly incomplete. In general, it would appear to be preferable for Governments to recognize the importance of the Convention, however imperfectly, rather than stay completely outside its orbit.<sup>19</sup>

The Convention is couched in general terms: for the most part it is a statement of broad goals and aspirations rather than an attempt to prescribe standards. Even though the principle of equality is seen as an absolute one in some senses, legal improvement in the status of women has generally occurred in stages. First come civil rights, then the removal of legal inequalities, followed by the outlawing of discrimination and the introduction of positive measures, including action to change attitudes. Despite the time sequence, there is no necessary correlation between the level of industrialization and the status of women.

Nor is it inevitable that changes in the status of women should always be in a positive direction. Their status may actually decline during periods of economic recession, military dictatorship, or religious revival which stress the subordinate position of women. Legal reform, even when it represents movement towards increasing women's rights, will not by itself effect radical changes in the status of women, especially since legal reform usually lags behind changes in public opinion and social mores. It is chastening to realize that movements to restrict women's rights can still win considerable mass support even among women themselves.

#### OTHER ISSUES

Looking at possible omissions from the scope of the recommendations adopted at Mexico City, it is important to remember that the recommendations are essentially addressed to the role and status of women in relation to population issues—especially fertility—and not, for example, child survival. (But it might be asked: What would result from greater participation of men in family responsibility? A dramatic fall in fertility, as men come to appreciate the work involved in child-rearing and housework?)

In contrast to the Forward-looking Strategies, the Mexico City recommendations suggest an almost unresolvable conflict between women's biological and economic roles. They also contain an unexplained reference to women not being coerced to participate in the labour force for reasons of demographic policy or cultural tradition. It is not clear whether such freedom from coercion is also to apply to men, who in almost all cultures are much more likely to feel such pressures—if only for reasons of economic survival. Some of those involved in drafting the recommendations evidently felt that women should have the option not to participate in the labour force. Yet such an option can exist only in circumstances where there is surplus wealth sufficient to support it. It requires that women themselves either have private incomes or remain dependent upon others. Women's equality with men would require that the same

choices in relation to participation in the labour force be available to both sexes.

Since the Mexico City recommendations urge the ratification of the very inclusive Convention on the Elimination of All Forms of Discrimination against Women, they cover implicitly the full range of the Convention's provisions. With hindsight, there are two aspects not covered by the recommendations: one is the situation of special groups of women and the other is the situation of women in times of severe economic adversity.

### *Special groups of women*

The recommendations focus on married women. They envisage women marrying late enough to finish their education and training but they make no reference to women who never marry or who become heads of households because of widowhood, divorce or separation. A focus on fertility tends to exclude such women; it even excludes married women as they pass the age of menopause. The Forward-looking Strategies did incorporate recommendations relating to special groups of women: those affected by drought, poor urban women, elderly women, young women, abused women, destitute women, women victims of trafficking and involuntary prostitution, women deprived of their traditional means of livelihood, women who are the sole supporters of families, women with physical and mental disabilities, women in detention and subject to penal law, refugee and displaced women, migrant women and minority and "indigenous" women. While all of them are significant, there are three groups that are especially significant in terms of population factors: older women, women who are the sole supporters of families and migrant women.

### *Older women*

Older women comprise a group that is rapidly growing in relative importance, especially in the industrialized countries. The Strategies are indeed forward-looking in stressing that "women should be prepared early in life, both psychologically and socially, to face the consequences of longer life expectancy". Little has been done to follow up on this. Longer life expectancy frequently means an old age aggravated by economic need and isolation, for both unmarried women and widows. Many women spend their lives in unpaid and unrecognized work in the home with little or no access to a pension. Unless they inherit wealth, they are liable to be poorer than men in old age, both because their wages were lower and their employment was interrupted by maternity and other family responsibilities, which limited their advancement and reduced their ability to save.<sup>20</sup>

In more traditional cultures older women are expected to be cared for by their extended families, notably their children. Women who do not have children or who are cut off from children who have migrated or are otherwise separated from them may fare very badly. Because of their longevity and the likelihood of having married men older than themselves, women have a

greater incentive than their husbands to want children as a form of old-age security. Raising the status of women helps to reduce that incentive for child-bearing, as the Government of China has explicitly recognized, both because women find it easier to provide for their old age and because they do not have to have sons in order to be sure of effective support in their latter years.

The fact that research into the diseases of old age is heavily focused on diseases that have greater impact on old men is a clear indication of the way in which women's needs are neglected, even when women form the preponderant majority.

### *Women who are the sole supporters of families*

By a convenient but inaccurate shorthand, women who are the sole supporters of families are often discussed under the heading of female heads of households. Leaving aside any debate over the assumption that women in households with economically active males will never be heads of households (e.g., that a 40-year-old widow living with a 19-year-old son will not head the household), a very significant proportion of female heads of households are, in fact, women living alone either in old age or as younger women who are not in marital unions.

Any measures to improve the economic situation of women will be especially beneficial to women who have to support their families unaided.<sup>21</sup> Owing to the social, economic and legal difficulties which such women face, they are often among the poorest workers in informal labour markets in urban areas and are strongly represented among those marginally employed in rural areas. Schemes which provide food for work or minimal wages for public works frequently find that those women will accept work at rates below those at which a man can be induced to work—such are the women's desperation and lack of alternatives. Too often planning is based on the notion that every household has a male "bread-winner" or—worse—that the incomes earned by women are only supplemental.

### *Women and migration*

Recognition that the migration of women often results from their autonomous decision-making and not just from associational migration along with male household members has been slow to spread.<sup>22</sup> Moreover, only recently has the question of the impact of male out-migration on the women who remain behind attracted serious interest. For a long time there has been considerable cultural blindness to the fact that, in many cultures which promote out-marriage, the majority of women migrate at marriage, a move which contributes to their inferior position since they are cast at a young age into a strange community away from the support of family and friends.

### *Mortality*

Since in the great majority of countries around the world women have a mortality advantage over men, it is perhaps understandable that the Mexico

City recommendations do not address mortality issues. Yet there are some areas that merit priority attention. There are still five countries, all in the Indian sub-continent, where, despite the considerable biological advantage of females, male life expectancy exceeds female even in 1986.<sup>23</sup> Such a situation reflects differences of treatment, especially in childhood and early adulthood, which should be urgently addressed. (In Papua New Guinea, where adequate mortality data are not available, adult women's burdens would appear to create a similar male advantage.)

Maternal mortality is another issue of women's lives which has been severely neglected. In some low-income economies there are 1,000 maternal deaths for every 100,000 live births, as compared with fewer than 10 in many industrial market economies. The World Bank, together with a number of other agencies, finally recognized this state of affairs and launched a Safe Motherhood Initiative in 1986. High maternal mortality rates are symptomatic of general deficiencies in the health services available to women, including lack of access to adequate contraceptive services.<sup>24</sup>

High mortality levels among children place a heavy burden on mothers, and also reflect the disadvantaged position of women in society. At a given level of per capita GDP, some of the most important factors in reducing child mortality can be shown to be the educational level of mothers, their ability to make independent decisions within the family and the social acceptability of their free movement in public to attend clinics.<sup>25</sup>

#### *The impact of structural adjustment upon women*

For the majority of countries in Africa, the Middle East and Latin America, the 1980s have seen a period of severe and prolonged depression resulting in negative cumulative growth rates in GDP per capita. Faced by low commodity prices, limited voluntary capital inflows, a large accumulation of debt and high real interest rates, Governments have turned to adjustment policies. Those have usually included measures to expand exports, reduce imports and curb the government deficit by increasing government revenues and reducing government expenditure.

Against such a background, women have fared particularly badly.<sup>26</sup> In the first place, Governments preoccupied with structural adjustment have argued that equity considerations, and especially considerations of equity between the sexes, must wait until adjustment has been achieved. In the second place, women, and especially women with children, have been especially hard hit by cuts in governmental programmes and rises in the prices of basic necessities. The most vulnerable groups, among whom female heads of households and their families are prominent, are those most exposed to suffering, and there is evidence that there has been actual deterioration in nutritional and educational levels, especially where adverse climatic conditions have exacerbated economic imbalances. Given the extent to which women give priority to feeding their children, it can be imagined how bad conditions are for mothers when there is evidence at a national level of a decline in the average weight of young children.

The feminization of poverty (i.e., the rise in the proportion of women among adults in poverty so that they constitute or exceed the majority) is a phenomenon that appears to be world-wide. Two out of every three adults falling within federal poverty guidelines in the United States are women, and the proportion is increasing. In developing countries household poverty statistics are rarely available, but it seems clear that the situation is comparable.

Successful long-term adjustment requires the achievement of economic growth and the protection of the welfare of low-income and vulnerable groups. Giving a human face to adjustment requires the assignment of priorities, selectivity, redistribution and restructuring. Giving priority to those expenditures and activities that help to maintain the incomes of the poor and contribute to the production and delivery of the basic goods and services they need will almost invariably be of assistance to women. For example, the promotion of productivity in the small-scale sector, both in agriculture and in industry and services, targets women's needs. Equally, policies designed to increase the equity and efficiency of the social sector by redirecting effort and resources away from high-cost areas that do not contribute basic needs towards low-cost basic services and targeting of interventions will all be of disproportionate benefit to women, since it is they who were previously disadvantaged. Again, in self-help mobilization for health and education and even in community action in areas such as housing, water and sanitation, women have much to contribute and to gain. Compensatory programmes to ensure that the poorest have access to basic needs, before restructuring and economic growth have been achieved, are likely to rely heavily upon public works employment to sustain incomes and targeted nutritional interventions—both of which are of immediate and special benefit to women.

Each country must define its own path to structural adjustment, based on specific conditions. However, in so doing each Government needs to distinguish false from true economies and to recognize the importance of community initiatives and more generally increased participation, especially of women, which is essential to raising incomes and improving services for the vulnerable. Many countries could greatly improve their social services by the transfer of a small proportion of their expenditures on defence to targeted welfare programmes. Even within the social sector there is usually broad scope for the transfer of resources from a few high-cost to many low-cost interventions. Basic services typically take less than half the total expenditure. In some countries expenditure on one city hospital exceeds that on basic medicines for the entire country. Since women make greater use of health services for childbirth and child care, they are especially disadvantaged by such biases.

The monitoring of the impact of economic adversity and consequent adjustments in living standards, especially in health and nutrition, should be designed to provide disaggregated data by sex, so as to facilitate the effective targeting of alleviatory measures. For example, if it is found that the proportion of girls in school is declining, special interventions may be required both to encourage girls to enter and stay in school and to ensure that, where school is not a practicable choice, they are able to make a productive contribution to



family and community well-being. One answer might be training classes for girls who have to mind younger siblings while their mothers are out at work.

## CONCLUSION

In 1988 it is too early to have a clear perspective on the pace and direction of change during the past five years.<sup>27</sup> Yet, in general it is impossible to be optimistic as to current trends. In too many areas progress has eluded women, stagnated, or even moved into reverse gear.

In her message to the 1975 World Conference of the United Nations Decade for Women, Indira Gandhi said, "Women's liberation is not a luxury for India but an urgent necessity to enable the nation to move ahead to a life which is more satisfying materially, intellectually and spiritually". A decade later, at Nairobi, the Indian Minister for Social and Women's Welfare, Mrs. Chandrasekhar, added, "Poverty, as we all know, has a differential impact on men and women, affecting the latter much more severely. They are the first to be thrown out of work when jobs are lost and the first to go without when food is short." We have still to see those convictions sufficiently translated into action.

Too often a false dichotomy is made between the promotion of economic growth through sound economic policy and advancing the status of women. Full integration of women achieves both goals while promoting a move towards sustainable levels of population growth.

## POSTSCRIPT: A NOTE ON DATA ON WOMEN

It has become a cliché to say that more data on women are needed. In the late 1980s such statements often reflect as much a lack of awareness of what is available as real information needs. One of the significant outcomes of the United Nations Decade for Women was that the United Nations system now collects and publishes a vast amount of data on women.<sup>28</sup> (See, for example, *World Survey on the Role of Women in Development*,<sup>29</sup> prepared for the Nairobi Conference in 1984.) However, there are still two gaps: areas where data on both sexes are highly deficient—e.g., income data or migration data; and areas where, for special reasons, the data collected on women are consistently less satisfactory than those available for men—the outstanding example is data on women's economic roles and participation in the labour force. There, too, the United Nations system has been working hard to improve the situation through the work of ILO, INSTRAW and the Statistical Office. There are also cases of data which appear to be of more widespread interest when they relate to women as opposed to men: examples would include information on heads of households and some forms of political participation.<sup>30</sup>

If one lesson has been learned during the 1980s, it is that any requests for further data need to be backed up by a well-informed knowledge of what is already in existence and a clear perspective on the potential uses of new data. The stage has been reached where it is possible to draw up a statistical profile of the situation of women in almost all countries. Some of the data may be

defective, but improvements are best sought with specific ends in view. For example, data on women's participation in agriculture is rarely of high quality, but improvements will depend on uses.<sup>31</sup> If the objective is to estimate women's contribution to agriculture, then, in some countries, it would be realistic to create an editing program that would, in cases where the male head of household is an agricultural worker (farmer), classify all women as agricultural workers as well, unless they are given an alternative occupation (and not just described as being engaged in household duties). If the objective is to estimate the proportion of women who are under-employed or who work on a seasonal basis in agriculture, then a very different approach will be needed. In any case, the first essential is to make use of data that are already available. If more data must be collected, then consideration should be given to a form of data collection that will also contribute more directly to women's welfare—for example, a survey of access to rural credit that is constructed so as to pass on to women information on their rights and where they can go for further information.

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#### NOTES

<sup>1</sup> See *Report of the World Conference to Review and Appraise the Achievements of the United Nations Decade for Women: Equality, Development and Peace, Nairobi, 15-26 July 1985* (United Nations publication, Sales No. E.85.IV.10), chap. I, sect. A.

<sup>2</sup> The delegation of the Holy See was alone in reserving its position on the paragraphs (156-159) relating to fertility regulation.

<sup>3</sup> See *Report of the United Nations World Population Conference, Bucharest, 19-30 August 1974* (United Nations publication, Sales No. E.75.XIII.3), chap. I.

<sup>4</sup> *Report of the International Conference on Population, Mexico City, 6-14 August 1984* (United Nations publication, Sales No. E.84.XIII.8), chap. I. A perspective on women's issues more oriented towards developing countries can be found in *Report of the Non-Aligned Conference on Women in Development* (New Delhi, 1985).

<sup>5</sup> Literature on women in development is certainly a growth area. Introductions from two very different perspectives are provided by UNESCO, *Bibliographic Guide to Studies on the Status of Women, Development and Population Trends* (London, Bowker/UNESCO, 1983), and R. Boorooah and others, *Women and Development: An Interdisciplinary Seminar*, Curriculum Guide No. 7 (Urbana-Champaign: University of Illinois, Office of Women in International Development, 1985). *Studies on Women Abstracts* (Oxford: Carfax Publishing Company), which appears bimonthly, provides an up-to-date guide to current literature.

<sup>6</sup> See, for example, L. Moruata, "Women in development and ADAB's bilateral projects" (Canberra: Australian Development Assistance Bureau, 1987).

<sup>7</sup> S. Rogers, "Efforts toward women's development in Tanzania: gender rhetoric vs. gender realities", in *Women in Developing Countries: A Policy Focus*, K. Staudt and J. Jaquette, eds. (New York: Haworth Press, 1983), p. 25.

<sup>8</sup> This is a subject that has been explored in a number of discussion papers available from the Women's Bureau of the Commonwealth Secretariat, Marlborough House, London, SW1. Asian-Pacific experience is outlined in *Achievements of the United Nations Decade for Women in Asia and the Pacific* (Bangkok: ESCAP, 1987).

<sup>9</sup> This is an argument now accepted by the World Bank.

<sup>10</sup> "Women's economic participation in Asia and the Pacific" (ST/ESCAP/510), 1987.

<sup>11</sup> Education figures are available in World Bank, *World Development Report, 1988* (Washington, D.C., World Bank, 1988), table 33 (women in development).

<sup>12</sup> Some issues relating to the impact of technology on women's status are explored in H. Ware, "The effects of fertility, family organization, sex structure of the labour market and tech-

nology on the position of women", in *Conference on Women's Position and Demographic Change in the Course of Development* (Liège: International Union for the Scientific Study of Population, 1988).

<sup>13</sup> H. Ware, *Women, Demography and Development* (Canberra: Australian National University Press).

<sup>14</sup> But see Ministry of Labour, Sweden, *Changing Role of the Male, Summary of a Report by the Working Party for the Role of the Male* (Stockholm, 1986).

<sup>15</sup> Japan is probably the only country in the world where male contraceptive methods predominate.

<sup>16</sup> M. Minchin, *Breastfeeding Matters: What We Need to Know about Infant Feeding* (Sydney: G. Allen and Unwin, 1985).

<sup>17</sup> R. Short, "Breast feeding", *Scientific American*, vol. 250, No. 4, pp. 35-41; R. Short, "The biological basis for the contraceptive effects of breast feeding", in *Advances in International Maternal and Child Health*, 3, J. Jelliffe, ed. (Oxford: Oxford University Press, 1984).

<sup>18</sup> J. C. Caldwell, *Theory of Fertility Decline* (London: Academic Press, 1982).

<sup>19</sup> Justice Elizabeth Evatt, "International machinery on human rights", *International Forum on Women in Public Sector Administration* (Queensland: Institute of Technology, July 1988).

<sup>20</sup> M. Gibson, *Older Women Around the World* (New York: International Federation on Aging/American Association of Retired Persons, 1985).

<sup>21</sup> M. Buvinic, *Women and Poverty in the Third World* (Baltimore: Johns Hopkins University Press, 1983).

<sup>22</sup> The *Proceedings of the Conference on Women's Position and Demographic Change in the Course of Development*, held at Oslo (Liège: IUSSP, 1988), contain three papers on women's position and migration which may well mark the beginning of a new trend. See also J. Fawcett and others, eds., *Women in the Cities of Asia: Migration and Urban Adaptation* (Boulder, Colorado: Westview Press, 1984).

<sup>23</sup> UNICEF, *The State of the World's Children, 1988* (Oxford: Oxford University Press, 1988), table 7 (women give life expectancy information).

<sup>24</sup> It is estimated that in Bangladesh 60 per cent of maternal mortality could be averted if women who do not want children were provided with safe and acceptable contraception. Population Crisis Committee, *Poor, Powerless and Pregnant: Country Rankings on the Status of Women* (Washington, D.C.: Population Crisis Committee, 1988).

<sup>25</sup> J. and P. Caldwell, "Women's position and child mortality and morbidity in LDC's", in *Proceedings of the Conference on Women's Position and Demographic Change in the Course of Development* (Liège: IUSSP, 1988).

<sup>26</sup> G. Cornia and others, eds., *Adjustment with a Human Face: Protecting the Vulnerable and Promoting Growth* (Oxford: UNICEF/Oxford University Press, 1987).

<sup>27</sup> One of the best sources of current information on issues affecting women around the world is Women's International Network *WIN News*, 187 Grant St., Lexington, Mass., USA, which appears quarterly, with some 100 brief items each quarter.

<sup>28</sup> *Compendium of Statistics and Indicators on the Situation of Women—1986* (United Nations publication, Sales No. E/F.88.XVII.6) and *Women's Indicators and Statistics Data Base and User's Guide* (United Nations publications, forthcoming).

<sup>29</sup> United Nations publication, Sales No. E.86.IV.3.

<sup>30</sup> Examples of explorations of the data available include K. Ward, *Women in the World System: Its Impact on Status and Fertility* (New York: Praeger, 1984), and F. Mascia-Lees, *Towards a Model of Women's Status* (New York: Peter Lang, 1984).

<sup>31</sup> Dixon-Mueller, *Women's Work in Third World Agriculture, Concepts and Indicators* (Geneva: International Labour Organisation, 1985).

## SUCSESSES AND FAILURES IN THE FIELD OF POPULATION POLICIES SINCE 1984\*

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### SUMMARY

During the second half of the twentieth century, there has been a marked growth in awareness of the problems associated with high rates of population growth. The compromise consensus reached at Bucharest and reaffirmed at Mexico City set limited goals against which progress can be partially measured. Acceptance of the need to formulate population goals and policies grew, especially in the less developed countries. Progress was made in reducing mortality, but the goals set by the international community were not fully met. Results in the area of fertility were markedly heterogeneous between regions. Rather more was accomplished in restraining the rapid growth of the largest urban agglomerations, and in some countries there is greater freedom of internal migration, although coercive resettlement policies are still found in a few countries. For policies to succeed, it is essential to reach a national consensus on population issues. Research and debate on population issues in international forums such as the conferences at Bucharest and Mexico City can contribute to the attainment of a national consensus.

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Most societies have had conscious or semi-conscious population policies—that is, norms, values or methods by which they attempt to avoid the two disastrous extremes of extinction and overpopulation. In the second half of the twentieth century the majority of the countries of the world are faced with the second problem—namely, a high rate of population growth which hinders their social and economic development and therefore impedes their emergence from a state of mass poverty. The minority belonging to the more developed world face, however, the problem of below-replacement fertility levels, which could lead to a decline of their numbers and the aging of their populations. In addition, this is an age when the world has become so interdependent that almost anything happening in one country has implications for all other countries:

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\*This paper is based to a large extent on the experiences of the author during his membership in the International Union for the Scientific Study of Population (IUSSP) Committee on the Utilization of Demographic Knowledge in Policy Formation and Planning (1982-1985) and the Committee on Policy and Population in Less Developed Countries (since 1986). Although the views expressed were developed under the influence of those Committees and their members, they are the personal opinions of the author and are obviously contestable.

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demographic, economic, social and political processes are interrelated all over the world. That applies especially to demographic phenomena. This situation has provoked endeavours to establish a consensus of countries in matters of population goals and policies. The high points of such endeavours were the World Population Plan of Action adopted at the World Population Conference (Bucharest, 1974) and the recommendations of the International Conference on Population<sup>1</sup> (Mexico City, 1984). Both documents were obviously compromises between the standpoints of countries having different demographic and economic problems—therefore, different interests and different ideologies (Chasteland, 1984; Finkle and Crane, 1988). The compromise character of the documents can be most clearly seen from the fact that no quantitative goal is given for the indicators of population growth or fertility, despite the fact that most of the initiators of a world-wide common approach to demographic problems were in favour of the long-term achievement of zero population growth, and despite the obvious conclusion of most demographers around the world that the high growth rates of the past four decades could not continue for long. The achievement of mortality goals and a high standard of living are mentioned several times as desirable goals of socio-economic development policies, which ought to include Governments' population policies. The concrete formulation, adoption and implementation of population policies was identified as being the exclusive prerogative of national Governments, implying that the setting of population goals similarly belongs to the field of national sovereignty. Therefore, the achievement or non-achievement of most of the policy recommendations of the Mexico City Conference cannot be measured by global or national demographic indicators—e.g., by a decrease in the growth rate of world population.

#### RECOMMENDATIONS OF THE MEXICO CITY CONFERENCE ON POPULATION POLICIES

Nevertheless, recommendations on policies on health, fertility and internal and international migration can be investigated in terms of relative achievement. The basic principle on which they are based is expressed in recommendation 13: "Such policies should respect human rights, the religious beliefs, philosophical convictions, cultural values and fundamental rights of each individual and couple, to determine the size of its own family." That means that there are indeed basic human rights which should not be infringed upon by the society or by its representative, the State, and that the right to decide on the number of one's children is one of those basic human rights.

#### *Health*

On morbidity and mortality, recommendation 14 states that "all Governments . . . are strongly urged to strive to reduce morbidity and mortality levels and socio-economic and geographical differentials . . .". This is the least controversial recommendation on population policies, since all Governments and individuals probably agree that the reduction of mortality and the improvement of health conditions are desirable goals.

## *Fertility*

Recommendation 30, on fertility policy, once again and more explicitly states the basic right of couples and individuals "to decide freely and responsibly the number and spacing of their children and to have the information, education and the means to do so". More concretely, Governments should make available information, education and the means of family planning, including "all medically approved and appropriate methods of family planning, including natural family planning" (recommendation 25). On that point the recommendations are obviously ambiguous, since it is not clearly stated whether induced abortion belongs among the medically approved and appropriate methods, and there is a well-known controversy not only among Governments but even more among social institutions and movements (e.g., churches, feminist movements) on the permissibility of induced abortions.

"Incentives and disincentives" are apparently accepted as permissible policy measures to influence fertility, with the proviso that they "should be neither coercive nor discriminatory" (recommendation 31). That formulation also seems to be ambiguous, because if incentives and disincentives are understood as monetary or material advantages or disadvantages offered to families having children, they are by definition non-coercive.

Pro-natalist monetary incentives are especially recommended in recommendation 35: "Governments that view the level of fertility in their countries as too low may consider financial and other support to families to assist them with their parental responsibilities and to facilitate their access to the necessary services." In recommendation 34, similar supports are suggested as measures of family policy, in order to help families to provide the most favourable environment for the development of their children (a general goal formulated in recommendation 26): financial and/or other support to parents; child-welfare services and child-care provisions; maternity and paternity leave; and housing assistance to young couples are mentioned in particular.

From all the above-mentioned recommendations—sometimes ambiguous or even contradictory—I would dare to conclude<sup>2</sup> that:

(a) Information on the available methods of contraception should be made accessible to all groups in the population, and contraceptives should be available for all couples, possibly at prices that everybody can afford;

(b) Non-coercive incentives and disincentives are permissible. Support for families having children is highly desirable in all circumstances, irrespective of the actual level of fertility (higher or lower than needed for the level of reproduction considered desirable in the national population policy);

(c) Women should be free to ask for an induced abortion, if medically acceptable (e.g., not after the twenty-eighth week of pregnancy). Induced abortions should not be prohibited or prosecuted by penal law, or be performed coercively. Similarly, sterilization of men or women should be performed at the wish of the given person, but never coercively.

A more general question relating the principles and the theory is only hinted at in recommendation 30—namely, that individuals "should take into

account the needs of their living and future children and their responsibilities towards the community” in the exercise of the right to decide freely the number of their children. It is not clear what is meant by “responsibilities towards the community”. The interests of the individual and of the community—e.g., of the national society—do not necessarily coincide and in many circumstances are contradictory. Contradiction of interests may arise in both directions: families might be interested in having more children or fewer children than would be optimal for the community. In the first case a “tragedy of the commons” type of situation might appear: parents might be interested in having many children (e.g., because they provide security in old age), but the community might favour a lower rate of population growth, because the amount of available land or pasture cannot be extended. Thus a higher rate of population growth would result in a lower land/population ratio and in pauperization. In the second case the children might be conceptualized as public goods, contributing to the national income from which pensions are paid. The cost of their upbringing is, however, completely or almost completely borne by their parental families, which might be interested in having few or no children, so as to share as “free riders” in the national income produced by the children of others. In similar cases of public goods it is obviously justified to ascribe the external costs to those who enjoy the benefits, or—vice versa—to allocate the costs to those who will enjoy the future external benefits. In other terms, it is justified to “buy” the behaviour of individuals and couples that is optimal for the whole community. Coercion, however, does not seem to be warranted, even if it is applied in the interest of the community as a whole.<sup>3</sup> That principle is, however, not explicitly stated in the Report of the Mexico City Conference.

#### *Internal migration*

The recommendations on internal migration seem to rely on the implicit assumption that excessive urbanization is undesirable and that balanced development of urban and rural areas ought to be sought. From the point of view of this paper, the most important recommendation seems to be that “Governments wishing to minimize undesired migration should implement population distribution policies through incentives, rather than migration controls, which are difficult to enforce and may infringe human rights” (recommendation 40). Although “the rights of indigenous and other groups” are mentioned in recommendation 37, “individual or mass forcible transfers” of population are explicitly condemned only in the case of territories occupied by force (recommendation 36). Transfers of population groups by coercion are, however, being undertaken within national boundaries in relatively peaceful times, and they also obviously infringe on human rights.

#### *International migration*

The recommendations on international migration, although numerous, do not take any definite stand on the desirability of encouraging or discouraging international migration flows, in spite of the fact that differences in population growth rates and also in economic growth rates obviously stimulate migration

flows and an ordered system of documented international migrations would contribute to the solution of world-wide economic and social problems. Decisions concerning the permission, encouragement or restriction of international emigration and immigration are clearly left completely to national Governments. Only the needs to safeguard the basic human rights and freedoms of migrants and the equal treatment of immigrants and nationals and to support humanitarian considerations in the treatment of undocumented (i.e., illegal) migrants are mentioned in the recommendations.

Let us review the extent to which the recommendations were put into effect.

#### IMPLEMENTATION OF THE RECOMMENDATIONS ON POPULATION POLICIES

If the aim of the Bucharest and Mexico City Conferences was to increase awareness on the part of Governments of existing population problems and of the need to pursue population policies as constituent elements of general socio-economic development policies, and if the degree of progress in the formulation, adoption and implementation of population policies can be reliably measured by the answers of Governments to the population inquiries of the United Nations, the achievement of the aim is proceeding at a spectacular rate (Chasteland, 1984; Heisel, 1985; Chamie, 1988). Since 1963 increasing numbers of countries have answered the inquiries and have reported that they have formulated population goals and policies. In addition, an increasing proportion of all countries consider their population growth rate to be too high and a declining proportion consider it to be too low. That would suggest that more and more Governments have become aware that their high rates of population growth are causing economic and social problems.

The result is, however, less convincing if the more developed countries and the less developed countries are considered separately. In the more developed countries, an increasing number of which have had a net reproduction rate below 1.0 since 1974, the percentage that consider their population growth rates too low declined. On the other hand, among the less developed countries, the percentage that consider their population growth rates to be too high increased only very slightly from 1974 to 1988. Therefore, it might be suspected that the change in the evaluation of the population growth rate was influenced less by demographic facts and more by changes in the intellectual climate in the more developed societies.

The importance and the influence of the recommendations of the Mexico City Conference can also, however, be measured by the fulfilment of the above-mentioned concrete recommendations.

#### *Health policies*

As mentioned above, no disagreement on the goals and means of health policies exists among Governments around the world. A decline in adult, infant and child mortality and an improvement in health conditions are consid-



ered important goals everywhere. The means to attain them are similar in all countries—i.e., provision of better health care for every member of the population, eradication of epidemic diseases, improvement in public hygiene etc. Some slight differences can be observed in the concrete ways of organizing the efforts: some countries rely first of all on free, or very-low-cost, public-health systems; others tend to permit the market to prevail in the field of health protection. That is, however, less a matter of principle than one of careful analysis of the solutions and results of different health systems in selected countries and of deciding which system is more appropriate in a given country and a given period.

Also, the results of population policies are the most unambiguous and visible in the mortality field. Death rates declined and life expectancies increased at the world level in the 1970s and 1980s, although less rapidly than in the 1960s. The slowdown probably was caused by the fact that in the 1960s the more easily defeated causes of death were reduced by deliberate policies, while in subsequent years causes of death that are less easily surmountable have had to be dealt with. In addition, it might be surmised that the improvement in the standard of living was more rapid in the 1960s than in subsequent years, and obviously the improvement in health depends not only on relatively simple policy measures, but also (and probably more) on general improvement in living conditions.

In some countries, especially in Africa, the improvement in mortality failed significantly to reach the desired goals, and a relatively high level of mortality prevails. Also, the surprising deterioration in adult mortality rates in most of the European socialist countries since the mid-1960s is one of the cases where goals in the field of mortality were far from attained (see, for example, Józán, 1988).

Some epidemic diseases that seemed to be almost defeated reappeared with new virulence, such as malaria just recently in Madagascar. The appearance and rapid spread of the AIDS epidemic may cause formidable problems for the health systems and populations of many countries of the world. Therefore, in spite of the successes of health policies, problems of mortality and morbidity will continue to be among the serious concerns of population policy-makers.

### *Fertility policies*

The recommendations on fertility policies have been put into effect with a much less positive result than those on health policies.

The goal to provide access to information and means of family planning to all couples seems to have been attained more or less “half way”; Mauldin and Segal (1988) estimate that “world-wide, about 400 million out of the 850 to 880 million married couples of reproductive age—or a little less than 50 per cent—are estimated to use a contraceptive method”. The contraceptive prevalence rates, expressed as a percentage of married women of reproductive age, are, however, very different in different countries, ranging from 83 per cent in

Switzerland to 1 per cent in Yemen. The rates are much higher in the developing countries of the Americas and Asia than in Africa. The Arab countries of the Near East also have conspicuously low rates. Among the largest developing Asian countries, China has a very high rate (69 per cent), but India (34 per cent), Bangladesh (25 per cent) and Pakistan (7 per cent) lag considerably behind, in spite of considerable efforts made in at least parts of those countries (Balasubramanian, 1985; Desai, 1985; Duza, 1985; Srikantan, 1985).

The low rate of contraceptive prevalence in some countries is caused in part by the lack of governmental population policies (Carafa and others, 1986; Mundigo, 1986; Frejka, 1987). In Bolivia, for example, several agreements were signed with international agencies to implement birth control programmes in the 1970s, but the programmes met such strong resistance from various social groups, notably the Roman Catholic Church and the military régime, that they were abruptly cancelled.

In other countries, it seems that no widespread demand existed for family-planning services. The underlying assumption of family-planning programmes is usually that there is a widespread latent demand for birth control in the developing societies and that once family-planning services appear in the field, the information and the means of family planning will be put to use. It seems, however, that there is much less demand for family planning than has been assumed—either because the societies are so poor that parents cannot achieve any social advancement or improvement in their level of living by limiting the number of their children or because the prevalent ideologies strongly condemn birth control or certain methods of birth control. If the last two hypotheses are valid, either a certain level of social and economic development has to be achieved before a demand for family planning will spread or the dominant ideologies will have to change. Obviously completely different strategies are needed in the two cases. Very little, however, is known about the causative mechanism determining the level of fertility (or about the respective roles of the availability of birth-control methods, general socio-economic development and ideologies).

Some countries, seeing the slowness in the decline of fertility, have resorted to coercive measures. The two most conspicuous examples are the two countries having the largest populations, India and China. In India, sporadic coerced sterilizations were soon discontinued; in China it is reported that the two-child family norm has sometimes been enforced by coerced induced abortions or at least by strong social pressure.

In the majority of the countries of the world the level of fertility has declined since about 1970 and has continued to decline since the Mexico City Conference. The decline in the birth rate of the total world population is due to a large extent to the abrupt decline in China, which comprises about one fifth of the world population. Nevertheless it may be concluded that the demographic transition is already well on its way in most countries of the world. How much the onset of fertility decline was due to population policies is, however, debatable.

At present most of the more developed countries face the opposite problem: fertility is below replacement level (Blayo, 1987; Macura and Malacic, 1987).<sup>4</sup> It is not clear whether the decline and aging of the population resulting from the low level of fertility might be at least partly compensated for by immigration. Also there is no agreement on the economic and social consequences of the decline and the aging of the population (Ermisch and Joshi, 1987). There are, however, convincing scientific arguments predicting disadvantageous consequences (Sauvy, 1979; Chesnais, 1984; McNicoll, 1986; Weaver, 1986). Therefore one would expect that those countries, which already use an important portion of their national incomes for different kinds of income transfers (pensions, sickness benefits etc.) would introduce pro-natalist financial incentives for families having children, according to the recommendations of the Mexico City Conference. In many of those countries, however, the policy response to the below-replacement level of fertility was slow and often rather modest, clearly not sufficient to induce an increase in fertility sufficient to attain the level of simple replacement (Klinger, 1987). It is noteworthy that, in the Federal Republic of Germany, where the level of fertility attained its lowest level in recent years, members of the parliament and of the Government tended to avoid even the phrase "population policy", speaking instead of family policy (Albers and others, 1979). One outstanding German demographer stated some years ago that there was no intention of pursuing an active population policy (Mackensen, 1982); another felt that, even if a consensus could be achieved on the goals of such a policy, there were no politically acceptable or efficient measures that could impel the population towards the desired goal (Kaufmann, 1983).

One of the reasons for the slow reaction is that there are widespread doubts about the efficacy of monetary and non-monetary benefits given to families in order to alleviate the burdens they face in consequence of their willingness to bear and rear children. It seems, however, that such benefits had a moderate influence on the average number of children per family in France (Calot and Chesnais, 1983; Chesnais, 1985) and in Hungary (Andorka and Vukovich, 1985).

In the less developed countries, also, the formulation of a population policy is hindered by the lack of an accepted explanation of the causative mechanism of fertility. If the level of fertility is determined by macro-social changes related to modernization, such as the emancipation of women, the decline in traditional values and norms, the appearance of new ways of life etc., then a policy providing minor financial benefits would obviously not change it. If, however, the economic theory of fertility is valid (i.e., if a monetary benefit, *ceteris paribus*, induces couples to have more children or to restrict the number of their children less effectively), then the benefits might have the desired effect.

In view of the difficulties of increasing the level of fertility by monetary benefits (the difficulties arising first of all from the inability of some state budgets to cover the cost), countries such as Romania resorted to a restriction on induced abortions and the accessibility of contraceptives.

### *Internal migration policies*

In the less developed countries, the importance of rural and agricultural development has been gradually accepted. This might result in a decline in the rate of growth of urban population, particularly in slower growth of the biggest urban agglomerations, although at present no new tendency is very visible. In the administration of internal migration, abolishing the requirement that nationals must request permission to change residence, which was enforced for many decades in the USSR, is an important step towards the fulfilment of the recommendations.

Migration continues to be forced on certain population groups in some countries of the world, Ethiopia being the best known recent example. In 1987, world public opinion was aroused by a report that the Government of Romania proposed to abolish the greater part of existing smaller villages and resettle the population in urban centres. If the resettlements were to be achieved by coercive means, they would clearly infringe on the human right to choose freely one's place of residence, implicitly recognized by the recommendations of the Mexico City Conference.

### *International migration policies*

There are signs that the policies of States are approaching common ground on international migration. Some countries do not hinder emigration; others control it by administrative means; others even encourage it. Some countries encourage immigration; others—among them the United States—restrict it.<sup>5</sup> One of the consequences of the situation is the great number of undocumented migrants in certain countries. Almost necessarily, such migrants are at a disadvantage compared to the national population.

#### SOME FACTORS IN THE FAILURE TO FULFIL THE POLICY RECOMMENDATIONS

It would be naive to be surprised or offended by the failure to implement some of the recommendations of the Mexico City Conference on the part of some countries. Policy-making is not a simple one-way process, in which national Governments follow the advice of international agreements, organizations or scientists. Policies are formulated and implemented in the framework of the interplay of various social classes, socio-economic groups, political and social movements and institutions, the governmental bureaucracy, scientists and scientific institutions, and international organizations. It must be recognized that the "objective function" of the activity of politicians is not the solution of economic, social or demographic problems but the acquisition and the maintenance of power (Urzua, 1986; Sirageldin, 1987; Andorka, 1985).

Maurice Kirk (1981) gives a very brief explanation of the difficulty of formulating and implementing a population policy in a State having a multi-party democratic system with elections: "Democratic politics is very largely about finding short-term solutions to short-term problems." The level of ferti-

ity is not a short-term problem, nor is the impact of health and migration policies. Yet the lack of adequate policies is rarely felt as an acute dilemma by the population. Therefore, although "it is the proper business of any government to ensure security and the good order of the national society", it is not likely that politicians "would be willing to stake their public reputations on a demographic issue", considering that "in general people are not disposed to calculate their position, or the position of the national community, a generation ahead". It ought to be added that authoritarian régimes are also usually more concerned about very short-term power relations than about long-term demographic problems.

Authoritarian régimes, without elections and other expressions of public opinion, face another, even more dangerous, potential failure—namely the implementation of population policies based on coercion. The temptation to resort to apparently easier command methods instead of non-coercive (and costly) incentives is always present. The history of coercive population policies, however, proves that those measures not only are inefficient in the long term but also backfire in a way that makes the implementation of sound non-coercive policies later much more difficult (Andorka, 1985). The best example is the population policy of Nazi Germany and the subsequent difficulties of introducing a population policy in the Federal Republic of Germany, where the highly unpopular Nazi measures resulted in public opinion that is reticent *vis-à-vis* any population policy and even the expression "population policy".

#### SOME TENTATIVE CONCLUSIONS

One of the most important pre-conditions for any sound and successful population policy seems to be a national consensus on the problems of population and the principles of the policy to be followed. France is one country with such a consensus: politicians from Simone Weil to François Mitterand and outstanding demographers from Alfred Sauvy to Gérard Calot seem to agree more or less in their evaluation of the demographic situation and in the principles of French population policy (McIntosh, 1983).

The science of demography obviously has an important part to play in bringing about a consensus of that sort. For that purpose, research—on not only the causal mechanisms of demographic phenomena and their economic and social consequences but also the utilization of demographic knowledge in policy-making and the demographic impact of policies—is greatly needed. The International Union for the Scientific Study of Population (IUSSP) has long been engaged in such research (McNicoll, 1988).

International governmental conferences, such as those held at Bucharest and Mexico City, and the reports and recommendations accepted there sensitize Governments to demographic problems and the need for population policies. They can also provide a reference basis when a sound, scientifically based population policy that does not infringe on human rights is required.

#### NOTES

<sup>1</sup> See *Report of the International Conference on Population, Mexico City, 6-14 August 1984* (United Nations publication, Sales No. E.84.XIII.8 and Corr.1 and 3), chap. I.B.

<sup>2</sup> These conclusions accord with the ethical principles formulated by Berelson and Lieberman (1979), in one of the few articles treating the ethical issues relating to population policies in a scientific way. In addition, they hold that peer pressures organized by the political apparatus in order to induce families to have the number of children considered to be desirable by the State are non-permissible on ethical grounds.

<sup>3</sup> Demeny (1986; 1987) dealt recently with the possible and permissible policies in the case of situations where the free decisions of the couples or the market do not produce the number of children that would be optimal for the society in the long term.

<sup>4</sup> The diversity in the developing countries is well characterized by the fact that, while many of those countries are still experiencing very high levels of fertility and high rates of growth, one country which two decades ago was certainly considered to belong to the less developed countries, Singapore, has had a below-replacement fertility level since 1975 and intends to introduce pro-natalist population policy measures (Saw, 1985; 1986).

<sup>5</sup> The European Economic Community is a noteworthy example of a group of countries having a common international migration policy. Its success might be an example for the world community in the long run.

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# CHANGING POPULATION RATES, POLICIES AND ATTITUDES IN AFRICA, THE MIDDLE EAST AND SOUTH ASIA

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## SUMMARY

This paper will explore the relationships between population growth rates, governmental policies and social attitudes in three regions: Africa, the Middle East and South Asia.

The comparative success of family planning programmes in certain countries of South Asia (most notably, India and Sri Lanka) can be partly ascribed to their long tradition of governmental leadership. In addition, families in those countries have strong incentives to educate their children. On the other hand, in North Africa and the Middle East, high levels of urbanization have had anti-natalist effects, which are offset by very low levels of girls' schooling and of female employment outside the home. In sub-Saharan Africa, high fertility is sustained by the structure of the family, with its tendency to separate reproductive decision-making from responsibility for child-rearing. In addition, Governments there have a comparatively weaker tradition of leadership in areas such as family behaviour.

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Most developing countries now have population policies that include disapproval of excessive fertility and growth rates (United Nations, 1986). Most also provide family planning assistance in order to influence demographic behaviour. The only major regions with high fertility rates that show little sign of decline are sub-Saharan Africa, North Africa and the Middle East, and South Asia. This paper will concentrate on those three regions, defined in a way that we consider culturally appropriate.<sup>1</sup>

Our aim is to explore the relationships between growth rates, governmental attitudes, governmental interventions and popular attitudes. We rely extensively on the monitoring of governmental attitudes by the United Nations, which has been carried out in accordance with the recommendations of the World Population Plan of Action, adopted by the World Population Conference at Bucharest in 1974, and reaffirmed by the International Conference on

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Population at Mexico City in 1984.<sup>2</sup> In particular, we focus on the responses to the 1978 and 1987 Population Inquiries sent out by the United Nations Secretariat (United Nations, 1980, 1987). As records of governmental policy, they provide a useful indicator of official commitment after the excitement of the population conferences had ebbed. In order to put governmental attitudes within a demographic context, policies in 1978 and 1987 are compared to fertility and growth rates of 1975 and 1985. Thus, we are presenting information on roughly a decade of demographic and programmatic change.

Although the three regions all have high rates of fertility, in the recent past they have been on quite different demographic courses. The sub-Saharan region has had no decline in fertility rates, and growth continues to rise. The total fertility rate is well over 6. The aggregate measures may, however, mask some decline in southern Africa in the past decade, arising from a decline in South Africa and probably in Zimbabwe and Botswana. In North Africa and the Middle East, fertility has been falling over the past two decades, with recent significant movements in Morocco and Algeria and a relatively low level already attained in Lebanon. However, the total rate is probably still over 7 in the Libyan Arab Jamahiriya and not far below that in Iraq. Fertility in South Asia has been falling since the 1960s. The picture is dominated by persistent declines in India, where the total fertility rate is probably now around 4, and the attainment of a rate well under 3 in Sri Lanka is in sight.

#### GOVERNMENTAL ATTITUDES TOWARDS FERTILITY

The greatest uncertainty in a comparison of this type is the actual attitude of Governments, which must be deduced from their responses to the United Nations Population Inquiries among Governments. Certain countries have clearly expressed views about population growth, which lead directly to either implementing family planning programmes or refusing to tolerate such programmes. Others make population-related statements in planning documents which are little more than rhetoric. Other responses may vary according to the governmental department or even public servant responsible for them. That appeared to be the case in a population monitoring report carried out in Africa in 1964 (Caldwell, 1966) and a more recent United Nations assessment of experiences, attitudes and programmes with regard to desertification (Caldwell, 1984). It is probable that the monitoring of population attitudes is being taken increasingly seriously, and indeed that change was one of the aims of many who advocated monitoring at Bucharest and Mexico City.

Table 1 reports the results of the 1979 and 1987 monitoring of population trends and policies in the three regions. In 1978, seven countries regarded their fertility as too low, 36 as satisfactory, and 28 as too high. By 1987 that had changed to five countries reporting fertility too low, 28 as satisfactory and 38 as too high. Clearly, in 40 to 53 per cent of the reporting countries, there had been a modest movement towards regarding fertility as too high.

However, that movement is the result solely of changes in sub-Saharan Africa and took place between the holding of the Bucharest and Mexico City

conferences. South Asia, with the exception of two small countries (Bhutan and Maldives), had decided before 1978 that it wanted lower fertility, while North Africa and the Middle East remained unconvinced over the decade, with only one third of the countries there favouring low fertility.

TABLE 1. GOVERNMENTAL ATTITUDES TOWARDS FERTILITY LEVELS IN THREE DEVELOPING REGIONS,<sup>a</sup> 1978 AND 1987

	Year	Too low		Satisfactory		Too high	
		Number	Percentage	Number	Percentage	Number	Percentage
Three regions combined . . . . .							
	1978	7	9	36	51	28	40
	1987	5	7	28	40	38	53
Sub-Saharan Africa . . . . .							
	1978	5	12	23	53	15	35
	1987	3	7	15	35	25	58
North Africa and the Middle East . . . . .							
	1978	2	10	11	58	6	32
	1987	2	10	11	58	6	32
South Asia . . . . .							
	1978	0	0	2	22	6	78
	1987	0	0	2	22	7	78

Sources: *World Population Trends and Policies: 1979 Monitoring Report*, vol. II. *Population Policies* (Sales No. E.79.XIII.5); and United Nations, *Global Reviews and Inventory of Population Policy, 1987* (computer diskette).

<sup>a</sup> *Sub-Saharan Africa*: Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Congo, Côte d'Ivoire, Djibouti, Ethiopia, Equatorial Guinea, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Malawi, Mali, Mauritania, Niger, Nigeria, Madagascar, Mauritius, Mozambique, Rwanda, Sao Tome, Senegal, Seychelles, Sierra Leone, Somalia, South Africa, Sudan, Swaziland, Togo, Uganda, United Republic of Tanzania, Zaire, Zambia, Zimbabwe.

*North Africa and the Middle East*: Algeria, Bahrain, Democratic Yemen, Egypt, Iran (Islamic Republic of), Iraq, Jordan, Kuwait, Lebanon, Libyan Arab Jamahiriya, Oman, Qatar, Saudi Arabia, Syrian Arab Republic, Morocco, Tunisia, Yemen, United Arab Emirates.

*South Asia*: Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, Sri Lanka.

The first question of interest is the extent to which different governmental attitudes reflect different demographic realities. It is examined in table 2 in terms of birth rates and rates of natural increase, the latter being included in case Governments are actually more influenced by growth than fertility levels.

The table reveals a weak relationship between governmental attitudes to the level of fertility and the actual levels of fertility. There is no relation in the sense that demographic levels determine attitudes. Indeed, increasingly attitudes will probably determine levels, in that the countries feeling most strongly that high fertility is undesirable will do the most to facilitate its decline. That has been the case in South Asia for at least a decade.

The policies of some sub-Saharan African countries are clearly a reaction to actual low fertility. All of the countries in that region which professed in either 1978 or 1987 that their fertility rates were too low have a history of widespread infertility. Gabon, Central African Republic and Cameroon are part of the low-fertility belt. Pathological sterility in those countries has re-

TABLE 2. CRUDE BIRTH RATES AND RATES OF NATURAL INCREASE BY REPORTED GOVERNMENTAL ATTITUDES TOWARDS FERTILITY LEVELS IN THREE DEVELOPING REGIONS,<sup>a</sup> 1978-1987

	Year	Attitude		
		Too low	Satisfactory	Too high
<i>Crude birth rate</i>				
Three regions combined	1978	41.8	46.4	42.2
	1987	39.9	42.6	44.1
Sub-Saharan Africa	1978	39.9	46.2	44.7
	1987	40.3	45.0	46.2
North Africa and the Middle East	1978	46.6	47.0	38.0
	1987	39.4	38.8	40.3
South Asia	1978	-	46.9	42.2
	1987	-	43.1	39.2
<i>Rate of natural increase</i>				
Three regions combined	1978	22.0	25.9	25.1
	1987	26.1	28.7	25.9
Sub-Saharan Africa	1978	18.0	24.6	25.0
	1987	21.0	26.9	25.8
North Africa and Middle East	1978	31.9	31.9	28.5
	1987	33.7	31.4	27.7
South Asia	1978	-	25.2	22.4
	1987	-	29.3	24.8

Sources: *World Population Trends and Policies: 1979 Monitoring Report*, vol. II. *Population Policies* (Sales No. E.79.XIII.5); and United Nations, *Global Review and Inventory of Population Policy, 1987* (computer diskette), New York, 1987.

<sup>a</sup> See table 1 for a list of countries by region.

sulted in birth rates up to 40 per cent below regional averages and a large proportion of women never bearing children (Caldwell and Caldwell, 1983). Equatorial Guinea, although apparently not severely affected by infertility, is nonetheless surrounded by the three low-fertility countries, which has probably influenced its pro-natalist policy. Guinea, which lies to the north of the low-fertility belt, also has moderately high levels of childlessness (Frank, 1983).

The situation reported for fertility is sustained by the data on natural increase. Although the inverted U-curve for demographic behaviour by fertility attitude persists until 1987, it largely reflects the adding together of dissimilar regions. The countries growing most slowly in sub-Saharan Africa favour faster growth. In North Africa and the Middle East and in South Asia, governmental support for lower fertility is reflected in smaller rates of natural increase.

#### *Changing attitudes, 1978-1987*

Sub-Saharan Africa is the only one of the three regions that has had a noteworthy transformation in governmental attitudes. From 1964 to 1978, the situation did not change much (Caldwell, 1966). The countries regarding fertility as too high were mostly anglophone: Botswana, Ghana, Kenya, Lesotho,

Liberia, Mauritius, Seychelles, Sierra Leone, South Africa, Swaziland and Uganda. Indeed, Botswana, Ghana, Kenya and Mauritius had introduced national family-planning programmes. Francophone Africa was represented only by Comoros, Madagascar, Rwanda and Senegal. Fourteen years later, by 1987, the situation had changed radically, with five more francophone countries declaring that their fertility rates were too high: Burundi, Cameroon, Central African Republic, Guinea and Niger. Other Governments changing to that point of view included Ethiopia, Gambia, Malawi, Nigeria, the United Republic of Tanzania and Zambia. Among the latter there is clear evidence that neither strongly felt African socialism nor African nationalism was any longer a bar to anti-natalist attitudes. The change was first signalled before the Mexico City Conference, at a meeting organized in Africa by the United Nations which produced the Kilimanjaro Programme of Action<sup>3</sup> (Heckel, 1986). One reason for the change was doubtless the continued build-up of world opposition to high rates of population growth, but another was almost certainly the continued problems besetting many African economies and their failure to yield significant growth in per capita incomes.<sup>4</sup>

In the Middle East, Bahrain, the Islamic Republic of Iran and Jordan (and perhaps Djibouti, which is in sub-Saharan Africa but on the Red Sea) considered their fertility too high in 1978, but not in 1987, even though birth rates had usually not fallen, and in Iran had increased. The other Middle Eastern and North African countries—Algeria, Democratic Yemen, Iraq, Kuwait, Lebanon, Libyan Arab Jamahiriya, Oman, Qatar, Saudi Arabia, Syrian Arab Republic, United Arab Emirates and Yemen—never considered their fertility too high, even though most had experienced birth rates over 45 per thousand in 1978. Indeed, Iraq and Kuwait classified their fertility in 1987 as too low, in spite of birth rates of 34 and 44, respectively. There we have clear testimony as to the effect of war and political/military tensions on the rejection of anti-natalist attitudes.

*Link between governmental attitudes and the provision  
of services to curb fertility control*

Table 3 explores the relationship in 1987 between stated governmental attitudes to fertility levels, access to contraception (contraceptive prevalence) and governmental support for family planning.

As might be anticipated, direct governmental support for family planning increased with opposition to high fertility. If we exclude the contraceptive-prevalence data for Iraq, where popular practice seems at odds with governmental policy, contraceptive prevalence increases with governmental support for family planning. That is especially the case with regard to modern methods of contraception, which are the main methods offered by family-planning programmes. The region with the most anomalies is North Africa and the Middle East, where the aims of individual families and of Governments frequently appear not to coincide. Lebanon, with a crude birth rate below 30 per thousand and 53 per cent of couples practising family planning, in spite of no direct support by the Government, appears to be following the European pattern of

TABLE 3. GOVERNMENTAL ATTITUDES IN 1987 TOWARDS FERTILITY LEVELS, SUPPORT FOR FAMILY PLANNING AND CONTRACEPTIVE PREVALENCE IN THREE DEVELOPING REGIONS<sup>a</sup>

	Fertility levels		Contraceptive prevalence (average)				Support for family planning	
	Attitude	Number of countries	All methods		Modern methods		Type	Percentage
			Number	Percentage	Number	Percentage		
Three regions combined.....	Too low	5	1 <sup>b</sup>	14	12	Major limits	20	
						No support	60	
						Indirect support	0	
	Satisfactory	28	8	15	8	Direct support	20	
						Major limits	4	
						No support	28	
						Indirect support	25	
	Too high	-	23	23	16	Direct support	43	
						Major limits	0	
						No support	0	
						Indirect support	8	
						Direct support	92	
Sub-Saharan Africa .....	Too low	3	-	-	-	No support	67	
						Direct support	33	
	Satisfactory	16	5	5	1	No support	19	
						Indirect support	25	
						Direct support	56	
	Too high	27	13	21	13	Indirect support	7	
						Direct support	93	
North Africa and Middle East .....	Too low	2	1	14	12	Major limits	50	
						No support	50	
	Satisfactory	10	3	33	18	Major limits	10	
						No support	40	
						Indirect support	30	
	Too high	6	5	27	20	Direct support	20	
						Indirect support	0	
South Asia .....	Satisfactory	2	-	-	-	Direct support	100	
	Too high	6	6	35	19	Direct support	100	

<sup>a</sup> See table 1 for a list of countries by region.

<sup>b</sup> Other countries in this group are probably much lower.

demographic transition. Jordan and the Syrian Arab Republic show considerable heterogeneity in their approaches to fertility decline: they are among the few countries in the world with a level of modern contraceptive use of around 20 per cent, while birth rates remain in the neighborhood of 45 per thousand.

#### RELATED ISSUES WITH REGARD TO FERTILITY DECLINE

What kind of pattern can be observed from the data so far presented and what kind of pattern is portended for the fertility transition?

Some scenarios can be dismissed quickly. It is clear that governmental attitudes towards fertility control do not stem from either the birth rate or the rate of population growth. A quarter of a century ago, the birth rate was around 45 per thousand in all three regions. The major countries of South Asia had already adopted population policies and implemented family-planning programmes. Most sub-Saharan African countries have taken a stance against high fertility only in the past five or 10 years, and few as yet have implemented family-planning programmes. In North Africa and the Middle East, Governments worried about high fertility are in a minority, although more of their citizens are practising family planning than is the case in sub-Saharan Africa. And there is no clear relationship between the timing of the establishment of family-planning programmes and other aspects of socio-economic transition, such as the attainment of threshold levels of per capita income or urbanization.

Since Governments are not necessarily responsive to demographic pressures, and demographic rates may be relatively unaffected by other socio-economic changes, we need to ask what is the relationship between governmental attitudes and popular attitudes towards fertility control. For instance, were there any spatial factors involved in the change of attitude in many francophone sub-Saharan African countries towards high fertility in the early 1980s?

Some tentative answers to such a question are outlined below (on India: Caldwell, Reddy and Caldwell, 1982, 1988; Caldwell and Caldwell, 1984; on Sri Lanka: Caldwell and others, 1987; on North Africa and Middle East: P. Caldwell, 1977; on Africa: J. C. Caldwell, 1982; Caldwell and Caldwell, 1987).

#### *South Asia*

Government family-planning policies and programmes in the subcontinental area that now includes India, Pakistan and Bangladesh date back to the 1950s and are the oldest such national programmes in the world. It is pertinent to ask why Governments were able to adopt such policies at that time with less opposition than most sub-Saharan Governments anticipate today. It is also relevant to ask why India has been more successful in reducing fertility levels than Pakistan and Bangladesh. Finally, why did Sri Lanka have a largely spontaneous fertility transition?

In contrast to sub-Saharan Africa, South Asia has a long tradition of governmental leadership. Perhaps more important still, in India, is the nature of Hindu society, firmly structured with a tradition of elite leadership, which blurs any firm distinction between religion, morality and secular enlightenment. In a South Indian rural area, researchers found no Hindu opposition to the right of the State to adopt family-planning policies, although they found plenty of controversy about who should run the State and apprehension about personally employing the family-planning methods offered. Among Hindus, the Indian family-planning programme owes some of its success to governmental moral advocacy and has been most successful where the state programmes were most self-assured and efficient.

There have also been personal, or private, reasons why many families in India wish to avoid unlimited fertility, and those reasons are related to the socio-economic transition that is under way. Researchers found a situation in which families were attempting to make use of the increasing opportunities for non-agricultural employment in order to diversify the sources of family income and thus overcome both the problem of surplus rural labour and the risk involved in being tied too closely to the cycle of food adequacy and deficit imposed by the climatic cycle. In order to provide their children with a greater chance of securing non-agricultural employment, families made increasing use of the educational opportunities provided by the expanding school system. Their real problem was that the families could not afford to have too many children at school at any one time. The situation was found to be magnified in a city population. Further pressure came from the shorter periods of breastfeeding and post-partum amenorrhoea of urban residents, which created a demand for spacing, as well as for terminal contraceptive methods.

In the research on South India, several points should be noted. The first is that the residential family—whether extended or nuclear—acted as a firm, with costs being borne by it and returns accruing to it. The second is that most of the population studied believed that, even with increasing demand for fertility limitation, family size would not have declined without the Government's family-planning programme.

The third point is that there was a clear distinction between the reaction of the Moslem population and that of the Hindus. The former had higher fertility in South India and in the country as a whole. Muslims were more opposed than Hindus to the family-planning programme, not only because they were a minority population but also because they maintained that morality did not change with government leadership and that certain methods of fertility control were ruled out by their religion. They also held the religious conviction that too much apprehension about one's ability to support, and even educate, a large family suggested an irreverent—even blasphemous—lack of faith. Presumably, that conviction helps to explain the relative lack of success of the family-planning programmes in Pakistan and Bangladesh.

The belief that a South Asian transition from predominantly rural to predominantly non-agricultural employment, together with near universal education, will reduce fertility, regardless of per capita income levels, is confirmed

by the experience of Sri Lanka. Indeed, that country's need for fertility control preceded the Government's family-planning programme, with resulting widespread recourse to natural family-planning methods reminiscent of the European fertility transition.

### *North Africa and the Middle East*

In some ways, demographic behaviour in North Africa and the Middle East also resembles the European fertility transition. Many Governments have been worried about fertility control, and private efforts have provided the necessary initiative for it. Once again, as in South Asia, the economic unit has been the residential family. Unlike the situation in mainland South Asia but like that in Sri Lanka, the problems involved in preparing persons for non-agricultural employment have often been considerable. While only 25 per cent of the population of the Indian subcontinent live in urban areas, the proportion for North Africa and the Middle East is around 50 per cent, reaching 70 per cent in Jordan, Iraq, Lebanon and Saudi Arabia, and much higher still in Kuwait and the United Arab Emirates. Even the Maghreb and the Islamic Republic of Iran have half their population in towns.

Nevertheless, the birth rate for the whole region is still over 40 per thousand. There are two reasons. At the personal level, the low rates of female employment outside the home have meant, in many countries, that there has been little demand for girls' schooling, with a consequent reduction of strain on the family budget, and also little clash, even among the middle class, between women's reproductive and work roles. At the governmental level, religion was once a significant element, but military tensions are now much more important. The result is that relatively rich and highly urbanized countries such as Iraq and Kuwait proclaimed in 1987 that their fertility levels, with growth rates of over 3 per cent per year, were too low, while others such as Lebanon, the Libyan Arab Jamahiriya, Saudi Arabia and the Syrian Arab Republic regard such growth rates as satisfactory. However, in most of the region, female levels of education are now increasing rapidly, and, if peace settlements are achieved, Governments could move quickly to establish population programmes.

### *Sub-Saharan Africa*

In contrast to the Middle East, the Governments in Sub-Saharan Africa may now be moving faster than their citizens towards opposing high fertility. Although three fifths of the Governments now say that their fertility is too high, very few have gone far towards establishing national family-planning programmes, even though nothing short of governmental intervention is likely to bring contraception to rural areas, or even to the urban poor. Where attempts to do so date back over two decades, as in Ghana and Kenya, fertility has not fallen. The programmes appear to be inefficient, which may mirror limited demand for controlling family size or official apprehension that the programmes are in conflict with cultural values. In the independent countries of the region, there is, as yet, no certain evidence of fertility decline anywhere



except in Indian Ocean islands, possibly in Zimbabwe and Botswana, and just possibly in some urban areas.

In sub-Saharan Africa, the failure of fertility to decline is not primarily due to lower levels of income, education or urbanization (Caldwell and Caldwell, 1988). One important reason, however, is a household economy that bears little resemblance to that of other regions. Reproductive decision-making, particularly in West Africa, lies mostly in the hands of the husband and his family of origin, while much of the responsibility for supporting the children lies with the wife. That is a logical consequence not only of a bride-wealth system but of high levels of polygyny where a woman and her children tend to form discrete emotional and economic units. Traditionally, high fertility was reinforced by a religion that placed great emphasis on the association of virtue with high fertility and on a belief in the intercession of ancestral spirits to punish those failing to bear many children or, alternatively, to show their disapproval by causing infecundity. Respect for ancestors and the aging still ensures that fathers who have done little for their children will be amply rewarded by their children and grandchildren. Besides polygyny, a growing instability in urban marriage helps to sustain the lack of connection between reproductive and economic responsibility and, hence, to maintain high fertility.

At the governmental level, the nation-state is new in Africa, and Governments lack the Asian precedents for providing leadership in areas of moral behaviour. There is still fear that family-planning programmes are contrary to the African way of life and a realization among politicians and bureaucrats that identifying with such programmes might mean identifying with failure.

Yet within the stable, high-fertility régime, new forces have emerged. There is growing demand for contraception in order to shorten the period of post-partum female sexual abstinence, while maintaining existing birth intervals (Chombo and others, 1986; Brown and others, 1987). There is a rising incidence of abortion, consequent upon premarital and extramarital conceptions. Governments, beset by stagnating economies, are beginning to be convinced that high rates of population growth are adding to their difficulties.

There are two other factors. One is that the increasing use of contraception is still being offset by a continued shortening in the duration of both lactation and post-partum sexual abstinence, so that family-planning activities, which may be setting the stage for future fertility declines, as yet appear to have achieved nothing and so sap the confidence of programme workers and policy-makers. The other is that the region has achieved population growth rates equal to the world's highest only because continued high mortality is accompanied by extremely high fertility, partly made possible by keeping nearly all women of reproductive age in marriage through the mechanism of polygyny. In a region where childlessness is greatly feared for economic, social and religious reasons, fertility control will not easily be accepted until infant and child mortality levels are substantially reduced. Current economic problems continue to militate against the provision of adequate health services, especially in rural areas.

## FORECASTING THE FUTURE

The United Nations assessments of regional fertility trends and prospects in 1973, 1980 and 1984 demonstrate the difficulties of projecting even a decade into the future (United Nations 1977, 1981, 1986a).

In South Asia the slow but continuing success of the Indian family-planning programmes has meant that through 1986, each United Nations projection has shown lower fertility levels than the preceding one. (However, preliminary indications are that the next assessment, as of 1988, may show some deceleration in the pace of fertility decline.) In the Middle East, earlier optimism about an imminent fertility decline has now been tempered. That has been offset by growing optimism with regard to North Africa, as fertility declines spread generally across the Maghreb, with the early declines in Egypt and Tunisia being resumed, and being supplemented by quite steep declines in Morocco after 1975 and Algeria after 1980. In contrast, continuing pessimism drives the projections for sub-Saharan Africa. For the entire region, except for the south, each successive projection forecasts a larger population and a later date for the onset of fertility decline. The date is always placed about half a dozen years after the last date secured for the projection. Clearly, there is as yet no real evidence or consensus as to when the onset of fertility decline is likely to take place in the region.

Research priorities probably should now concentrate on sub-national populations in high-fertility countries where fertility decline might begin. Target groups in sub-Saharan Africa might be urban populations and such regions as Kenya's Central Province and southern Ghana. In action terms, there is need for model family-planning programmes to be successfully established over defined and limited populations. The programmes that follow will be stronger because policy-makers, service providers and potential clients will be confident that smaller family sizes are feasible and beneficial.

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### NOTES

<sup>1</sup> Thus, the only African countries included in the North African and Middle East category are those of the Maghreb. Iran is also included in that grouping.

<sup>2</sup> See *Report of the World Population Conference, Bucharest, 19-20 August 1974* (United Nations publication, Sales No. E.75.XIII.3), chap. I; and *Report of the International Conference on Population, Mexico City, 6-14 August 1984* (United Nations publication, Sales No. E.84.XIII.8 and corrigenda), chap I.

<sup>3</sup> The Kilimanjaro Programme of Action for African Population and Self-reliant Development was adopted by the Second African Population Conference, Arusha, 9-13 January 1984. See E/CONF76/6.

<sup>4</sup> See, for example, the discussion about Nigeria's new population policy in IPPF (1987).

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# THE GLOBAL EPIDEMIOLOGY AND PROJECTED SHORT-TERM DEMOGRAPHIC IMPACT OF AIDS\*

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## SUMMARY

This paper summarizes the natural history, surveillance and global patterns of infections with the human immunodeficiency virus (HIV), the etiologic agent of AIDS. The focus is primarily on HIV-1 because surveillance of HIV-2, which has recently been recognized as a separate type of the virus, is only just beginning. The natural progress of the disease is described, from acute infection through asymptomatic phase to the clinical illness phase. Available evidence on the speed of progression from infection to AIDS and possible co-factors in that progression are reviewed. The three patterns of AIDS which are described characterize the experience of different regions according to the types of transmission (i.e., homosexual vs. heterosexual, contaminated blood, drug use) and demographic characteristics of the affected persons.

An epidemiologically based short-term forecasting model for AIDS cases is presented and used to project the demographic impact of AIDS in a hypothetical central African country. In that hypothetical setting, the impact of AIDS is shown to be disproportionately felt in urban areas, where the projected increase in population will decrease by 30 per cent due to AIDS deaths by 1997; the growth rate of the rural population will be only very slightly affected. In conclusion, the global prevalence of the disease, and prospects and implications for the future are discussed. Without effective drugs for treatment and with no vaccine for prevention of HIV infections, the short-term outlook is not good. HIV/AIDS is expected to be an increasing public-health problem in the next two decades.

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## INTRODUCTION

Although the potential impact of AIDS was denied or grossly underestimated in 1981 (Centers for Disease Control, 1981), it is now apparent that the disease is an unprecedented threat to global health. Since it is in its early

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stages, its ultimate dimensions are difficult to estimate. From our current knowledge, we can confidently predict that further spread is inevitable and the global situation will get much worse before it can be brought under effective control. This paper will summarize the natural history, surveillance and global patterns of infections with the human immunodeficiency virus (HIV), the etiologic agent of AIDS. In addition, an epidemiologically based short-term forecasting model for AIDS cases will be described and used to project the demographic impact of AIDS on a hypothetical central African country.

#### NATURAL HISTORY OF HIV INFECTION

Since the initial isolation and identification of HIV in 1983-1984 (R. C. Gallo and others, 1984; F. Barre-Sinoussi and others, 1983), it is now recognized that there are at least two major types of the virus—HIV-1 and HIV-2. HIV-2 is currently believed to be prevalent primarily in West Africa (Clavel and others, 1987) but active surveillance to detect it has only recently begun in other areas. In this paper, unless otherwise designated, HIV will refer to HIV-1.

The following description applies primarily to HIV-1 in adults, which accounts for the vast majority of AIDS cases so far reported throughout the world.<sup>1</sup> Not all HIV-infected persons will necessarily develop all of the clinical signs and symptoms described or will have them in the sequence outlined. Significant individual variation exists.

Initial infection with HIV may provoke no notable signs or symptoms. An unknown proportion of persons will experience a short, self-limited, acute infectious mononucleosis-like illness (fever, malaise, possibly a skin rash). Such symptoms develop at about the time that detectable antibodies to HIV can be found, usually from several weeks to 2-3 months after infection, rarely longer.

After the self-limited, acute phase, those infected with HIV will experience, on average, a variable period (from months to years, but generally at least a couple of years) free from any illness associated with their infection. In some persons, generalized enlargement of the lymph nodes may be noticed. In some persons, the generalized lymphadenopathy may be accompanied by night sweats, fever, diarrhoea, weight loss, fatigue and uncommon infections such as oral candidiasis and varicella-zoster. While not ordinarily life-threatening, persistent diarrhoea and weight loss (the "wasting syndrome") may occasionally cause death.

Collectively, the above-mentioned signs and symptoms do not meet the Centers for Disease Control (CDC)/WHO definition for AIDS, and are referred to as AIDS-related conditions (ARC). (No uniformly accepted definition for ARC currently exists.) Some persons will have intermittent bouts of some of the above signs of illness; some may have variable but prolonged periods without any signs, and others may continue to develop additional signs.

Continued progression of the signs and symptoms, aggravated by life-threatening opportunistic infections and cancers, will enable a diagnosis of AIDS to be made. The average period from infection to the development of the clinical end-stage of HIV infection may be about eight years (Liu, Darrow and Rutherford, 1988).

Groups (cohorts) of infected persons have been observed over various periods to determine the proportion who will develop AIDS. Studies of HIV-infected homosexual men in the United States of America show that after a clinical lag phase of about two years, 2 to 5 per cent per year may then progress to AIDS. In the largest study of its kind, close to 7,000 homosexual/bisexual men in San Francisco participated in a hepatitis-B vaccine field trial between 1978 and 1980. Representative samples of the men were followed for signs and symptoms of AIDS, beginning in late 1983. By the end of September 1987, about three quarters of them (out of a sample of 785) had been infected with HIV and, overall, 16 per cent had developed AIDS. In those men followed for eight years after their infection (since the field trials in 1978), more than 40 per cent had progressed to AIDS (Hessol and others, 1988). Approximately the same progression rates were observed in African heterosexuals (Piot and others, 1988).

Studies of other groups for whom the duration of infection is known produced similar results. In persons with haemophilia 21 years of age or older, 30 per cent developed AIDS within six years after infection (Eyster and others, 1987). Among transfusion recipients, 25 per cent developed AIDS within five years of infection (Ward and others, 1987). The data from Africa are more limited but suggest that the rate of progression from infection to the development of AIDS is similar to that observed in other areas and populations (Piot and others, 1988).

The fatality rate for AIDS cases is very high and may eventually reach 100 per cent (Fauci, 1988). The interval from diagnosis of AIDS to death is highly variable: in developed countries about 50 per cent of the patients die within 18 months of diagnosis, and about 80 per cent within 36 months (Allen and Curran, 1985). Survival time appears to be shorter in Africa and Haiti, possibly due to diagnosis at later stages of the disease and possibly due to the more limited capacities for treatment of all of the AIDS indicator infections and cancers.

#### *Possible co-factors for HIV infection and clinical disease*

Little is known about the factors that influence the progression from HIV infection to severe and likely irreversible immune deficiency, which is the underlying cause of AIDS. One theory is that repeated infections with other micro-organisms or exposure to other foreign substances which stimulate or depress the immune system might accelerate the progression to severe or irreversible immune deficiency. There is increasing evidence that sexually transmitted diseases, particularly those with genital ulceration, such as chancroid and syphilis, could increase susceptibility to infection upon exposure to an

HIV-infected partner or increase the infectivity of an HIV-infected person. That hypothesis is supported by several African studies associating HIV infection with sexually transmitted diseases, and especially with ulceration (Simonsen and others, 1988; Van DePerre and others, 1988) and by the association between HIV seropositivity and genital or anal lesions in homosexual men in the United States (Handsfield and others, 1987).

No genetic basis for increased susceptibility to HIV infection or subsequent progression to AIDS has been identified. A reported association between certain genetically controlled components of a serum protein and susceptibility to HIV-1 infection has not been supported by subsequent studies (Eales and others, 1987). One study which infected lymphocytes *in vitro* collected from persons with different racial backgrounds showed that there was no resistance to HIV infection among any of the racial groups.

#### EPIDEMIOLOGY AND SURVEILLANCE

Epidemiological studies throughout the world have clarified the modes of transmission of HIV, the causative agent of AIDS. Fortunately, HIV has been consistently documented to be limited in its modes of spread—limited to sexual intercourse (vaginal or anal), to injection or administration of infected blood, and transmission from an infected mother to her foetus or infant (perinatal transmission). Transmission of HIV is very similar to that of hepatitis-B virus (HBV). The major difference is that for the same type of exposure, such as from an accidental needle-puncture, HBV is far more infectious than HIV. There is no evidence to support the claim that HIV can be transmitted in food or water, by biting insects or by coughing or sneezing. Most importantly, there is no evidence for casual transmission from person to person in schools or in the workplace.

World-wide AIDS surveillance is co-ordinated by the Surveillance, Forecasting and Impact Assessment Unit of the Global Programme on AIDS at the World Health Organization in Geneva. Reports are received from collaborating centres, WHO regional offices and individual ministries of health. The accuracy and the completeness of AIDS reporting vary in different areas of the world. In the United States, validation studies have indicated that about 90 per cent of diagnosed cases are in fact reported (Hardy and others, 1987; Storcher and others, 1987). In most developed countries, it is believed that the majority of diagnosed cases are reported to national health authorities. In most developing countries, because of significant under-recognition, under-diagnosis and under-reporting, it is believed that the majority of AIDS cases have not been reported to WHO.

As of June 1989, close to 160,000 cases had been reported to WHO by 149 countries. The global AIDS surveillance data indicate that AIDS cases are occurring world-wide and that the numbers are increasing at the same general rate in all major regions. Large numbers of cases have been reported from North America, Latin America, Oceania, Western Europe and areas of cen-

tral, eastern and southern Africa. However, because of the incompleteness of reporting in many developing countries, WHO estimates that, as of mid-1989, the total number of AIDS cases since the start of the pandemic is close to 500,000.

### GLOBAL PATTERNS OF AIDS

The large numbers of AIDS cases now being reported are due to HIV infections that began to be silently and extensively spread in the 1970s, before HIV was identified and its pathogenesis and transmission understood. The origin of HIV is not known with any certainty. The World Health Assembly stated in 1987 that HIV is a "naturally occurring retrovirus of undetermined geographic origin".

Since HIV infection precedes the development of AIDS by several years, an optimal understanding of the current patterns of AIDS must be based upon an analysis of both HIV sero-prevalence data and reported AIDS cases. From such analyses WHO has distinguished three broad yet distinct patterns. The patterns are determined by the apparent date of HIV entry and/or the period when HIV began to spread extensively in the population, the relative importance of the three modes of HIV transmission and details of sexual and other social risk behaviours in the population. The three general patterns of AIDS are described below.

*Pattern I.* In areas with pattern I, HIV probably began to spread extensively in the late 1970s. Most cases occur among homosexual or bisexual males and urban intravenous drug users. Heterosexual transmission is responsible for only a small percentage of cases but is increasing. Transmission due to blood and blood products occurred between the late 1970s and 1985 but has now been largely controlled through the self-deferral of persons with known risk factors/behaviours and by routine blood screening for the HIV antibody. Unsterile needles, other than those used by intravenous drug users, are not significant factors in HIV transmission. The male-to-female sex ratio ranges from 10:1 to 15:1 and, to date, perinatal transmission is uncommon. Overall population sero-prevalence is estimated to be less than 1 per cent but has been measured to be over 50 per cent in some groups of persons practising high-risk behaviours, such as men with multiple male sex partners and intravenous drug users. This pattern is typical of industrialized countries with large numbers of reported AIDS cases, including North America, many Western European countries, Australia, New Zealand and parts of Latin America.

*Pattern II.* In pattern-II areas, most cases occur among heterosexuals, and HIV probably began to spread extensively in the late 1970s. The male-to-female ratio is approximately 1:1, and as a result perinatal transmission is common. Intravenous drug use and homosexual transmission either are absent or occur very rarely. In a number of countries, overall population sero-prevalence is estimated at more than 1 per cent, and in some urban areas up to 25 per cent of the sexually active age group is infected. Transmission through contaminated blood and blood products has been a significant problem and con-



tinues in those countries that have not yet implemented nation-wide donor screening. In addition, the use of unsterile needles and syringes for injection is considered an important public-health problem. This pattern is currently observed in areas of central, eastern and southern Africa and increasingly in some countries of Latin America, especially in the Caribbean.

*Pattern III.* In pattern-III areas, HIV was probably introduced in the early to mid 1980s and only small numbers of AIDS cases have been reported. Homosexual and heterosexual transmission have only recently been documented. Cases have generally occurred in persons who have travelled to pattern-I or -II areas or who have had sexual contact with individuals from such areas. Cases due to use of imported blood products have been reported, and in a few pattern-III countries they comprise the largest percentage of reported cases to date. This pattern is found in areas in Eastern Europe, North Africa, the Middle East, Asia and most of the Pacific (excluding Australia and New Zealand).

#### AIDS PROJECTIONS

It is difficult to predict the long-range (> 10 years) dimensions of the AIDS pandemic because:

(a) It has only been possible to follow the disease for about eight years;  
(b) HIV infection is believed to be life-long, and there is virtually no similar retrovirus infection in humans which has been adequately studied to provide an analogy for predictions;

(c) Our knowledge of the behaviour that is associated with transmission of the virus (vaginal or anal intercourse and intravenous drug use) and of the number of persons engaging in such behaviour is incomplete and difficult to study;

(d) The proportion of HIV-infected persons who will ultimately develop AIDS is not known. Current estimates are that about 50 per cent will develop AIDS within 10 years. Whether the progression rate will reach 75 per cent or close to 100 per cent within 15 to 20 years after infection can only be answered with time;

(e) Most of the data so far collected on the clinical aspects of HIV infections have been for HIV-1. The relative pathogenicity and distribution of HIV-2, which was identified in the mid 1980s from West Africa, need to be determined. At the present time it is believed that HIV-2 may be less pathogenic than HIV-1, but conclusive evidence is still lacking;

(f) The relative role(s) of "co-factors" in facilitating HIV transmission and/or progression to clinical disease after infection needs to be determined. At the present time, it has been postulated that other sexually transmitted diseases, especially those associated with genital ulcers, may be important co-factors for the transmission of HIV. Similar or different co-factors may influence the pattern and/or rate of progression from infection to the development of AIDS;

(g) The degree and the pattern of infectiousness of HIV-infected persons are not completely known. There is some evidence that infectiousness increases markedly during the later clinical stages of HIV infection. It will be extremely important to determine whether there are multiple patterns of infectiousness and whether there may be some individuals who are "super-infectious".

In spite of these uncertainties, short-term predictions (5-10 years) of the impact of AIDS can be reasonably derived from our current knowledge of the natural history of HIV infections and from the limited surveillance data (especially HIV sero-survey data). However, even short-term predictions will need to be periodically revised, as additional data are collected.

Short-term projections are virtually independent of the future trends and new HIV infections that will occur in 1989 and later. The vast majority of AIDS cases and deaths that can be projected within the next five years would be expected to occur even if all HIV transmission were to cease in 1989. The mean or average incubation period from infection to the development of AIDS has been estimated by most AIDS modellers to be about eight to nine years. Thus, the majority of new AIDS cases which will become manifest over the next four to five years will be derived from the pool of persons who had been infected with HIV in 1989 or before.

In 1987, WHO estimated that from 5 million to 10 million persons worldwide were infected by HIV. Based on the lower estimate of 5 million as of 1987, a relatively conservative projection of the number of AIDS cases which can be expected over the next five years is about 1 million. Beyond five years, the toll of AIDS cases from those already infected as of 1987 can potentially double or triple. It should be stressed that the projected toll does not take into consideration the number of new HIV infections that occur after 1987.

#### SHORT-TERM FORECASTING OF AIDS

The short-term forecasting of AIDS has been attempted by statistical extrapolations (or "fitting") of the observed curve of reported AIDS cases. The forecasting models assume that, after adjustment for inherent reporting delays, the past trends of reported cases will continue, at least over the short term. They are believed to be reasonably accurate for several years. All such models have projected several-fold increases of AIDS cases over the next five to ten years (Morgan and Curran, 1986; Downs and others, 1987).

In countries where reporting of AIDS cases is grossly incomplete or where reporting just began in the past few years, it is not possible to extrapolate future AIDS cases from the pattern or number of previously reported cases. In such situations, an epidemiologically based forecasting model has been developed to estimate the current cumulative number of AIDS cases in a specified population and to project the number and general distribution of AIDS cases that may be expected within a 10-year period. (The current cumulative number of AIDS cases is the total since the start of the pandemic, includ-

ing those that have resulted in death.) The following estimates and assumptions, based on available HIV serologic survey data and on the current understanding of the epidemiology and natural history of HIV infections, are needed to operate the model:

(a) The cumulative prevalence of HIV infections in the population. Such an estimate can be derived from HIV serologic survey data, when available;

(b) The year when HIV probably began to spread extensively in the population. For most pattern-I or -II countries, extensive spread probably did not begin until the late 1970s or early 1980s;

(c) The number of persons who were infected with HIV in each year (annual infected cohorts), starting from the year when HIV began to spread extensively. The available epidemiological cohort data suggest that the rate of increase in the incidence of HIV infections was highest in the early 1980s and, at least in some areas, may have slowed in recent years. The cumulative prevalence curve of HIV infections is thus assumed to be more asymptotic in shape than exponential, and HIV infections in the forecasting model are distributed to each annual infected cohort in such a pattern;

(d) The annual rate of progression to the development of AIDS after HIV infection. The progression rate has been estimated from cohort studies of HIV-infected persons to be about 20 per cent within five years and close to 50 per cent within 10 years. For the model in question, the rate is projected to be 75 per cent in 15 years and 95 per cent within 20 years;

(e) The incidence of HIV infection in each future year. In the model, a gradually decreasing annual incidence of HIV is estimated up to the year 2000;

(f) Estimations and assumptions needed to model pediatric AIDS. The above estimates and assumptions are applicable to model AIDS cases in an adult population but cannot be used to forecast mother-to-foetus or infant transmission of HIV and the development of AIDS in HIV-infected infants, since the progression rate of HIV-infected infants for the development of AIDS appears to be more rapid. On the basis of available data it can be assumed that 25 per cent of the infants born to HIV-infected mothers will be infected with HIV, and that the development of AIDS in HIV-infected infants is 25 per cent during the first year of life, 20 per cent in the second year, 15 per cent in the third year and 10 per cent in the fourth and fifth years, for a cumulative rate of 80 per cent by the fifth birthday.

Using those estimates and assumptions, both the annual incidence and cumulative prevalence of both pediatric and adult AIDS cases in a given population can be estimated by applying the specific (adult or pediatric) annual progression rate for the development of AIDS to each of the annual HIV-infected cohorts. There are some HIV serologic survey data from central African countries which indicate that a higher prevalence of HIV infections is found among sexually active younger women and older men. For the purpose of the model, an overall equal male-to-female ratio of HIV infections is used. Obviously, all of the assumptions and estimations used will need to be modified when and if additional data warrant any change.

### *The demographic impact of HIV/AIDS in a pattern-II country*

The impact of AIDS on urban/rural and age-specific mortality in a hypothetical pattern-II country is projected below, using the model described above.

#### *Population patterns and projected growth*

The population of the pattern-II country, as of 1987, is constructed with an urban/rural and age-group distribution similar to that of several central African countries. In 1987, the total population of the country was just under 20 million, with about 15 per cent residing in urban areas and 85 per cent in rural areas. Over half of the population (51.1 per cent in urban and 50.9 per cent in rural areas) are under 15 years of age. The growth pattern from 1987 to 1997 is projected in the absence of an HIV/AIDS problem (table 1). The population growth projected for the 10-year period 1987-1997 without HIV/AIDS is about 6.5 million (0.895 million urban and 5.7 million rural) for a total country growth rate of over 3 per cent per year.

#### *Prevalence and distribution of HIV infections*

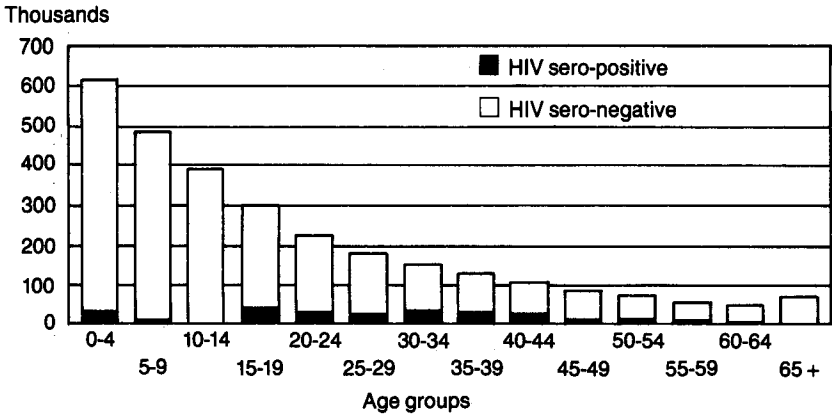
Data from HIV sero-surveys in some areas of central Africa indicate that as of 1987 up to 25 per cent of the most sexually active age groups (20-40 years of age) in certain cities were infected with HIV. The surveys also indicate that about 66 per cent of all HIV infections were in urban residents and about 33 per cent among rural residents. Based on those data, the urban/rural and age-group distribution of HIV infections was estimated in the pattern-II country as of 1987 (figs. I, II, III).

The HIV infection rate for the total population of the country is about 2.3 per cent. Less than 1 per cent of the rural population is infected, compared with over 10 per cent of the urban population. In the urban population, about 10 per cent of the 0-4 age group is infected as a result of the high HIV-infection rate (up to 25 per cent) found in sexually active adults and, therefore, among pregnant women. Relatively few infected children 5-14 years of age are found. The total number of HIV infections found in the country in 1987 is about 450,000, with some 372,000 of them among the sexually active age groups.

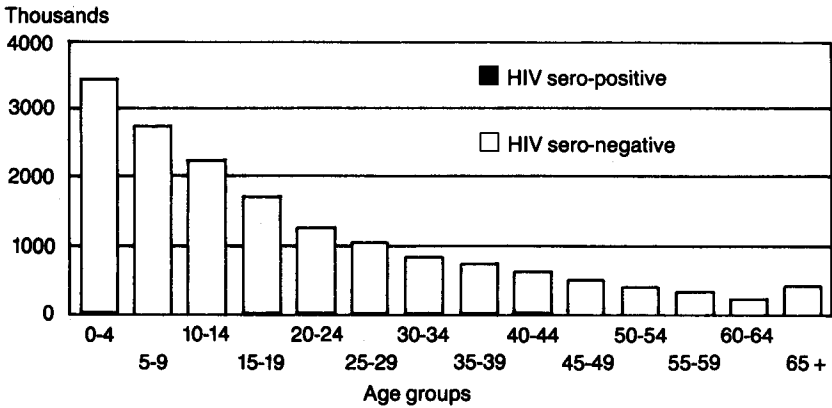
TABLE 1. PROJECTED POPULATION CHANGES IN A HYPOTHETICAL PATTERN-II COUNTRY DUE TO HIV/AIDS, 1987-1997  
(Thousands)

Residence	Population estimates			Deaths from HIV/AIDS 1987-1997 (4)	Population growth		Percentage decrease in growth due to HIV/AIDS (1.00-(6)/(5)) (7)
	1987 (1)	1997 (without HIV/AIDS) (2)	1997 (with HIV/AIDS) ((2)-(4)) (3)		(without HIV/AIDS) (2)-(1) (5)	(with HIV/AIDS) (3)-(1) (6)	
Total . . .	19 655	26 250	25 771	479	6 595	6 116	7.3
Urban . . .	2 943	3 838	3 518	320	895	575	35.8
Rural . . .	16 712	22 412	22 253	159	5 700	5 541	2.8

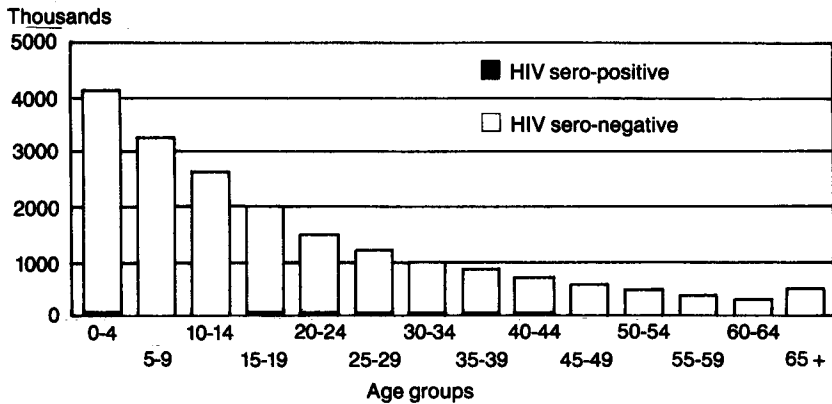
**Figure I. Estimated urban HIV sero-prevalence in a pattern-II country**



**Figure II. Estimated rural HIV sero-prevalence in a pattern-II country**



**Figure III. Estimated HIV sero-prevalence in a pattern-II country**



### Forecasting to the year 2000

By applying the AIDS projection model described above for adult HIV infections and a modified model for perinatally acquired infections, the annual and cumulative number of AIDS cases can be calculated for the pattern-II country up to the year 2000. It was specifically and additionally assumed that extensive spread of HIV began in 1980, that during the period from 1987 to 1997 the relative urban/rural and age distribution of HIV infection would not change significantly, and that AIDS patients would die in the year in which the disease developed. Deaths due to pediatric AIDS were adjusted by 10 per cent to take into account other competing causes of infant/child deaths, but adult deaths were not.

Table 2 summarizes, for the years 1982, 1987, 1992 and 1997, the cumulative number of HIV infections, cumulative number of adult AIDS cases and the HIV-to-AIDS-case ratio obtained using the forecasting model. Initially the infection-to-case ratio is very high (over 500:1 in 1982), but as the progression from infection to development of AIDS accumulates for each of the annual HIV-infected cohorts, the ratio rapidly decreases. According to the model, in most pattern-I and -II countries where HIV first began to spread extensively around 1980, the infection-to-AIDS ratio in 1987-1988 would be about 20-30:1 and by 1997 (about 17 years after the "start" of the pandemic), about 3:1.

The total number of AIDS cases (adult and pediatric) projected for the pattern-II country by 1997 is over 420,000. Of that total, two thirds, or 281,000 AIDS cases, occurred in urban residents (164,000 adult and 117,000 pediatric). By 1997, deaths due to AIDS will lower the projected increase in the urban population by over 35 per cent but will have a relatively negligible effect (a 2.8 per cent decrease) on the growth of the rural population (table 1).

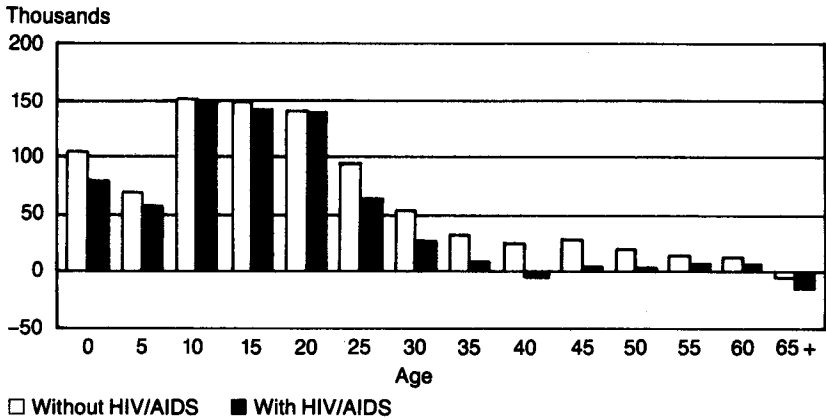
### Projected impact of AIDS on the urban population

Figure IV presents the age-specific impact of AIDS on the urban population in the pattern-II country from 1987 to 1997. An increasing impact will be seen in the 0-9 age group as the prevalence of HIV infection increases among pregnant women. The projected increase in the 0-4 age group in 1997 will be reduced by more than 25 per cent due to perinatally acquired AIDS. In con-

TABLE 2. ESTIMATES AND PROJECTIONS OF HIV INFECTIONS AND AIDS CASES IN THE ADULT POPULATION OF A HYPOTHETICAL PATTERN-II COUNTRY, 1982-1997

Year	Number of persons in population infected with HIV (prevalence)	Cumulative number or AIDS cases since 1980	Ratios of HIV infections to AIDS cases
1982	17 000	32	523.9
1987	372 000	11 813	31.5
1992	672 000	109 023	6.2
1997	802 000	304 296	2.6

**Figure IV. Impact of AIDS on the growth of urban population in a pattern-II country, 1987-1997**



trast, HIV/AIDS will have a minimal impact on the 15-24-year age group in 1997 since that cohort was 5-14 years of age in 1987 and therefore not at any significant risk of HIV infection. A very large reduction (close to 50 per cent) in the projected growth of the 25-59-year age group can be expected due to AIDS in 1997 since that was the most sexually active age group (15-49) in 1987.

#### CONCLUDING COMMENTS AND PROJECTIONS

The current and future impact of HIV infection on global health will be immensely greater than was at first thought. The very high HIV-infection rates documented in some populations will result in large increases of AIDS cases in the near future. The further spread of the virus is primarily dependent upon voluntary human behaviour. The economic and social implications of a disease that mainly kills persons in their most productive years are and will be immense.

The impact of AIDS and HIV infection on social and economic development may be critical. For example, mortality rates among the economically and socially most productive age groups, especially 20-49-year-olds, will rise several-fold as a result of AIDS. The selective impact on young and middle-aged adults, including business and governmental workers and members of social, economic, and political élites, could lead to economic and even political destabilization. In addition, in areas where large numbers of pregnant women are HIV-infected, AIDS-related infant mortality will significantly increase the infant mortality rate. Thus, the projected gains in infant and child health anticipated through child survival initiatives in developing countries may be cancelled by HIV.

Over the next 10 years, the major impact of AIDS in pattern-I countries (basically all of the Western industrialized countries, including Australia and

New Zealand) will continue to be among homosexual/bisexual men and intravenous drug users, since they currently comprise the vast majority of HIV-infected persons. The United States Public Health Service estimated in June 1988 that over 400,000 cases of AIDS would occur, primarily among males in the 20-49-year age group, in the United States by the early 1990s (W. M. Morgan, personal communication). That estimate is similar to the one arrived at using the adult AIDS forecasting model described in this paper. To forecast AIDS in the United States it was assumed that HIV began to spread extensively starting in 1980 and that 1 million Americans were infected as of 1987. In Europe an estimate of close to 500,000 HIV-infected persons, as of the end of 1987, was made by national AIDS programme representatives at a WHO meeting on HIV/AIDS surveillance in early 1988 (WHO, 1988). Assuming that HIV did not begin to spread extensively in Europe until about 1982, the adult AIDS forecasting model projects that there will be a cumulative total of about 25,000 AIDS cases by the end of 1988 and that by the early 1990s over 100,000 cumulative cases can be expected.

Uninfected homosexual men have continued to acquire HIV infections, but at a lower rate in the past couple of years. The decrease is consistent with reported changes in sexual behaviour and declines in other sexually transmitted diseases in homosexual men (Winkelstein and others, 1987). Nevertheless, due to the large present and future populations at risk, many hundreds of thousands of additional homosexual men, intravenous drug users and others may become infected during the next five years. Current information in pattern-I areas is insufficient to predict the future incidence of HIV infection due to heterosexual transmission, but increases over the present low numbers are likely over the next few years.

In pattern-II countries the major focus of HIV infections at present is on heterosexuals with multiple sexual partners, primarily in the major urban areas. HIV sero-prevalence rates of 50 per cent or more are consistently being found among female prostitutes in many cities of central Africa and of from 10 to 25 per cent among the sexually active age groups in those same cities. Whether the current incidence of acquisition of new HIV infections is decreasing or not is the subject of intensive study. According to the AIDS forecasting model used in this paper, the number of AIDS cases that can be expected to occur over the next 10 years in the most severely affected pattern-II countries will not come close to reversing the positive population growth rate which has been projected for most central African countries. Anderson and others came to a similar conclusion (Anderson, May and McClean, 1988), using a mathematical model that also included estimates and assumptions regarding HIV transmission. Nevertheless, during the 10-year period there will be, in urban areas, a marked and a very selective decrease in the projected increase of the very young, due to perinatally acquired AIDS and AIDS in sexually active persons with multiple sex partners. The overall national population growth rate of over 3 per cent a year for the pattern-II country will be reduced by about 0.5 per cent.



If HIV infections continue to increase in urban areas and if an extensive spread of HIV begins in rural areas, a negative population growth rate might be possible. The long-term demographic impact of AIDS in pattern-II countries cannot be projected with any degree of certainty until it can be determined whether such a spread of HIV will occur or not.

How extensively HIV will spread in pattern-III countries may depend to some extent on current and future patterns of other sexually transmitted diseases. Where intravenous drug use is prevalent, HIV/AIDS will also be a major potential problem. As of 1989 such a problem has been documented as very real in Bangkok, where the prevalence of HIV infection among an estimated 60,000 intravenous drug users has increased dramatically, from less than 1 per cent in August 1987 and less than 2 per cent in January 1988 to about 50 per cent as of mid-1989.

It is very clear that HIV/AIDS will be a growing public-health problem in the next two decades. Accurate forecasting of the number of AIDS cases will depend on two main factors: the number of HIV-infected persons and what proportion of them will ultimately develop AIDS. The distribution of AIDS cases by year of occurrence in a given population reflects the incidence of HIV infection since the pandemic started and the increasing propensity to develop AIDS as time period since infection lengthens. At the present time, without very effective drugs for treatment and no vaccine for prevention of HIV infections, the short-term outlook is not good.

By the early 1990s, the cumulative number of global AIDS cases can be expected to be over 1 million, and by the late 1990s the number can be expected to be over 3 million. Health-care systems throughout the world will need to be strengthened in order to respond effectively.

The greatest public-health challenge facing AIDS-control programmes is to reduce, to the maximum extent possible, the transmission of HIV. As with most other human infectious disease agents, an endemic level of infection and disease will eventually be established. How high or low that endemic level gets will be a measure of the effectiveness of the HIV/AIDS prevention programmes now being developed.

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#### NOTE

<sup>1</sup> It is believed that the spectrum of disease and modes of transmission for HIV-2 are generally similar to those of HIV-1, though the clinical expression of HIV-2 infections has not been fully delineated. There are some preliminary data and observations that suggest that HIV-2 infections may be less pathogenic or that it may take more time for clinical disease progression.

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## THE EFFECTIVENESS OF FAMILY-PLANNING PROGRAMMES

*W. Parker Mauldin\**

### SUMMARY

By the mid-1960s, countries that accounted for 66 per cent of the population of the developing countries had adopted policies designed to reduce their rates of population growth; by 1986, the corresponding figure had reached 78 per cent. In the developing regions as a whole, fertility has fallen by more than 30 per cent since 1950. Contraceptive use has risen sharply, and there has been a more than 10-fold increase in the number of couples in developing countries who use contraceptives. There is a very strong association between use of contraception and level of fertility in the developing countries. Social and economic modernization has also been taking place, although quite unevenly in the developing regions, so that the relationship of modernization to fertility is not very easy to demonstrate. In general, the experience of the developing countries suggests that a strong family-planning programme effort can, and does, lead to a more rapid fertility decline than would be likely based only on socio-economic variables. The effectiveness of family-planning programmes can be enhanced by increasing the range of choice of contraceptive methods offered. However, it is difficult to disentangle the various factors that contribute to the effectiveness of family-planning programmes. The public sector is the main supplier of family-planning services in most developing countries, and there is no clear trend towards increased reliance on the private sector.

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The revolution in mortality that led to the rapid increases in rates of population growth during the second half of the current century started a few years before 1950. Fertility rates remained high in most developing countries, at least until about 1965. Population statisticians noted the increasing rates of population growth, and economic planners began to analyse the likely consequences of population growth on the growth of cities, the need for expansion of educational facilities, the need for creation of large numbers of jobs for increasing numbers of youths entering the labour force and the problems of absorbing a doubling of the population in a little more than a generation.

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## POPULATION POLICIES

The response of Governments in developing countries to the challenge of assimilating and utilizing their rapidly growing populations has been relatively rapid. By the mid-1960s, 20 countries had adopted policies designed to reduce rates of population growth. Those countries contained two thirds of the population of developing countries, or somewhat more than half, excluding China. By 1986, 39 countries reported that their rates of population growth were too high and that intervention to lower rates was appropriate. Those countries contained 78 per cent of the population of developing countries. In addition, many other countries provided some support to family-planning programmes.

Many donor countries and several international organizations have provided major assistance to family-planning programmes since the late 1960s. The amount of assistance annually has grown to about \$500 million, but because of inflation the contributions have been decreasing somewhat in constant dollars. The conservative, traditional religious right has emerged as a political force in countries such as the Islamic Republic of Iran, Pakistan, the Philippines and the United States of America. This has had an inhibiting influence on population programmes in those developing countries and in both the amount and the nature of assistance given by the United States, which has discontinued assistance to the United Nations Population Fund (UNFPA) and to the International Planned Parenthood Federation (IPPF), a non-governmental organization. The driving force behind the position taken by the United States has been groups opposed to abortion. It is ironic that their opposition to providing funds to organizations such as UNFPA and IPPF has resulted in less assistance being given to family-planning programmes, and that no doubt results in more unwanted pregnancies, followed by abortions.

The development of family-planning programmes is the primary policy instrument used by Governments seeking to reduce rates of population growth, but there are a variety of other measures that could be taken—and in a few instances have been taken—to influence fertility, including incentive programmes; tax and welfare benefits and penalties; shifts in social and economic institutions—e.g., increasing the minimum age at marriage through legislation, persuasion or substantial fees for marriage licenses; intensified educational campaigns; and, at the extreme, the establishment of involuntary fertility control. This paper will be limited to a discussion of family-planning programmes.

## FERTILITY CHANGE

The crude birth rate of the world was about 37 births per 1,000 population per year in 1950; it has been reduced by a little more than 25 per cent, to 27 per 1,000 population. Among developing countries, however, the corresponding figures are 45 and 31, a decrease of more than 30 per cent. China has had unusually rapid fertility decline, and its current birth rate of about 20 is less than half its rate of 44 in 1950. For developing countries other than China the

crude birth rate was about 45 in 1950 and is estimated by the United Nations to be 33 at the present time, a decrease of more than 25 per cent. Table 1 presents data on total fertility rates (TFR) in 1965 and for the period 1985-1990 for countries with a population of 35 million or more. Data on contraceptive prevalence rates are also given. The United Nations estimates may be too optimistic for a few of the countries, particularly Bangladesh, Pakistan and the Philippines. Nevertheless, the majority of large countries have had fertility declines of 25 per cent or more during the past two decades. Contraceptive prevalence is 50 per cent or more for six of the 17 countries, and is 25 per cent or more for an additional five countries.

TABLE 1. POPULATION SIZE, TOTAL FERTILITY RATES FOR 1965 AND 1985-1990, AND PERCENTAGE CHANGE IN TOTAL FERTILITY RATES, 1965 TO 1985-1990, FOR COUNTRIES WITH 35 MILLION OR MORE POPULATION

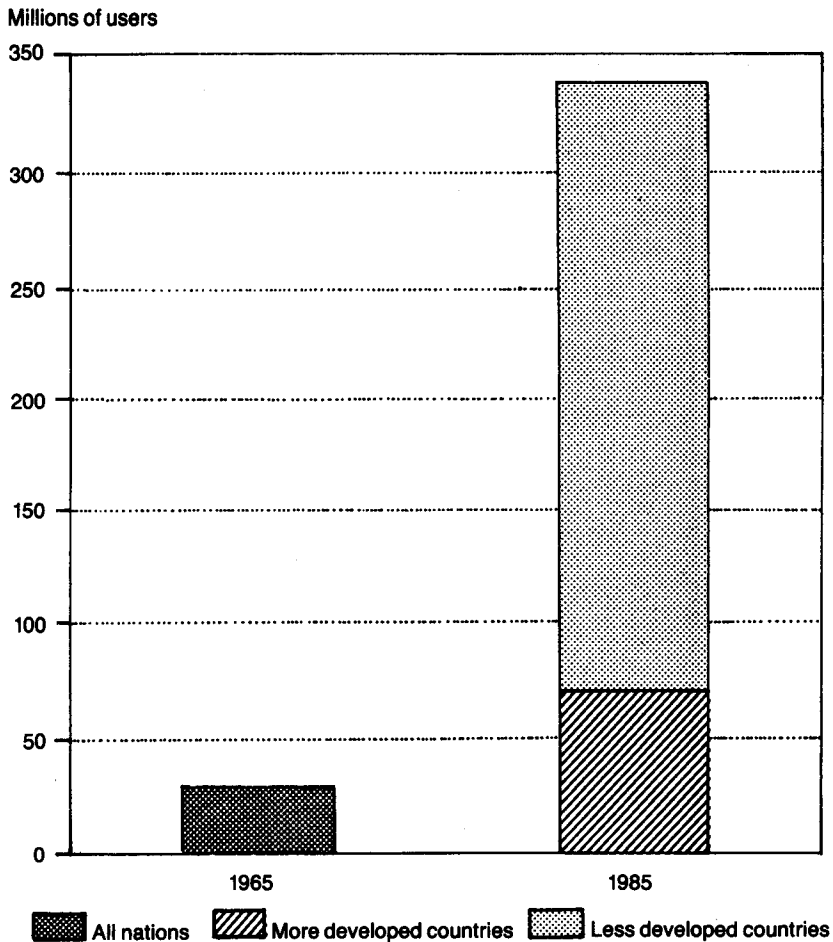
Country	Population (millions) 1 Jan. 1989	Contraceptive prevalence (percentage)	TFR		Percentage change in TFR
			1965	1985-1990	
China . . . . .	1 113	74	5.68	2.36	-58
India . . . . .	828	34	5.72	4.30	-25
Indonesia . . . . .	176	48	5.77	3.30	-43
Brazil . . . . .	146	65	5.73	3.46	-40
Pakistan . . . . .	117	7	7.50	6.50	-13
Bangladesh . . . . .	111	25	7.40	5.53	-25
Nigeria . . . . .	108	5	6.90	7.00	+ 1
Mexico . . . . .	86	53	6.73	3.58	-47
Viet Nam . . . . .	65	20	5.57	4.10	-26
Philippines . . . . .	60	44	6.82	4.33	-37
Thailand . . . . .	54	68	6.28	2.60	-67
Turkey . . . . .	54	53	5.90	3.55	-40
Iran, Islamic Republic of . . . . .	54	23	6.89	5.64	-18
Egypt . . . . .	52	30	5.86	4.82	-18
Ethiopia . . . . .	45	2	6.70	6.15	- 8
Republic of Korea . . . . .	43	70	4.83	2.00	-59
Myanmar (formerly Burma) . . . . .	40	5	5.78	4.02	-30
TOTAL	3 152	51	5.91	3.59	-39

Sources: Population and total fertility rate for 1985-1990: United Nations, 1989; contraceptive prevalence: Mauldin and Segal, 1988.

#### CONTRACEPTIVE USE AND FERTILITY

There were about 25 million to 30 million users of contraceptives, excluding rhythm and withdrawal, throughout the non-communist world around 1965 (Levin, 1966), and most of them were in developed countries. The annual number of family-planning acceptors in large-scale programmes had increased from about 25 thousand around 1960 to about 2.5 million in 1965. Today, as shown in figure I and table 2, there are almost 400 million contraceptive users, three quarters of whom are in developing countries (Mauldin and Segal, 1988).

**Figure I. Number of users of modern methods of contraception: 1965 and 1985**



Slightly fewer than one half of couples in developing countries currently use contraceptives. In Asia and the Pacific, the corresponding proportion is just over one half of couples. Seventy per cent or more of couples use contraceptives in China, Hong Kong, the Republic of Korea and Singapore. More than half of couples use contraceptives in Lebanon, Malaysia, Sri Lanka, Thailand and Turkey. Those high proportions of users are offset by more modest levels of use in Bangladesh and India, and very low levels of use in Afghanistan, Burma and Pakistan. Levels of use of contraception are also high in Latin America, with 10 countries reporting 50 per cent or more of couples using. The average for that region is 56 per cent. In Africa, however, levels of use are

TABLE 2. CONTRACEPTIVE USERS  
(Millions of persons)<sup>a</sup>

Method	Total	Developed countries	Developing countries			
			Total	Africa	Americas	Asia and the Pacific
Sterilization . . . . .	155	19	135	1	11	123
Female . . . . .	108	13	95	1	11	84
Male . . . . .	47	7	40	0	0	40
Hormonal . . . . .	61	20	40	5	10	26
Pill . . . . .	55	20	35	4	9	22
Injectable . . . . .	6	0.3	6	1	1	4
IUD . . . . .	80	8	72	1	4	67
Condom . . . . .	38	20	18	0.3	1	16
Vaginal . . . . .	6	4	2	0	0.4	2
Traditional . . . . .	58	28	30	3	6	22
Rhythm . . . . .	16	9	6	1	2	3
Withdrawal . . . . .	21	15	6	0.4	2	4
TOTAL	398	99	297	10	32	256

Source: Calculated from latest data in Mauldin and Segal, 1988 (table A3), multiplied by estimated females 15-49 and proportion married or in union (United Nations, 1989).

<sup>a</sup>Estimated.

very low, with only a few exceptions. Mauritius is usually classified as being an African country despite its being an island somewhat removed from the continent. It has a contraceptive prevalence rate of 75 per cent, far higher than any "other" African country. Tunisia, with 42 per cent, and Zimbabwe, with 40 per cent, have the highest percentages of contraceptive users among countries in Africa, followed by Morocco, Egypt and Botswana, with 36, 30 and 29 per cent, respectively. The average percentage of users in Africa is only 12 per cent, and for sub-Saharan Africa, it is only 5 per cent.

There have been very rapid increases in contraceptive prevalence in a sizeable number of countries—for instance:

China: 24 per cent (1965); 63 per cent (1976); 78 per cent (1985).

Colombia: 21 per cent (1969); 48 per cent (1978); 63 per cent (1986).

Indonesia: 19 per cent (1976); 48 per cent (1987).

Republic of Korea: 9 per cent (1964); 37 per cent (1974); 70 per cent (1985).

Mauritius: 25 per cent 1971; 51 per cent (1981); 75 per cent (1985).

Mexico: 13 per cent (1973); 40 per cent (1979); 53 per cent (1987).

Thailand: 15 per cent (1969); 53 per cent (1978-1979); 68 per cent (1987).

Turkey: 22 per cent (1963); 38 per cent (1973); 53 per cent (1983).

The annual rate of increase in contraceptive prevalence in the earlier of the periods was about 19 per cent in Mexico, 14 per cent in the Republic of Korea, and more than 12 per cent in Thailand. In the latter period the annual rate of increase slowed but was still quite rapid. In the other countries listed, annual

rates of growth were 7-9 per cent in the earlier periods—very rapid growth indeed!

Less spectacular but impressive increases in contraceptive prevalence have occurred in Bangladesh, with reported rates of only 8 per cent in 1975-1976 and of 25 per cent a decade later. In one area of Bangladesh, Matlab, where a special programme has been introduced, contraceptive prevalence was 46 per cent at the end of 1985 and more than 50 per cent at the close of 1987 (Phillips, 1988).

It is important to keep in mind that fertility remains high and contraceptive prevalence low in most of sub-Saharan Africa, the Arab world, and a number of other countries, including Afghanistan, Burma, Nepal and Pakistan. There are a few exceptions in those areas—notably, Botswana and Zimbabwe in sub-Saharan Africa; Egypt, Morocco and Tunisia in North Africa.

The association between estimated levels of contraceptive prevalence and the level of fertility is very close. Calculations based on data shown in figure II yield an  $R^2$ , or coefficient of determination, of 0.89, with the percentage of contraceptive use being the independent variable, and the total fertility rate (TFR) the dependent variable. The  $R^2$  between the TFR and contraceptive prevalence is 0.67 for African countries, 0.76 for developing countries in the Americas, and 0.85 for developing countries in Asia and the Pacific.

In developed countries the  $R^2$  between the two variables is very low (0.06) for several reasons. Fertility is very low in almost all developed countries, and thus there is little variation to be “explained”. Also, traditional methods of withdrawal and rhythm are used by substantial proportions of couples, and fertility is relatively high among those populations. Indeed there is a *positive* relationship between the use of traditional methods and fertility; that is because fertility is slightly higher in developed countries where the use of traditional methods is relatively high. Also, abortion is widely used in many developed countries, and is an important method of fertility control.

In sub-Saharan Africa there is no relationship between the levels of fertility and of contraceptive use (figure III). Bongaarts and Frank (1988) have analysed why countries in Africa and West Asia deviate appreciably from the levels of fertility expected from their levels of contraceptive prevalence. For countries that have higher than expected fertility, they note that marriage and breast-feeding behaviours in those societies exert less restraint on fertility than is the case in other societies with similar levels of contraceptive prevalence. Exceptionally low fertility is attributed to pathological infertility, no doubt due primarily to sexually transmitted diseases. They conclude that “there is no necessary connection between trends in fertility and contraceptive prevalence at the onset of fertility transition. It is quite possible for fertility to remain constant or even rise temporarily as contraceptive use increases, because other proximate determinants can exert offsetting upward pressure on fertility.”<sup>1</sup> However, when contraceptive prevalence reaches moderate levels, almost certainly the strong negative correlation between contraceptive prevalence and fertility rates will also be evident in sub-Saharan Africa.



Figure II. Total fertility rates and contraceptive prevalence in selected countries, December 1988

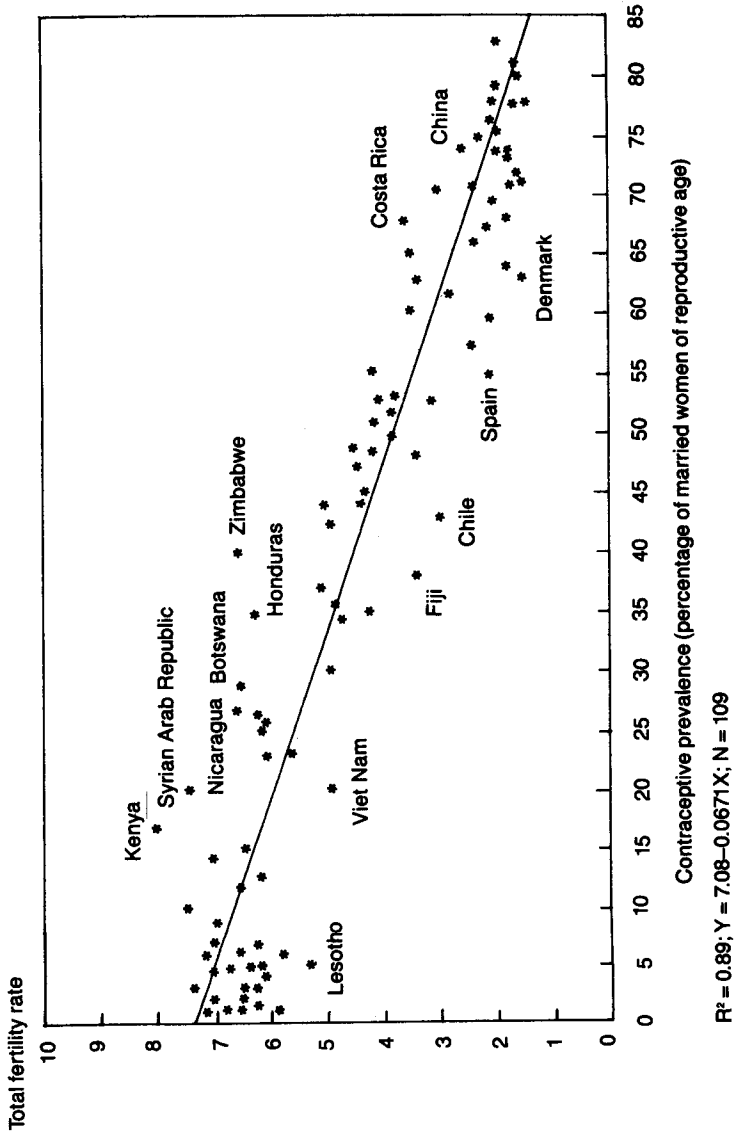
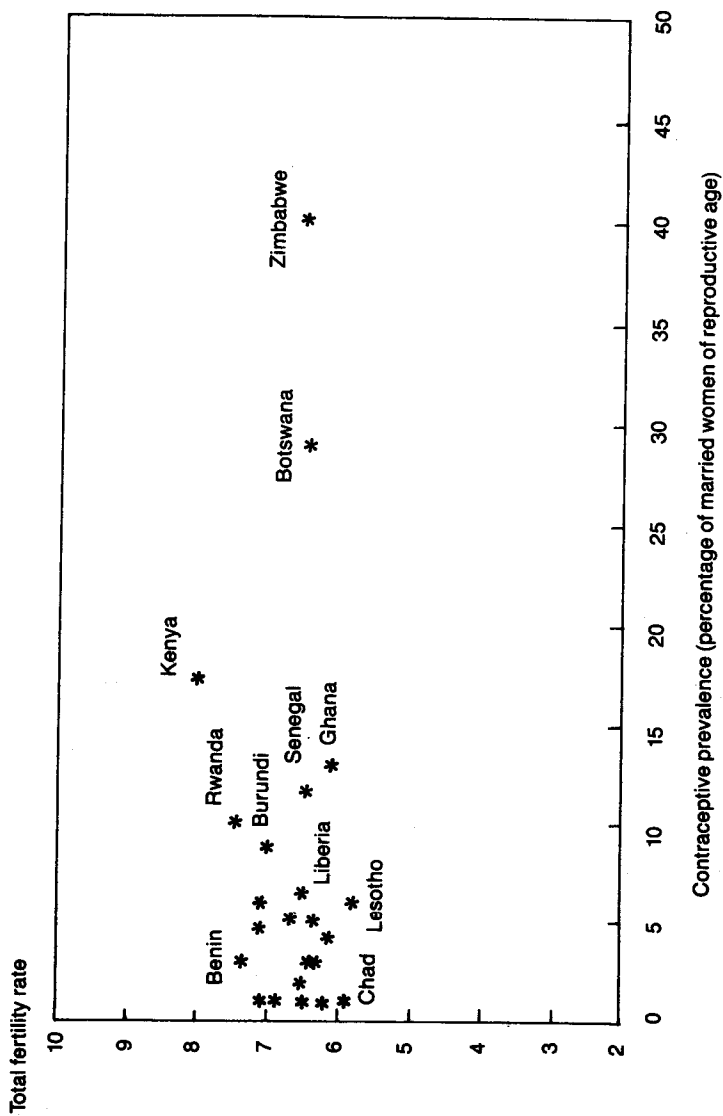


Figure III. Total fertility rates and contraceptive prevalence in sub-Saharan Africa



It should be noted that fertility data derived from surveys are for a time period several years before the date for which contraceptive prevalence is known, but one should compare fertility levels a year after the date for which information is available on contraceptive prevalence. However, the vital statistics systems in sub-Saharan Africa, as in most other developing countries, are too poor to provide the desired data. Thus, we are dependent on sample surveys and censuses for estimates of fertility levels.

The close relationship between fertility rates and contraceptive prevalence should not be interpreted as a claim that contraception "causes" 87 per cent of the variance in the total fertility rate. Contraceptive prevalence is closely associated with the level of women's education, age at marriage, and other factors that affect the desire for children. It is clear, however, that contraception is the major proximate means by which fertility is controlled, and the level of contraceptive use is a good proxy for fertility in the absence of up-to-date fertility data.

#### SOCIO-ECONOMIC FACTORS

The demographic transition theory states that with modernization, mortality declines, followed some years (possibly decades) later by fertility decline. Many critics of governmental family-planning programmes have argued that economic development is the primary—and perhaps the only—determinant of fertility. Although in many developing countries indices of modernization are far from satisfactory—infant mortality is high; life expectancy is relatively low; illiteracy is high; education, particularly above the primary-school level, is far from universal; income per capita is very low; national debts impose a severe burden; etc.—there have been significant improvements in many of them during the past two or three decades. Infant mortality has dropped appreciably in every developing region of the world, although it remains much higher than is acceptable (figure IV). Similarly, there have been gains in the level of literacy (figure V) and in school enrolment (figure VI). The average annual increase in GNP per capita has been moderately high in most developing regions (figure VII), although the gap in GNP per capita between developed and developing countries continues to increase.

Although most studies find that fertility tends to fall with increased literacy, schooling, urbanization, participation in the non-agricultural labour force and decreased infant mortality, very few have ventured to quantify those relationships. Also, as Cochrane (1979) and Timur (1977) have shown, the relationship between education or schooling and fertility varies appreciably over time and among population groups. Thus, we do not have good models that estimate how much fertility is expected to be reduced with given amounts of change in the various socio-economic variables. The section below deals with family-planning programmes, followed by an analysis of the relative contributions of such programmes and socio-economic variables to fertility change.

Figure IV. Infant mortality in developing countries, by region, 1960-1965 and 1985-1990

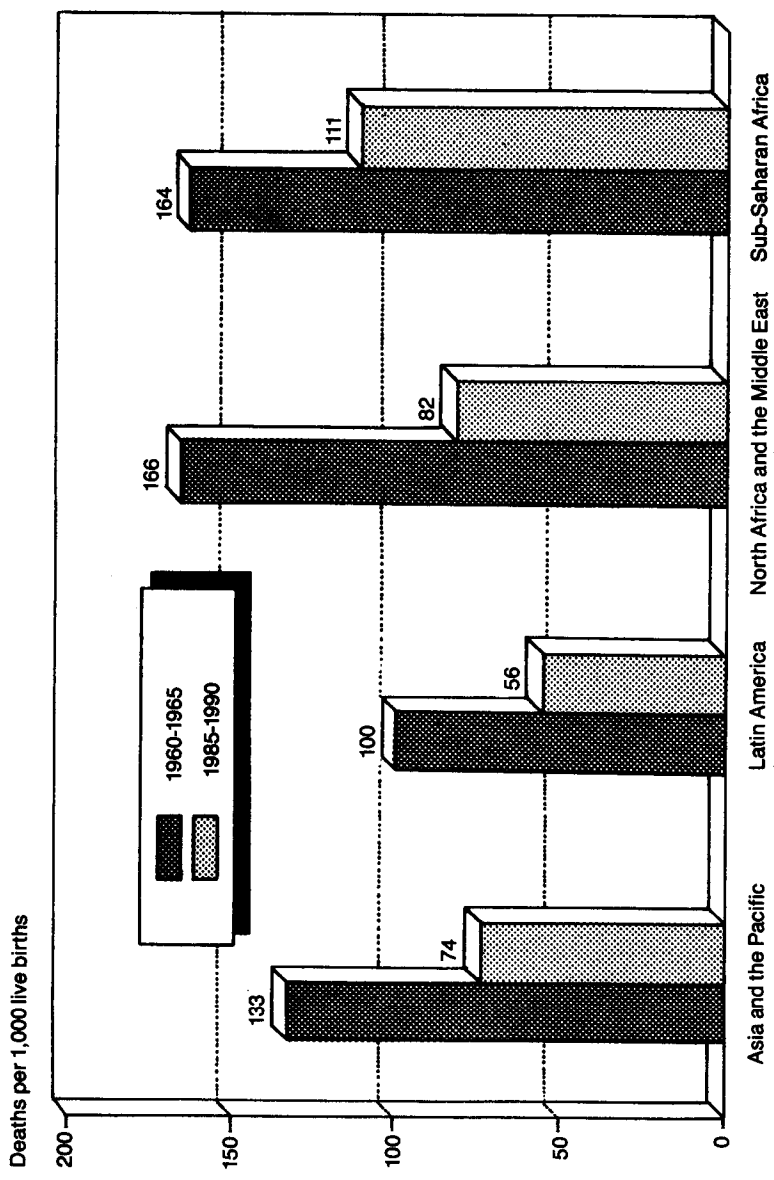


Figure V. Adult literacy in developing countries, by region, 1960 and 1984

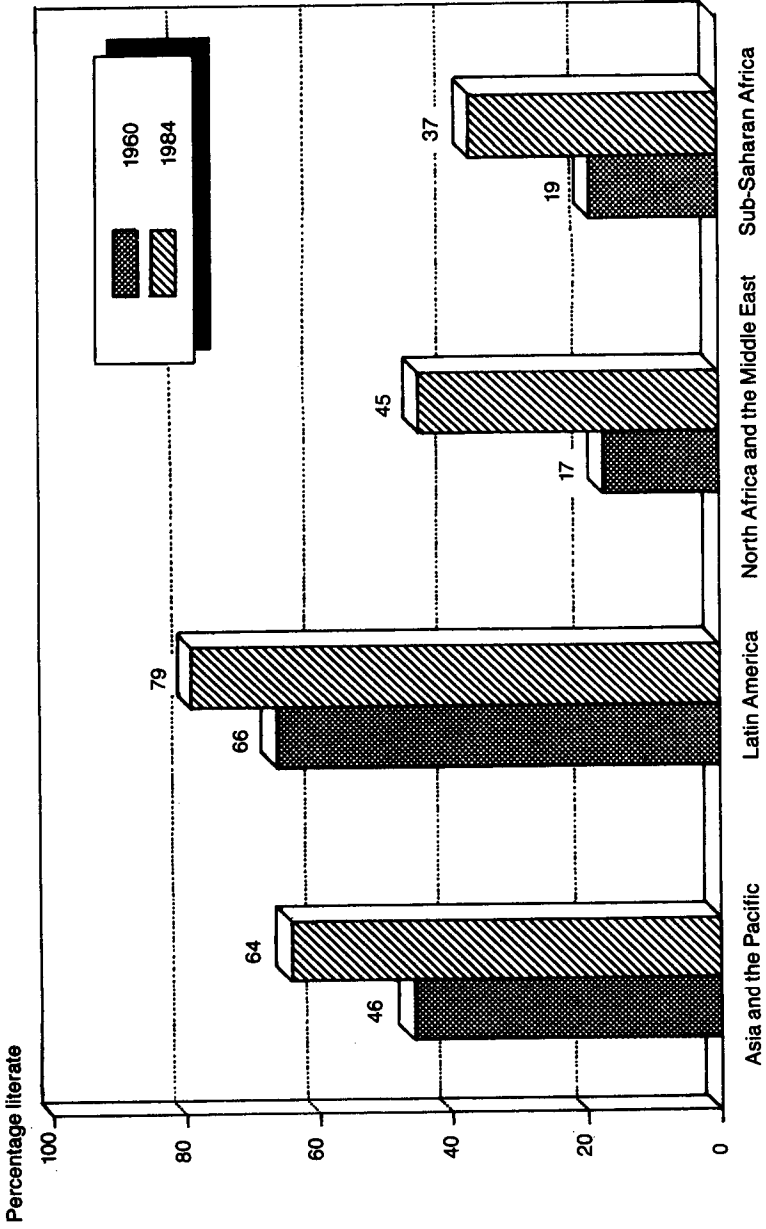


Figure VI. Primary-school enrolment in developing countries, by region, 1960 and 1984

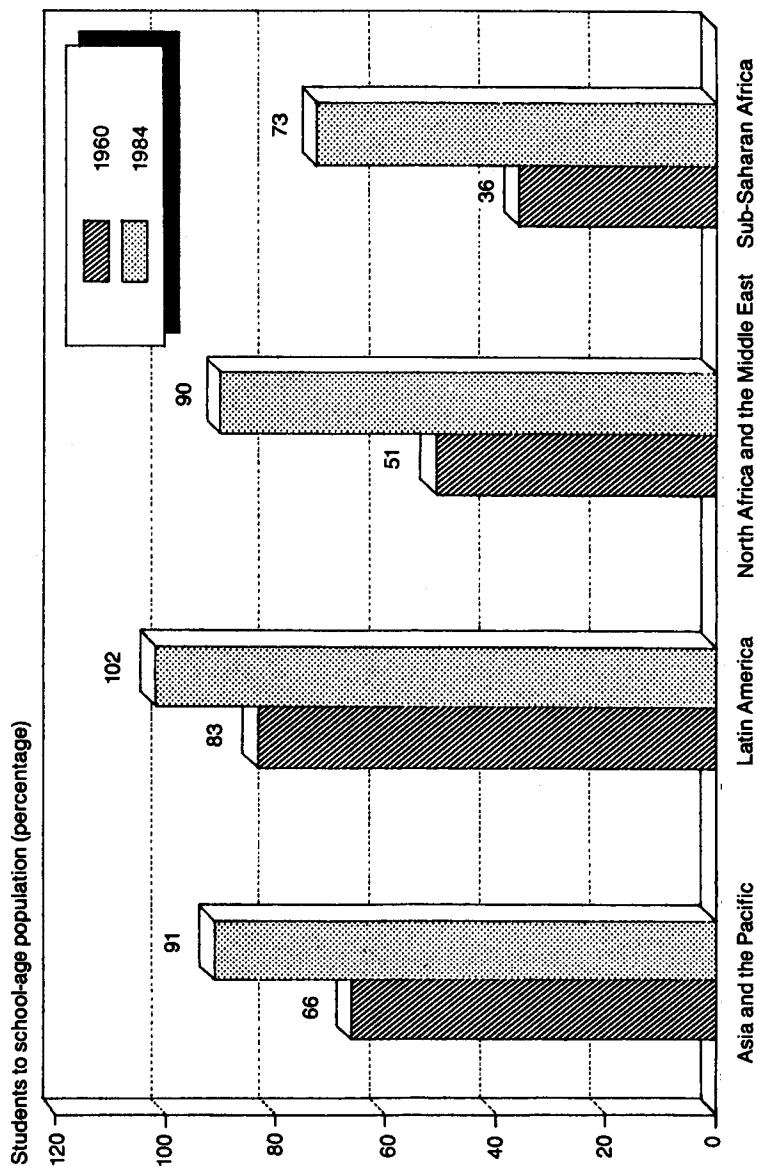
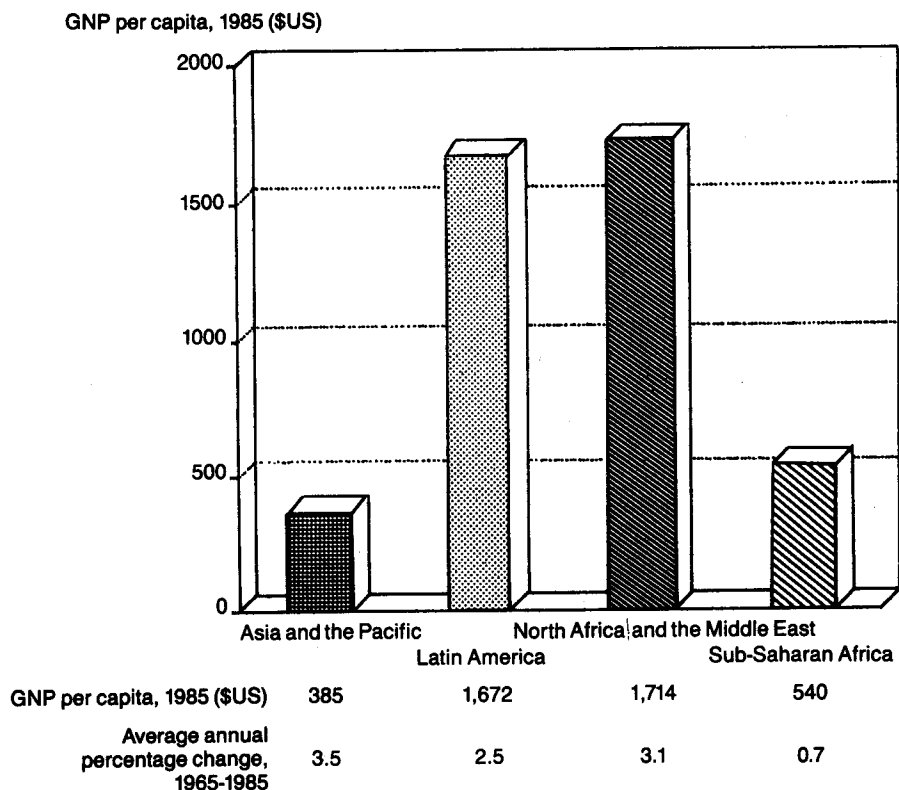


Figure VII. GNP per capita in less developed countries, by region, 1985



#### PROGRAMME ELEMENTS

One would expect considerable differences in the ways in which family-planning programmes are structured and implemented by separate countries. One would also expect that a well-organized family-planning programme that is readily available to a large proportion of the population would be more effective than a poorly organized programme that is limited in its coverage. Unfortunately, there have been relatively few efforts to quantify programme elements (Freedman and Takeshita, 1969; Lapham and Mauldin, 1972, 1984, 1987; King, 1974; Freedman and Berelson, 1976; Srikantan, 1977; Mauldin and Berelson, 1978), and many analyses use very crude measures or simply treat programme inputs as a 0/1 variable.

There have been many demonstration and experimental projects designed to assess the feasibility and effectiveness of various types of intervention, with the expectation that promising interventions would be introduced as part of a national programme. The projects vary greatly in design and in their scale of operation, and many of them have influenced both the adoption and the implementation of national programmes (Freedman and Takeshita, 1969; Freedman and Berelson, 1976; Cuca and Pierce, 1977; Forrest and Ross, 1978; Ross and Forrest, 1978; United Nations, 1978, 1979; Phillips and others, 1982; Stinson and others, 1982). There have also been a number of monographs and books looking in depth at fertility change within a country: Brazil (Merrick and Berquo, 1983), Cuba (Hollerbach and Diaz Briquets, 1983), Indonesia (McNicoll and Singarimbun, 1983), the Republic of Korea (Cho, Arnold and Kwon, 1982), Singapore (Chen and Fawcett, 1979) and Thailand (Knodel and others, 1982). A major generalization that emerges from the various "country" studies is that most analysts have not been able to quantify the impact of specific socio-economic variables or their combined effect on fertility decline or of programme impact.

There have been a number of attempts to assess the impact of family-planning programmes on fertility (Lapham and Mauldin, 1972; Freedman and Berelson, 1976; Mauldin and Berelson, 1978; Cutright, 1983; Cutright and Kelly, 1981; Lapham and Mauldin, 1987). Lapham and Mauldin constructed a questionnaire designed to determine the relative strength of family-planning programmes as measured by a variety of programme elements, and analysed the effects both of socio-economic factors and of programme elements on fertility change in developing countries. Table 3 shows the average declines in crude birth rates from 1965 to 1980, with countries classified by socio-economic setting and family-planning programme effort in 1972 and 1982.

The declines in the crude birth rate (CBR) increase in an orderly fashion as one moves from very weak or none to strong on programme effort, and from low to high on social setting. The single exception is the cell in which China is located—strong on programme effort and upper middle on social setting. China's CBR decline has been greater than might be expected on the basis of its

TABLE 3. DECLINES IN THE CRUDE BIRTH RATE,  
BY SOCIAL SETTING AND PROGRAMME EFFORT, 1965-1980  
(percentage)

Socio-economic setting	Programme effort, 1972-1982				Total
	Strong	Moderate	Weak	Very weak or none	
High . . . . .	34	31	27	11	27
Upper middle . . . . .	43	23	11	3	13
Lower middle . . . . .	..	18	7	2	5
Low . . . . .	..	..	0	1	1
TOTAL	36	26	13	3	11

Source: R. J. Lapham and W. P. Mauldin, "The effects of family planning on fertility: research findings", in *Organizing for Effective Family Planning and Programs*, Robert J. Lapham and Georges B. Simmons, eds. (Washington, D.C., National Academy of Sciences, 1987).



socio-economic conditions. However, that country's extremely strong population policy and programme are well known, and thus the reader is unlikely to be surprised by the large decrease in fertility rates. CBR declines are somewhat greater when countries are classified by strength of programme effort rather than by socio-economic setting. That suggests that programme effort can, and does, lead to more rapid fertility decline than would be likely based on socio-economic status variables.<sup>2</sup>

### THE ROLE OF CONTRACEPTIVE TECHNOLOGY

New and improved technologies have greatly aided the implementation of large-scale family-planning programmes and fostered the growth of birth control and the decline in fertility. In rough order of descending importance, they are sterilization, IUDs, hormonal methods (oral contraceptives and injectables), simpler abortion and improved condoms.

The principal methods available before 1960 were diaphragms; foams; jellies, along with condoms; and to a lesser extent sterilization. Not only has there been a more-than-10-fold increase in the number of users of supply- and clinic-based methods in the past two decades but there has also been a shift in the sex of the user. Less than three decades ago male methods of contraception were used far more than female methods (Mauldin, 1965). With the introduction of the pill, the IUD and simpler methods of abortion and female sterilization, that has changed dramatically. Today the ratio of female to male methods of contraception is about 2.7 to 1.

The chief factors in the shift from male to female methods are obvious. To a greater or lesser extent the new methods offer one or more of the following characteristics of the ideal: single action with automatic continuation; actionable by one partner alone; not linked to coitus; convenient; not medically traumatic (unlike suction abortion and simplified sterilization); and inexpensive. The old methods fail on one or more of those factors. They required higher motivation, repeated actions connected to coitus etc.

In many countries there has been a significant increase in the availability of birth-control methods. The correlation between the number of methods readily available to most of the population and the TFR is 0.70 (Mauldin and Ross, 1989)—thus, one half of the variance in the TFR is associated with the number of contraceptive methods available.

No single technology serves the needs of all subgroups of the population. Where several methods are available and there is informed knowledge and free choice on the part of the user, each method is adopted by couples with somewhat different interests and needs. Therefore, the addition of a new method has not in the past simply replaced others among the principal methods considered here, but seems to add another layer of use to the existing practice. Of course, if five or six modern methods of contraception are available to a given population, the addition of another would not be expected to increase contraceptive prevalence as much as it would if only two or three methods were available.

## OPERATIONS RESEARCH

“Operations research” is the term used for most research funded by the World Bank, the United Nations Population Fund (UNFPA), and the United States Agency for International Development (USAID). Gallen and Reinhart (1986), in a summary of operations research projects, say that, to date, it has focused on community-based distribution of family-planning services, integrated delivery of family planning and other selected primary health services, and the cost-effectiveness of different approaches. They state that over the past 10 years about 140 operations research projects have been carried out in Asia, Africa, the Near East, Latin America and the Caribbean. The projects have been sponsored mainly by USAID and the World Health Organization (WHO). The objectives of the Operations Research Program of USAID are: “to provide technical assistance and financial support to developing country family-planning programs to improve their service delivery through carefully designed and executed subprojects that diagnose existing service delivery problems; to try new approaches to service delivery; and to collect and make available information useful for improving service delivery” (Williamson, 1988).

The USAID project was approved for 10 years in 1984, with a ceiling of \$97.6 million. A 1988 fact sheet states that there are 85 ongoing projects in 30 countries, with 28 full-time resident social science advisors. The objectives are to improve the quality, accessibility and cost-effectiveness of family-planning service delivery systems and to strengthen developing-country institutional capabilities to use operations research as a management tool to diagnose and solve service delivery problems.

Ross (1986) describes seven programme approaches used in Africa by the Center for Population and Family Health, Columbia University, in its operations research project, funded by USAID. The seven are: community-based distribution; integrated programmes; social marketing; traditional midwives; the post-partum approach; incentives; and special urban programmes.

According to Gallen and Reinhart (1986), operations research has determined that:

- (a) Community-based programmes increase contraceptive prevalence, are safe, and are cost-effective;
- (b) Adding new contraceptive methods to a family-planning programme can increase contraceptive use, and charging a small fee does not necessarily decrease their use;
- (c) Integration of health services and family planning makes the family-planning service less cost-effective, and may not increase contraceptive use, but may add to health benefits;
- (d) Satisfied users can work with programme personnel to stimulate increased use of family planning;
- (e) Specially trained nurse/midwives and auxiliary nurse/midwives can insert IUDs as safely as physicians can.

Those conclusions illustrate the difficulty of synthesizing findings from operations research, since such research focuses on very specific problems within a given family-planning programme. It is also difficult to evaluate its effectiveness because, typically, a research programme within a given country addresses a number of aspects or problems within a family-planning programme. As a result, it is difficult to disentangle the effects of a given activity.

## PUBLIC SECTOR

In 1965 national family-planning programmes were in their infancy, and therefore the public sector provided only a small proportion of all users with contraceptive supplies and services. That situation changed dramatically in the many developing countries that adopted population policies and programmes designed to reduce rates of population growth. It is estimated that more than three quarters of contraceptive users receive supplies and services from the public sector.

Some writers have hypothesized that, as programmes mature and the levels of contraceptive prevalence increase, there will be a shift away from dependence on the public sector to increased reliance on the private sector. Data on sources of supply and service are available for more than one time period for 16 countries. What is the trend over time within countries? If one considers that a shift of 5 or more percentage points in the proportions receiving supplies and/or services from the public sector is significant, eight countries show increasing dependence on the public sector, five countries show decreasing dependence and in three countries there was no change. Those limited data do not give a clear indication of likely trends in the future.

In recent years the focus has shifted to the non-governmental sector. IPPF, in its publication *Family Planning in a Changing World* (1987), states that many non-governmental organizations have now built family planning into their programmes for youth, women, rural people and other sectors of the population. Disaster-relief agencies—the Red Cross, Save the Children, OXFAM and others, including church-related organizations—have taken family planning into many of their projects. Conservation organizations are actively pursuing linkages between their work and that of IPPF and UNFPA. The strong emphasis on people's participation in community development has brought diverse non-governmental organizations into partnership with each other in order to address local needs more effectively. In 1988 Indonesia embarked on a programme of "self-reliance" and is developing a scheme designed to shift large proportions of contraceptive users served by the public to the private sector. The efforts are too recent to judge their probable effect.

We have seen that there has been more than a 10-fold increase in the number of couples using contraception since 1965. The increase among persons in the reproductive ages would account for about 70 per cent, with increasing proportions of couples using contraceptive methods accounting for the remainder. Data are available for 35 countries on the estimated proportion

of contraceptive users who receive their supplies and services from the public and the private sectors, and those countries account for 94 per cent of all users in developing countries. In countries for which we have data, 38 per cent of users in Latin America are served by the public sector, 46 per cent in Africa and 89 per cent in Asia and the Pacific. Inasmuch as 3 billion people live in Asia and the Pacific and five sixths of all contraceptors live in developing countries, the proportion of all contraceptive users who are served by the public sector is more than 80 per cent (figure VIII). Thus, it is clear that national family-planning programmes are the source of supplies and services for an overwhelming proportion of the increased numbers using contraceptives during the past two decades or so. We have noted the very rapid increase in contraceptive use in countries such as Colombia, Mexico, Thailand and the Republic of Korea, increases that were much more rapid than changes in social and economic indicators. That is strong presumptive evidence that the well-organized national family-planning programmes in those countries contributed appreciably to the increase in contraceptive use.

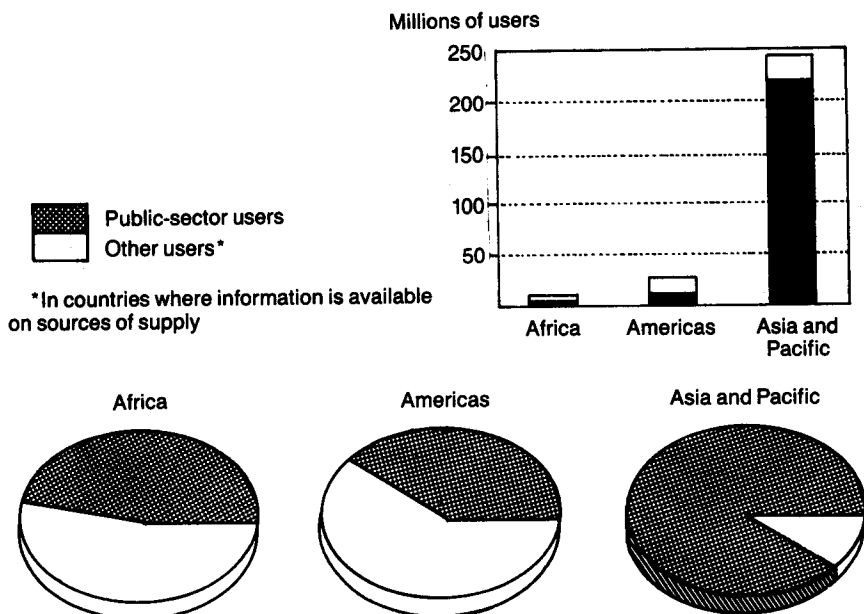
#### COSTS AND INCENTIVES

There are many different monetary policies regarding contraceptives around the world. They range from high user charges in some countries to free contraceptives in many, to monetary incentives and disincentives in others (Ross and Isaacs, 1988). A few developing countries charge for all contraceptives, a few charge for some methods but not for others, and other countries provide all methods of contraceptives free of charge. Several countries pay clients for being sterilized or for the insertion of an IUD (see table 4).

Incentive payments are also offered to service providers and to recruiters in a few countries—e.g., Bangladesh and India for sterilization clients, and at times for recruiting and providing services to IUD clients. Community incentives have been offered, in a few instances, to mothers' clubs, villages or a local administrative area. Finally, certain incentives and disincentives are offered to the population at large or to those employed in a given factory or commercial company, with benefits being tied to the *n*th child: salary decreases or increases, tax exemptions, maternity leaves, eligibility for preferred housing, schools etc. (David, 1987; Ross and Isaacs, 1988).

There are about 155 million users of contraceptives in developing countries, excluding China, and about 55 million users of sterilization and IUDs in developing countries which provide incentives for the use of those methods. Thus, 35 per cent of all users of contraceptives in developing countries use methods for which incentives are paid to clients and/or service providers and/or recruiters. Among persons who have been sterilized for contraceptive purposes, more than half—57 per cent—are in countries that pay incentives for sterilization. Among IUD users, the comparable figure is 41 per cent (see figs. IX and X).

**Figure VIII. Source of supply for contraceptive users in developing countries, 1985**

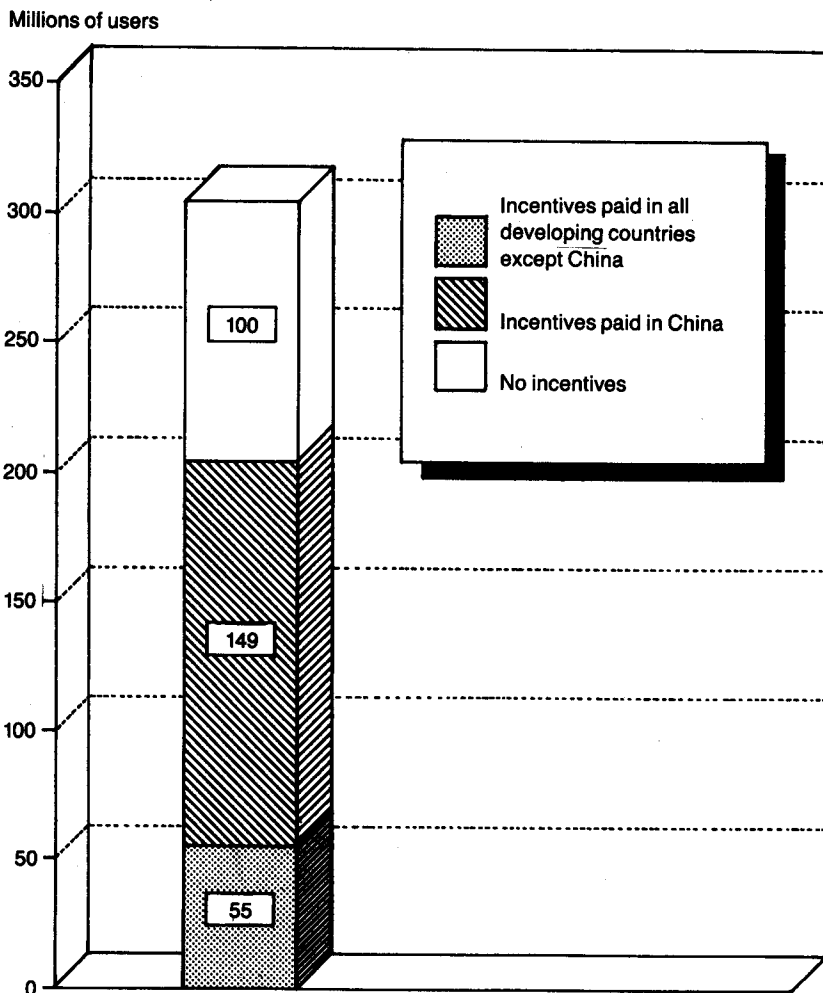


**TABLE 4. INCENTIVES PAID FOR STERILIZATION AND IUD INSERTION**

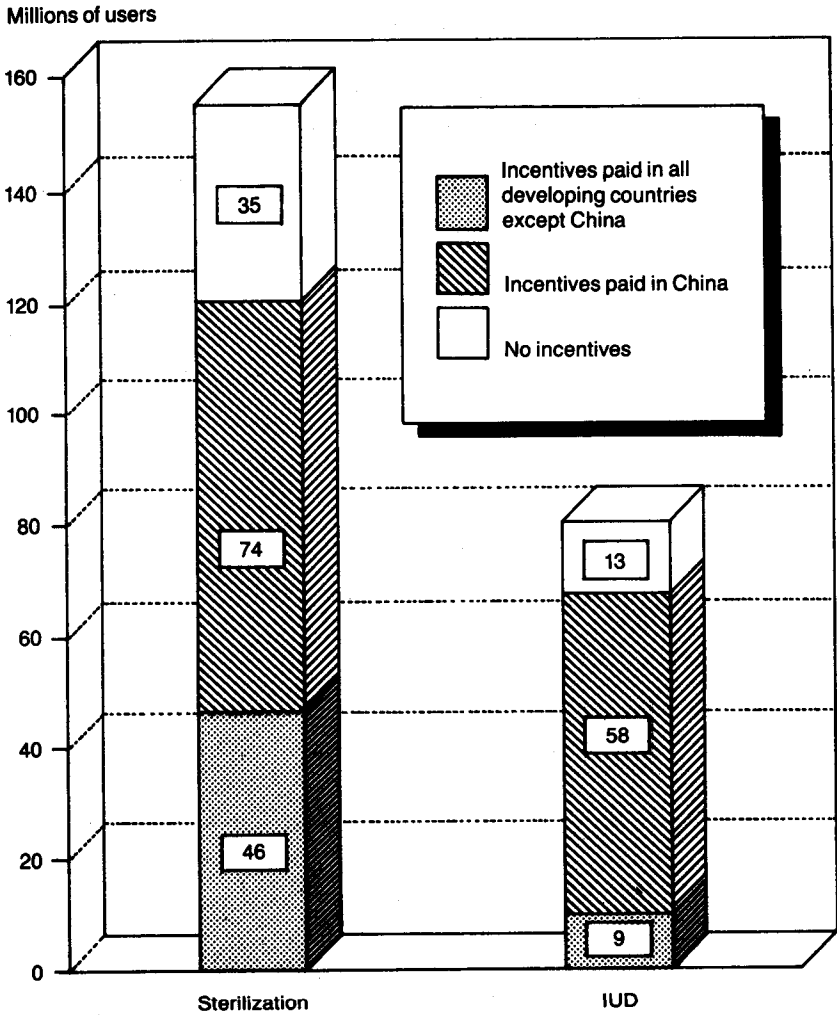
Country or area	Sterilization payments to			IUD payments to		
	Clients	Service personnel	Recruiters	Clients	Service personnel	Recruiters
Bangladesh	X	X	X	X	X	X
Hong Kong		X				
India	X		X	X		
Indonesia						X
Mauritius			X		X	X
Nepal	X					
Pakistan		X	X		X	X
Paraguay					X	
Peru					X	
Puerto Rico		X				
Republic of Korea	X	X			X	
Sri Lanka	X					
Taiwan, Province of China			X			X
Tunisia		X			X	
Turkey			X		X	X

Source: Ross, J. A. and others, *Family Planning and Child Survival: 100 Developing Countries* (New York, Center for Population and Family Health, Columbia University, 1988).

**Figure IX. Contraceptive users and incentive programmes in developing countries**



**Figure X. Incentive programmes and the use of sterilization and IUDs in developing countries**



It is difficult to assess the effectiveness of incentive programmes. For example, among the 14 developing countries with contraceptive prevalence rates of 60 per cent or more, about half offer incentives and half do not. Similarly, among developing countries with a population of 40 million or more, about half offer incentives and half do not. In the countries that have the highest percentage of couples in the reproductive ages who are sterilized, the proportions are the same (see table 5). The situation is different for countries with 10 per cent or more married women in the reproductive ages using IUDs: only two of nine countries offer incentives.

TABLE 5. STERILIZATION AND INCENTIVE PROGRAMMES IN 20 LEAST DEVELOPED COUNTRIES

Country or area	Incentives offered to			Married women of reproductive age using sterilization (percentage)
	Clients	Service personnel	Recruiters	
Puerto Rico . . . . .		X		44
Republic of Korea . . . . .	X	X		40
China . . . . .				37
Panama . . . . .				34
Dominican Republic . . . . .				33
El Salvador . . . . .				33
Sri Lanka . . . . .	X	X		30
Brazil . . . . .				28
Thailand . . . . .				28
Hong Kong . . . . .		X		24
Singapore . . . . .				23
India . . . . .	X		X	22
Mexico . . . . .				20
Colombia . . . . .				18
Costa Rica . . . . .				17
Fiji . . . . .				15
Ecuador . . . . .				15
Nepal . . . . .	X			13
Tunisia . . . . .		X		13

On variables such as school enrolment, literacy, life expectancy, percentages of the labour force that are in agricultural and non-agricultural work, and levels of contraceptive prevalence, countries that offer incentives do not differ appreciably from countries that do not. Countries that offer incentives rank somewhat lower on per capita GNP and somewhat higher on infant mortality rates than do other countries.

The World Population Plan of Action (United Nations, 1975) considered incentives and made the following recommendation:

*Recommendation 31:* Legislation and policies concerning the family and programmes of incentives and disincentives should be neither coercive nor discriminatory and should be consistent with internationally recognized human rights as well as with changing individual and cultural values.



If incentives are very large, an ethical question arises as to whether they “coerce” the disadvantaged—primarily the poor—into actions that they otherwise would not take. On the other hand, there are costs to the client associated with certain procedures. For voluntary sterilization, for example, there are costs of travel, food, child care, and loss of earnings because of time lost from work. Those costs may be higher than the poorest of the poor can afford and, consequently, in the absence of adequate monetary incentives, those poor do not have access to a desired method of contraception.

In Bangladesh, for example, sterilization clients are paid 175 taka—about \$US 5.25. That is a relatively trivial sum for persons in the upper-middle and upper income classes, but it amounts to several days’ wages for an unskilled labourer. Does the amount “coerce” the poor into having sterilizations without adequate knowledge of the consequences of the operation? Studies show that even the poor who elect to have a sterilization say they do not want more children and that they know that having a sterilization means that they cannot have more. Recruiters are paid 45 taka for accompanying a sterilization client to a clinic. Usually recruiters are family members or governmental workers, and there is a need for their service, particularly in a society where women almost never travel alone. However, there are self-employed recruiters who seek out potential clients, almost exclusively men, in places where men are likely to be looking for work. There is some evidence that those recruiters put as much pressure as they can on potential clients to have a sterilization as soon as possible—“today”—and do not provide their clients with adequate information about what is involved and about alternative contraceptive methods. In principle, counselling at a clinic corrects deficiencies in recruiters, and in fact that is usually the case. On the basis of a number of studies carried out in Bangladesh and discussions with a wide variety of persons there, I am convinced that coercion is very, very rare or is non-existent.

#### CONCLUDING REMARKS

Several developing countries or areas have reached replacement fertility or below—Hong Kong, the Republic of Korea, Singapore and Thailand. China reached replacement fertility level in 1984 and 1985, but fertility rose in 1986 to an estimated TFR of 2.4. At the same time, fertility has changed hardly at all in sub-Saharan Africa or in the Arab countries, with the exceptions of Tunisia and Morocco, and possibly Egypt.

Contraceptive prevalence levels of 50 per cent or more have been reached in six of 17 developing countries with a population of 35 million or more and in an additional 16 countries with smaller populations.

I have argued that those changes have been brought about by five factors:

(a) Large-scale family-planning programmes, primarily national, have played a major role in the rapid increase of contraceptive prevalence during the past two decades;

(b) Despite the weakness and fragility of the economies of many developing countries, there has been appreciable socio-economic development in all regions of the world since 1960; improvements in health, education and the economic situation have also played an important role in the increase of contraceptive prevalence;

(c) Increased contraceptive prevalence and decreases in fertility have been greatest where both socio-economic variables and "programme effort" in family-planning programmes rank high;

(d) The primary instrument of fertility decline during the past several decades has been the use of contraception, including voluntary surgical contraception. Other downward determinants, including later marriage, have played a lesser role, although later marriage has been a very important contributor in the early stages of fertility decline in many countries;

(e) New and improved birth-control technologies have figured importantly in the growth of birth control and of family-planning programmes, and in the consequent fertility declines;

(f) In the coming years, the challenges will be to increase contraceptive prevalence to levels consistent with the social and economic goals of the various countries and to shift a significant proportion of services and supplies from the public to the private sector.

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#### NOTES

<sup>1</sup> J. Bongaarts and O. Frank, "Biological and behavioral determinants of exceptional fertility levels in Africa and West Asia", in *African Population Conference* (Dakar) (Liège, International Union for the Scientific Study of Population, 1988).

<sup>2</sup> The total fertility rate (TFR) is the preferred measure of fertility, but I used the crude birth rate in table 3 because it is more familiar to non-demographers. An analysis using TFRs gives essentially the same results.

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# WOMEN IN INTERNAL AND INTERNATIONAL MIGRATION, WITH SPECIAL REFERENCE TO LATIN AMERICA\*

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## SUMMARY

The recommendations for further action made by the International Conference on Population (Mexico City, 1984) in the area of population distribution and internal and international migration continue to be an accurate reflection of the current state of scientific and political thinking in Latin America, except for the one topic on which they are deficient—female migration. An increasing body of research findings demonstrates the importance of women migrants—especially women as independent migrants. The predominance of women in Latin American rural-to-urban migration flows is well known, but female majorities are found in other important flows (e.g., in some inter-urban and international flows) as well. In general, female migrants tend to be younger than their male counterparts. The kinds of employment most commonly sought by women migrants are related to their traditional roles in the home and in child-rearing. The problems faced by migrant women differ from those confronting men who migrate and vary greatly over a wide range of conditions.

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The recommendations formulated at the International Conference on Population, held at Mexico City in 1984, on population distribution and internal and international migration cover a wide spectrum of topics which, in one way or another, reflect the trends of the research and views of politicians on those specific topics in the years preceding the Conference. It may be said, on the basis of a subsequent reading of those recommendations and in the light of the available knowledge accumulated since then<sup>1</sup> in Latin America, that there are no conspicuous changes in either scientific or political findings and that, were the recommendations to be rewritten today, there would not be need to change them greatly, except in the case of one topic: female migration.

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Although female migration is a long-standing phenomenon in the world and although its predominance in certain types of movement was already indicated by Ravenstein (1885) in his famous "laws of migration", its magnitude and its specificity, and therefore extreme importance for policies, were ignored for many decades. The issue of migrant women was introduced in the Mexico City recommendations under the topic of internal migration but not in the chapter on international migration, which continued to be as asexual as it had been 10 years earlier at the World Population Conference at Bucharest. But female migration is now beginning to be more seriously and explicitly considered as a critical population issue. The purpose of this article is to stress the importance of taking female migration into account in research and especially in policy formulation.

### RESEARCH AND POLICIES

Until very recently research and policies on female migration were affected by two adverse factors. The first is characteristic of the field of migration in general: traditionally it has been viewed as a secondary, or residual, variable. In population research, fertility, mortality and population growth have usually been regarded as key questions while migration has been treated as a dependent variable. As a result of that attitude and of the fact that policies in the field of migration have been considered very costly and of doubtful effectiveness (also *vis-à-vis* the other variables)—and this is unquestionably linked to the tenuousness of knowledge about migration—very few resources were allocated for research. Fortunately, a reversal of that attitude seems to be occurring.<sup>2</sup>

The second factor is that research and policies on female migration have been affected by the short-sightedness of students of migration, who have tended either to exclude migrant women from their conceptual and theoretical theses or to devise a stereotype of migrant women as dependants, wives or mothers, economically inactive, and, therefore, not worthy of socio-economic analysis (Morokvasic, 1983), in spite of the abundant documentation on the predominance of women in certain types of migration. That generically distorted view of migration seems to be starting to show some faint signs of changing at last, a process helped along by the activities of the United Nations Decade for Women, which culminated at Nairobi in 1985.

The Decade for Women gave rise, *inter alia*, to a large number of studies on women throughout the world: on female labour-force participation and the problems of measuring such participation, its relationship to education and family characteristics, its expansion in recent decades, the status of women and, in general, the relationship between women and development.<sup>3</sup> Several of the study topics promoted the perception of women as protagonists of the migration process—for example, the studies on female employment and labour-force participation and the anthropological studies of rural life, the status of women and living conditions in urban working-class sectors.

A good while before the Mexico City Conference, articles and books began to appear on female migration,<sup>4</sup> and from the early 1980s onwards meetings on the subject<sup>5</sup> were organized or special meetings<sup>6</sup> were allocated to it as part of a more general agenda. Those initiatives often originated from studies on women but rarely from studies on population or migration. Specialists in migration did not take up the topic because it was dealt with only partially at the meeting on migration held preparatory to the Mexico City Conference, at which experts in that speciality<sup>7</sup> naturally predominated. The exceptions, such as the meeting organized by the International Committee for Migration, indicate that the topic was introduced at Mexico City.

In Latin America, a region where women have been predominant in rural-to-urban migration since the early 1960s at least (United Nations, 1962; Elizaga, 1966; Simmons, Diaz-Briguets and Laguian, 1977), the topic of migrant women was conspicuously absent until approximately the second half of the 1970s.<sup>8</sup> Even today there are topics, such as temporary or seasonal migrations, in which migration continues to be dealt with as either a predominantly male or an asexual phenomenon.<sup>9</sup> Apparently researchers focusing on seasonal migration—a new subject in the region—have not yet become aware of the role of women in temporary migration because, when questions have been raised by researchers who propose to explain certain patterns of female labour, they have found examples of temporary female migration (Sautu, 1979).

The specificity of female migration is also usually ignored in research on international migrations of past decades. The situation in Latin America appears similar to that described by Morokvasic (1986) for Europe when he speaks of the “created” invisibility of migrants. As a rule, research on the subject deals with men or with the wives of migrants, but not with migrant women as such. Even when the word “migrant” is used, as a general term, without reference to gender, as in the expression “migrants and their families”, it invariably refers to the masculine gender and “family” means dependent women and children. That dependence, whether genuine or applied, has served as a basic guide for statistical compilation and the formulation of policies (Morokvasic, 1986, p. 111). Unsurprisingly, the topic of migration, in the international population conferences of 1974 and 1984, reflected the status of research carried out by specialists in population. The recommendations of 1974 make no mention of women either in the chapter on spatial distribution and internal migration or in the chapter on international migration. The topic was introduced 10 years later, in the first of the above-mentioned chapters, almost exclusively in connection with rural-to-urban migration and the problems confronting women of rural origin (recommendations 43 and 44). In the chapter on international migration, the subject continues to be treated largely without reference to gender, but it acquires a male connotation. However, with regard to refugees, the numerical predominance of women is acknowledged in the introductory paragraph to the topic (United Nations, 1984a, para. 31; see also ACNUR, 1985). The Plan therefore implicitly ignores the numerical importance, characteristics and patterns of female migration, as well as the spe-

cific problems and advantages for development and the status of women deriving from female migration.

#### TYPES AND MAGNITUDE OF FEMALE MIGRATION

Reference has been made above to the recognized predominance of women in rural-to-urban migration in Latin America. Women would seem also to predominate in certain types of movement that are not necessarily from rural areas to urban. For example, in Argentina women predominated in the positive net migration of several provinces, such as Cordoba and Río Negro in 1970-1980 (Recchini de Lattes, mimeo), and among the interprovincial migrants ages 10-14 years in the period 1975-1980 (Abdala and Elizalde, mimeo). Evidence indicates that women usually also predominate in countries that have reached relatively high levels of urbanization. In order to explain such cases of female selectivity, which appear to be contrary to the common expectation of predominantly male flows of internal migration, at least the following aspects of the migratory process should be reflected: the status of women in the areas of origin; the distance involved; existing occupational opportunities in the place of destination; and cultural patterns of the human settlements (Oliveira and García, 1984).

The numerical importance of women in international migrations in general has been widely recognized in the literature of recent years. For example, Houstoun, Kramer and Barrett (1984) show that women have apparently predominated in international immigration to the United States since 1930, and the chapter on international migration in *World Population Trends and Policies: 1987 Monitoring Report* (United Nations, 1988) indicates that women constitute a large proportion of foreign residents in the majority of countries where the volume of migration is substantial. Schkolnik (1987) points out that, although the masculinity index for the population of Argentina was 97.5, the corresponding index for the foreign population was significantly lower—95.9.

Moreover, in the categories of documented migrant workers and undocumented migrants (and in the refugee category, as already stated) there is sufficient evidence to show that the number and/or proportion of women is high, although it is, of course, impossible to generalize because the composition of each flow depends on factors associated with each particular situation. Thus Sassen-Koob (1984) notes the growing migration of women workers (without distinguishing between the legal or illegal nature thereof) to large urban centres in industrialized countries, independently of male migration, in response to a demand for cheap labour in the United States, but points out that the process is part of a pattern already started in the chiefly Asian and Caribbean countries of emigration which employ women in export industries. In other words, as regards situations at both the origin and the destination of the migrants, he seems to have established the numerical superiority of women in those migratory movements. Safa (1986) also points out that women usually predominate among Hispanic migrants to the United States, especially among



Puerto Ricans, Cubans, South Americans and Central Americans in New York.

It is more difficult to find evidence of the numerical importance of women among undocumented migrants, since the estimates for that category are usually subject to considerable error. Nevertheless, there is some evidence that women constitute a substantial part of such movements. For example, although the percentage of women among Colombians deported from Venezuela amounted to barely 17 per cent from 1968 to 1978 (Pinto, 1981), it has been remarked that it is men who "are more exposed to circumstances that make deportation possible because illegal females generally employed in domestic services live, for the most part, in the houses of their employers and are more protected against the aforesaid risk" (Pellegrino, s.f., p. 21).

A knowledge of the economic and social scenario in the Latin American countries where internal and international migrations take place makes it possible to predict that the geographical movements of women and men will not cease; on the contrary, they will become more complex and possibly increase in the next few years. The implications of the economic crisis created by the heavy external debt of those countries, which already existed in the early 1980s, have become more acute in recent years for the more disadvantaged population sectors. Per capita income fell by 1.8 per cent per year in the period 1980-1985, and the deterioration was more pronounced in urban areas, especially in the cities. The lower-income groups bore the brunt of that decline, especially through rising unemployment and underemployment and the drop in real wages. That situation hastened both the increase in migration from the large metropolitan areas (or return migration, or re-migration) which occurred in several Latin American countries in the 1970s (Lattes, 1984) and its spread to other countries. It is also possible that Latin America's traditional population movements, associated with the urbanization and rural proletarianization processes, and the international movements to developed countries or between Latin American countries at different stages of relative development,<sup>10</sup> will increase. Perhaps—and even more likely—the social crisis will lead to patterns of migration that are more complex or differentiated in terms of formal and informal activities, rural or urban origin, and sex and age (Gómez Jiménez and Díaz, 1987). Women, who already constitute a large proportion or a majority of migrants, will no doubt continue to participate in migration as a strategy for the survival of the families of the region. On the other hand, if they find their traditional opportunities for migration limited, still other patterns of migration are likely to emerge. That seems to have occurred when the migration of young Peruvian women from the mountain areas to Lima declined because of a decrease in demand for domestic service in the Peruvian economic crisis. Moreover, given their different economic situations, Governments of those developing countries are able to react only to the immediate crisis and are unable to address topics requiring medium-term or long-term planning.

## CHARACTERISTICS OF MIGRANT WOMEN

### *Age*

The generalization that, as a rule, in both developed and developing countries most migrants are young adults was first expressed in 1938 (Lattes, 1983). A few years ago it began to be noticed that the peak was being reached at slightly younger ages for women than for men (Elton, 1978). In a study presenting comparable data on net migration to 21 large metropolitan areas in developing countries (United Nations, 1986), it was found that children and young people constituted the vast majority of migrants, with net migration rates reaching the maximum in the age group 10-14 for females and 15-19 for males. There is no doubt that such generalizations conceal a variety of different situations, depending on the places of origin and destination;<sup>11</sup> an effort must be made to find the economic and social factors that encourage migration and the characteristics of the migrant streams (Arizpe, 1986). It remains the case that the classic age/sex distribution is very frequently found, not only among internal but also among international migrants (United Nations, 1979b; Torrealba, 1986).

### *Principal occupations*

Female labour-force participation rates are usually low in the developing countries, whereas typical rates for adult men are, as in the developed countries, high. While measurements of economic participation are not comparable for men and women, since statistics usually underestimate female participation (Wainerman and Recchini de Lattes, 1981), there are differences between the sexes, even though they may be overestimated. In addition to the differences in participation levels, men and women generally carry out their economic activities in different types of occupations. Men are distributed over a very wide range of activities, most of which are usually closed to women in countries where studies have been made. On the other hand, women are usually concentrated in a small number of occupations, and constitute a majority in occupations that have characteristics related to women's traditional roles in the home and in child-bearing, such as servants, nurses and primary- and secondary-school teachers. Those differences, apparent throughout society, also exist among migrant men and women, but within the framework of the different levels of participation and concentration in occupations other than those typically held by non-migrants.

In Latin America women in low social strata, in general, and young migrant women in urban areas, in particular, are concentrated for the most part in manual jobs and especially domestic service (Silva, Cardozo and Castro, 1981; Jelin, 1976; Marshall, 1980; Young, 1986; Arizpe, 1986). There are some indications that, owing to their employment in domestic service, migrant women of rural origin become socially and culturally integrated into the urban environment. A certain proportion of them move from service employment to other wage-earning jobs, mainly textile work, or to self-employment, thus expanding the informal urban market (Marshall, 1980; Jelin, 1976). Arizpe

(1975) has carefully documented the case of the indigenous migrant "Marias". They are women who usually accompanied their spouses to Mexico City and had to join the labour force as pedlars because, as wives and mothers, they were barred from working as housemaids or in other occupations. The fact that a majority of the very young migrant women entered the labour market as domestic servants (a typically female job) or were engaged in marginal urban activities, in jobs that are also labelled female (the "Marias"), indicates the existence of a very clear specificity of migrant women workers *vis-à-vis* their male counterparts.

It has also been pointed out that, in urban areas, the more skilled migrant women occupy higher rungs on the occupational ladder as technicians and professionals. Herold (1979), in a study of migration in Chile, distinguishes between migration to Santiago and migration to other urban areas, and at the same time between women migrating for the first time and those who are repeat migrants. Among the latter women migrating to other towns (who are usually somewhat older), professionals predominate over housemaids. That discovery is consistent with one of Raczynski (1983), who suggests that "the existence of two types of migrant women—the more numerous type, possibly consisting of the youngest, less educated and at a lower social and economic level, whose only occupational prospect is in personal services, and the less common type, with more favourable social backgrounds, who obtain technical and professional jobs" (p. 42). Once again, those findings indicate that facile generalizations are not possible and that attention must be paid to the factors determining migration in each case and to the characteristics of the areas of origin and destination and of the women themselves.

Most international women migrants are also to be found in a limited range of occupations, depending, in each case, on the characteristics of the migrants and on the conditions prevailing in the labour market where they work. Domestic service is a common occupation for Colombian women in Venezuela (Torrealba, 1986), Jamaicans in Canada (Boyd and Taylor, 1986), Paraguayans in Argentina (Marshall, 1980) and some Hispanics in the United States, especially among undocumented migrant women (Safa, 1986). Seasonal migrant women workers are often found helping their husbands in various harvests in northern Argentina (Sautu, 1979), and Haitian women are seen travelling to Jamaica to sell their agricultural products (Despradel, 1986). A large number of the Hispanic migrants in the United States are also employed in the garment, textile and food industries, and a smaller number in restaurants, health and cleaning services. Those jobs are all characterized by low wages and a low level of trade-union coverage, and many of them are situated in large cities. In recent times there has been a trend towards transferring such industries to the southern states, where the level of trade-union activity is lower than in the large cities (Sassen-Koob, 1984; and Safa, 1986).

However, although the great majority of international and internal migrant women hold unskilled jobs, references are often found in the literature to professional migrant women. The International Committee for Migration, for example, reports that it collaborated in efforts to bring back professional

women from European countries to Latin America (Alexandraki, 1981). Pellegrino (1986) also shows that a substantial proportion of Peruvian, Argentine, Chilean and Uruguayan immigrant women in Venezuela were working as secondary-school teachers in 1981, while large numbers of others from Argentina and Uruguay were working in offices.

#### SOME SPECIFIC PROBLEMS OF MIGRANT WOMEN

Migrants of both sexes are in search of advantages. Mention has also been made in the literature of the benefits, for the internal cohesion of immigrant communities, deriving from the domestic role of women who do not participate in the economic activity of their place of destination (Andizian and Streiff, 1983).

Migrant women (and men) are confronted in their place of destination with cultural standards and customs different from those of their place of origin, and that often creates problems. They are usually confronted with the need for very complex processes of social and cultural integration into their place of destination and in the workplace and must adjust to new practices. However, migrant women often encounter more problems in the labour force than do migrant men. Their problems are connected with their education, the social benefits of employment and their particular types of work in the place of destination, as Goldscheider (1983) concludes in a comparative analysis of several Asian and Latin American countries.

In addition, migrant women are also confronted with changes in relation to their reproductive function and womanhood. The act of migrating often means a change of status in intra-family relationships. The situation of migrant women workers from Sri Lanka to the Middle East is a case in point (Eelens and Schampers, 1988). First of all, the women are extremely dependent in the place of destination on their employers, in an environment where women traditionally have lower status than in their place of origin. Secondly, they lose control over the money they send to their families because it is spent before they return. Lastly, they suffer from the problems of separation from their families. In a review of a number of African and Latin American cases, Tienda and Booth (1988) conclude that the status of women migrants *vis-à-vis* that of men depends on "(a) the cultural context in which the decisions to migrate are taken; (b) the family and employment situation of the women prior to migration; (c) the points of contact between women's economic and non-economic exchanges; and the class level" (Tienda and Booth, 1988, p. 312).

In the literature on migration and the recommendations of 1984, references are made to the women and children who remain in charge of family farms when the men emigrate. However, an increasing number of examples are to be found of women who leave husband and children, or sometimes only children, in order to emigrate. Lima (1986) reports that 8 per cent of Central American refugee women in Mexico left children behind with relatives. Torrealba (1986) describes the situation of migrant women in Venezuela, many of

whom have apparently been obliged to leave their children in the places of origin. Since the task of bringing up children is usually left to mothers, those facts seem to entail terrible social and psychological costs for the children and for the women themselves. (Husbands would also suffer from such prolonged absences.)

## CONCLUSIONS

The above discussion of trends in research and policy on female migration used international recommendations as the guide for policies. It shows that, particularly in Latin America, women constitute a substantial proportion in all types of migration and that it is highly probable that migration in general and female migration in particular are acquiring more complex characteristics and/or increasing in the Latin American region for reasons relating to the economic crisis and problems arising from the heavy external indebtedness of the countries concerned. The specificity of female migration has also been documented in terms of the ages at which the majority of such migrations occur and of the types of occupation preferred by migrant women. Lastly, some of the problems typically encountered by migrant women are enumerated.

It is important to bear in mind both the numerical importance and the specificity of female migration and the problems that usually confront migrant women in order to ensure that, when formulating policies concerning the various aspects of spatial redistribution and migration covered in the Plan of Action, those policies are redefined so as to attain more efficiently the general goals defined in 1974 and reaffirmed in 1984, especially the goals of "advancing human welfare" and of promoting "the status of women and the expansion of their roles, their full participation in the formulation and implementation of socio-economic policy . . ." (United Nations, 1979a, recommendations 15*b* and 15*e*). So long as the question of women is not covered under every demographic topic—and not just in connection with fertility or the role and status of women (section B of the 1984 recommendations)—there will be no real progress towards improving the status of women or towards incorporating them into development.

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## NOTES

<sup>1</sup> It should be explained that, both in monitoring population trends and in reviewing and appraising recommendations, there is an inevitable time-lag, such as has occurred ever since the United Nations (1979c) undertook the first monitoring exercise, relating to 1977. The lag is due, on the one hand, to the customary delay in supplying demographic information, a very familiar situation for third-world demographers/analysts, and, in the case of migrations, it is accentuated by the chronic shortage of relevant data. On the other hand, some time is needed to assimilate new publications and devise ways of implementing recommendations. For example, the preparatory meetings of experts for the Mexico City Conference were held in 1983 and, in their turn, were based on literature published up to the end of 1982. In its turn that literature referred, at best, to phenomena of the 1970s, although frequent references were made to previous years. That time-

lag—not made explicit in the Plan, which is appraised every five years and monitored every two years—must be taken into account realistically.

<sup>2</sup> The meagre conceptual development of the topic and the greater lack of basic data on the other demographic topics seem to explain why even organizations such as the United Nations openly avoid the topic, although its treatment is similar to that of others in the Plan. An analysis of trends in internal migration was excluded from the monitoring reports until 1986, whereas fertility and mortality were always suitably represented. The latest report (United Nations, 1988) marks a reversal of that trend.

<sup>3</sup> For example, the UNESCO bibliography (1983).

<sup>4</sup> See the following examples relevant to Latin America: Elton (1978), Jelin (1976), Arizpe (1975), (1978) and (1986), Bustamante (1978), Chaney (1977), Castro and Lopes (1978), Safa (1978), Sautu (1979), Herold (1979), Young (1986), Smith, Khoo and Go (1984).

<sup>5</sup> For example, the symposium on the role of women in the redistribution of population, organized by the International Geographical Union, held in 1982 (*Population Geography*, 1983); the second Latin American seminar on the topic "Migrant women", organized by the Regional Office of the International Social Service and its Office in Argentina, held in 1985 (ILDIS-SIS, 1986); the seminar on the adjustment and integration of permanent immigrants, organized by the International Committee for Migration and held at Geneva in 1981, at which the only topic for consideration was "The situation and function of migrant women: their problems of adjustment and integration" (International Committee for Migration, 1981).

<sup>6</sup> The Conference on Women's Position and Demographic Change in the Course of Development, organized by the International Union for the Scientific Study of Population, held at Oslo in June 1988.

<sup>7</sup> Of the 20 or so papers presented at the meeting, it is interesting to note that only those submitted by FAO, Guy Standing (representative of the ILO Department of Employment and Development), WHO, and Oliveira and García (two experts specializing not only in migration but also in female labour-force participation) commented on some noteworthy aspects of female migration (United Nations, 1984b).

<sup>8</sup> Female migration was virtually absent as a topic of demographic study, even though the low index of male participation in regional rural-to-urban migration was constantly stressed. For example, in the publications that emanated from the six meetings of the Working Group on Internal Migration of the Population and Development Commission of the Consejo Latinoamericano de Ciencias Sociales, which sponsored research on migration and supplied material on the topic in the region in the 1970s, there is not one report that differentiates migrants by gender or deals with female migration. Most of the reports submitted to the meetings were not gender-oriented, whereas there was no lack of articles presenting findings concerning exclusively the male population (see, for example, Muñoz and Oliveira, 1973). At the meeting held in 1977 (and in a publication of 1980), articles distinguishing the characteristics of female migration from those of male migration began to appear (Conroy, 1980; Marshall, 1980).

<sup>9</sup> See, for example, PISPAL/CIUDAD/CENEP (1986), which presents the results of a 1984 seminar on the topic.

<sup>10</sup> Torrealba (1987, p. 47) distinguishes the following five types of predominant migration patterns for Central America and the Spanish-speaking Caribbean: "(a) migratory movements from rural to urban areas, generally of short and medium distance, consisting of poorly skilled and relatively poorly educated migrants; (b) internal and/or intraregional movements of manual workers and professionals with some, or a high level of, skill; (c) frontier labour movements, more or less permanent, usually consisting of poorly skilled manual workers migrating illegally to the receiving country; (d) seasonal to-and-fro frontier movements, legal or illegal, of agricultural day-labourers; and (e) movements of persons, displaced for reasons of violence and political instability in their regions of origin, seeking to avail themselves of the statute defining them as refugees."

<sup>11</sup> See, for example, the age-differentiation of migrant men and women in Guatemala, according to the various migratory movements discussed in Schroten (1987).

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# POPULATION STRUCTURE

*Shigemi Kono\**

## SUMMARY

This paper reviews recent new trends in population structure in the world and its major regions in order to assess the determinants of those trends and explore issues regarding the recent and projected changes in the age structure of population and the relationships of those changes to economic and social development. In particular, the paper compares the change in age structure projected by the Population Division of the Department of International Economic and Social Affairs of the United Nations Secretariat in its most recent three series—namely, those completed in 1984, 1986 and 1988. By and large, the most recent United Nations assessment projects that a larger proportion of the world population will be aged 60 and over in the years 2000 and 2025 than was previously estimated. Those changes in projections can be observed for the world and the more developed countries as a whole, and for the regions of Africa, Latin America, Northern America, East Asia, Europe and Oceania. While the recommendations of the International Conference on Population called attention to the importance of changes in population structure, this paper recommends urgent governmental action in planning social programmes for the aged because of the greater imminence of population aging in many settings. The case of Japan is used to illustrate the growing importance of increases in life expectancy as a determinant of age structure changes (in relation to fertility decline), a point that is reinforced through a cruder decomposition of United Nations estimates and projections for several European countries.

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## INTRODUCTION

The purpose of the present paper is to review recent new trends in population structure in the world and its major regions, to assess the determinants of those trends, and to explore issues relating to recent and projected changes in the age structure of population and the relationships of those changes to economic and social development. Although the term "population structure" denotes the population composition not only by sex and age but also by marital status, educational attainment, occupation etc., the present essay deals almost

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exclusively with age structure, because of its great importance for economic and social development. Furthermore, other categories of population structure such as marital status lack comparative world data.

When the United Nations published its seminal report on the aging of populations (United Nations, 1956), most scholars and intellectuals in the countries outside of Western Europe and Northern America were not fully aware of the importance of the phenomenon. However, thanks to the long history of United Nations global population projections and the process of preparing national projections, many Governments of developing countries are coming to realize the great importance and urgency of the issue. In the 1980s, the question has been attracting the keen interest of demographers in the developing world. In 1982, the first global forum exclusively on population aging, the World Assembly on Aging, was held.

#### INTERPRETING THE CHANGE IN AGE STRUCTURE

The sex/age structure of population is a frozen record of historical levels and patterns of fertility, mortality and migration. If the migration effect is nil, then the theory of stable population elucidates the interaction of fertility and mortality. On the other hand, population structure determines fertility and mortality levels. Apart from the well-known demographic fact that age composition affects the levels of crude birth and death rates, Easterlin (1980) argues that a relatively large cohort has relatively low fertility because its relative size produces economic disadvantages, while a smaller cohort has higher fertility because of the relatively advantageous position the members enjoy. That hypothesis has been applied to an analysis of United States fertility in past periods. It also seems applicable to Japan for explaining the fertility behaviour of various cohorts of women born from 1935 to 1948. During that period the total fertility rate for each cohort shows a very clear inverse relationship to the size of the cohort. The Japanese birth experience demonstrates that the cumulated fertility rate, which is considered to be close to the cohort total fertility rate, is counter-cyclical to the size of the cohort. The so-called "Easterlin effect" also seems to work adequately for some past cohorts in other developed countries (Kono and others, 1986).

In 1984, on the other hand, Preston (1984) suggested that, in the United States, changes in the cohort size of different generations—notably the shrinking proportion of the population under 15 and the expanding size of the elderly population—have not always resulted in the expected effects on relative well-being. It can be argued that the increasing proportion of a functional group of the population is not so preponderantly menacing to its well-being as to nullify the impact of all other influences. As Preston (1984) pointed out in his famous presidential address at the 1984 annual meeting of the Population Association of America, a conventional analysis would lead to the expectation that the 54 per cent increase in the number of the aged and the 7 per cent decrease in the number of children in the United States between 1960 and 1980 would operate against the well-being of the elderly and in favour of the children: smaller

numbers of children would mean greater educational resources per child; and a substantial increase in the number of persons over 65 would increase the strain on governmental pension schemes and subsidized medical care. However, Preston argues that the increase in the number of the elderly has, in fact, contributed to their improved well-being through their increased political influence etc., while the decrease in the number of children has served to worsen their relative position.

Preston and Kono (1988) applied Preston's hypothesis to the situation in Japan. Surprisingly, the hypothesis seems to be proved robust, even though Japanese culture and customs as well as social and political backgrounds are very different from those in the United States. During the 10-year period between 1975 and 1985, the expenditures of the households to which aged persons belong have increased more rapidly than those of the households where children live. At the same time, there are clear trends in household expenditure by age which are especially visible in the lowest income bracket. In 1975, what might be called the "poverty group" consisted largely of households having elderly members. Between 1980 and 1985, however, the percentage of persons aged 60 and above in the lowest income group decreased while there was a levelling off in the percentage of population falling below the poverty line in other age groups. It is likely that the exceptional reduction in the percentage of the aged population in the lowest income group is related to the expansion of pension benefits.

When Preston gave his seminal lecture in 1984, my first reaction was that his hypothesis could be valid only in a country like the United States, where land and resources are plentiful. But when cross-tabulations were made for household expenditures by size of household and by age of each household member on the basis of the Japanese survey on household expenditure and social welfare (Ministry of Health and Welfare), I came to realize that what might be called the "Preston effect" seems to be workable in Japan. It should be mentioned that it is still not clear whether the current improved economic conditions for the aged in Japan can be entirely explained by Preston's demographic effect, since there have been considerable improvements in the well-being of all households, including the households containing youth, during the past decade. Nevertheless, it would be difficult to negate the Preston effect in Japan inasmuch as circumstantial evidence clearly indicates that the elderly have experienced much improvement in their well-being relative to children and youth.

The Japanese experience teaches us that the effect of a changing age structure in Japan varies: under certain circumstances, the age structure promotes the Easterlin effect; under other circumstances it promotes the Preston effect. In contemporary Japan, chances are that the Easterlin effect may operate more strongly when the participation of married women in the labour force is low and when economic and social development has not yet reached its peak. But it can be argued that as soon as female labour-force participation substantially increases and economic and social development approaches its maturity the Preston effect then becomes dominant.

As Ansley J. Coale elucidated on many occasions, by using the stable population model, or as Jean Bourgeois-Pichat often demonstrated in his theoretical analysis, past fertility trends rather than mortality trends generally determine age structure. That is because, in the first phase of demographic transition, mortality improvements occur essentially among children and youth, and there is little space for a reduction in mortality among the aged. Hence, an increase in life expectancy means juvenation of population. However, as modern medicine wipes out infectious and parasitic diseases among children and youth, in the course of economic and social development, further mortality improvements are made among the middle and advanced age groups. In Japan, nutritional improvements, combined with dietary change and the introduction of modern electric refrigerators and heating systems, have reduced the risks of death from cerebro-vascular diseases, while infant and child mortality rates are at a world-record low. In Japan, as well as in European countries, the lengthening of life expectancy has now come to be synonymous with the aging of the population. That is indeed a revolutionary development and is the theme of the present essay, which may challenge the conventional demographic theory and may suggest some revisions to the World Population Plan of Action.

#### NEW TRENDS IN THE CHANGING AGE STRUCTURE

In its recommendations, the International Conference on Population (Mexico City, 1984), emphasized the importance of changing age structure in relation to sustained demographic change. Cognizant of the urgent need to monitor population trends, the present essay compares the change in age structure projected by the Population Division of the United Nations in its most recent three series—namely, those completed in 1984, 1986 and 1988.<sup>1</sup> Tables 1 and 2 show, for the world and for each major region, the three different estimates of the percentages of the population under 15 years of age and those of the population aged 60 and over. Tables 3 and 4 show, for the same regions, the corresponding three different estimates and projections of total fertility rate and life expectancy, which may be closely related to the revisions in age structure.

It can be seen from table 1 that the projected percentages of the population aged under 15 have declined in the developed regions, particularly in Northern America and Europe. Furthermore, the declines are not confined to developed regions. In the less developed regions, decreases are noted in Latin America and East Asia (including Japan), the latter showing a decline in the proportion for 1985 and 2025.

The estimates of the proportion aged 60 and over (table 2) in the three projections indicate even more interesting changes. By and large, the most recent United Nations assessment shows the world to be aging more rapidly than was previously estimated for the years 2000 and 2025. The changes can be observed for the world as a whole, the more developed regions, Africa, Latin America, Northern America, East Asia, Europe and Oceania. Indeed, the rapidity of the population aging in the more developed regions as a whole

TABLE 1. PERCENTAGE OF THE POPULATION AGED UNDER 15 YEARS IN THE TOTAL POPULATION FOR 1985, 2000 AND 2025, AS PROJECTED IN 1984, 1986 AND 1988, BY REGION

Region	1985			2000			2025		
	1984	1986	1988	1984	1986	1988	1984	1986	1988
World total . . . . .	33.7	33.4	33.5	30.4	30.3	31.3	24.7	24.8	24.4
More-developed regions . . . . .	22.2	22.2	22.2	20.8	20.8	20.1	19.8	19.7	17.9
Less-developed regions . . . . .	37.4	36.9	37.2	32.9	32.7	34.2	25.7	25.8	25.6
Africa . . . . .	45.4	45.1	45.3	45.2	44.7	44.3	35.5	35.3	34.2
Latin America . . . . .	38.0	37.9	37.5	33.4	33.3	32.8	26.1	26.0	25.7
Northern America . . . . .	21.9	21.8	21.7	21.6	21.6	20.2	20.1	20.1	17.9
Asia . . . . .	35.0	34.5	34.8	29.2	29.2	31.4	21.8	22.1	22.5
East Asia . . . . .	29.9	29.2	29.1	23.6	23.8	25.0	18.4	19.5	18.1
South Asia . . . . .	39.1	38.8	39.4	33.2	33.0	35.7	23.9	23.8	24.9
Europe . . . . .	20.9	21.0	20.8	19.3	19.3	18.5	18.5	18.3	16.6
Oceania . . . . .	28.4	27.8	27.8	26.1	25.6	25.9	22.9	21.3	22.1
USSR . . . . .	24.8	24.8	25.2	23.6	23.5	23.6	22.0	22.1	20.8

Sources: 1984: *World Population Prospects: Estimates and Projections as Assessed in 1982* (United Nations publication, Sales No. E.83.XIII.5); 1986: *World Population Prospects: Estimates and Projections as Assessed in 1984* (United Nations publication, Sales No. E.86.XIII.3); 1988: *World Population Prospects: 1988* (United Nations publication, Sales No. E.88.XIII.7).

TABLE 2. PERCENTAGE OF THE POPULATION AGED 60 YEARS AND OVER IN THE TOTAL POPULATION FOR 1985, 2000 AND 2025, AS PROJECTED IN 1984, 1986 AND 1988, BY REGION

Region	1985			2000			2025		
	1984	1986	1988	1984	1986	1988	1984	1986	1988
World total . . . . .	8.6	8.8	8.9	9.7	9.9	9.8	13.9	14.3	14.2
More-developed regions . . . . .	15.8	15.8	16.1	18.3	18.4	18.7	23.6	23.6	25.3
Less-developed regions . . . . .	6.3	6.6	6.6	7.5	7.7	7.6	11.9	12.4	12.1
Africa . . . . .	4.8	4.8	4.9	4.8	4.8	4.8	6.0	6.1	6.4
Latin America . . . . .	6.7	6.7	6.8	7.6	7.7	7.8	12.2	12.4	12.7
Northern America . . . . .	15.9	16.2	16.4	15.7	16.0	16.8	23.7	23.8	26.4
Asia . . . . .	6.9	7.3	7.2	8.6	8.9	8.7	14.4	15.0	14.3
East Asia . . . . .	8.5	8.7	8.8	11.0	11.3	11.2	19.0	19.6	20.0
South Asia . . . . .	5.5	6.1	6.1	6.8	7.3	6.9	11.6	12.2	11.1
Europe . . . . .	17.6	17.6	17.8	19.8	19.8	20.2	25.0	25.0	27.0
Oceania . . . . .	12.1	12.3	12.3	12.6	13.0	13.0	17.5	18.4	18.5
USSR . . . . .	13.1	13.1	13.5	17.5	17.5	16.9	20.7	20.7	20.6

Sources: 1984: *World Population Prospects: Estimates and Projections as Assessed in 1982* (United Nations publication, Sales No. E.83.XIII.5); 1986: *World Population Prospects: Estimates and Projections as Assessed in 1984* (United Nations publication, Sales No. E.86.XIII.3); 1988: *World Population Prospects: 1988* (United Nations publication, Sales No. E.88.XIII.7).

and particularly in Northern America and Europe is particularly striking. For example, Northern America's aging is now expected to become much more rapid by 2025 than was expected in the 1984 and 1986 projections. For the year 2025, the 1984 projections show the aged as 23.7 per cent of the population; the 1986 projections indicate 23.8 per cent, and the 1988 projections show 26.4 per cent, the latter being an increase of 2.6 percentage points. For Europe, for 1985, the three estimates are similar. But for the year 2000, the 1988 projection shows the aged as 20.2 per cent of the total, or 0.4 percentage points larger than the projections in 1984 and 1986; and for the year 2025, the 1988 projection is 27.0 per cent, or 2.0 percentage points larger than estimated in 1984 and 1986. Clearly, population aging in those developed regions is now expected to move faster than previously estimated.

### *Rapidity of aging*

Comparative analysis of the three different estimates of the proportion of the aged is called for in view of the corresponding three estimates of fertility and mortality in the 1984, 1986 and 1988 revisions. Since the age structure data for each region were not available at the time of this writing, it is difficult to draw a definite conclusion, but some general thoughts may be mentioned. More concrete substantiation will be made in a later section of this paper, dealing with the decomposition of the change in the proportion of the aged by changes in fertility and mortality.

In the case of Northern America, the lower levels of fertility (see table 3) estimated and projected in 1988 are considered an important factor in the estimates of more rapid aging. For European countries, the estimates and projections of levels of fertility in 1988 were lowered noticeably, presumably reflecting the recent tenacity of low fertility, and that lower fertility will bring with it an acceleration in the aging process.

On the other hand, the 1988 projections show a clear increase in the estimation of life expectancies (see table 4) in Europe as compared to the 1984 and 1986 projections. If the mortality decline for the aged exceeds that for children and youth in the extremely low-mortality schedule, then the enhancement in life expectancies also operates to promote population aging. In general, the increase in the estimated proportion of the aged noted in the past three series of projections may be explained by the fact that, in more recent years, fertility has declined to a level lower than expected and life expectancy has increased more than expected.

### *Some immediate implications*

Both the World Population Plan of Action and the recommendations for its further implementation<sup>2</sup> took cognizance of the importance of changes in population structure and urged intensified efforts to carry out specific programmes related to both youth and the elderly. However, since it has become clear that future aging will be more rapid in the developed regions and in some

developing regions, such as Latin America and East Asia (including Japan), than previously anticipated, it would be useful to incorporate into the next revision of the Plan of Action the results of the most recent United Nations assessments, in order to emphasize more strongly the imminence of population aging and urge Governments to adopt specific measures for the population subgroups most affected. At the same time, the Plan of Action and the recommendations may not have sufficiently spelled out the importance of mortality decline and prolongation of life expectancy at birth, which are important factors in the acceleration of the aging process. According to our studies, which will be presented below, the increase in life expectancy is often more important than fertility decline in explaining the change in age structure, particularly population aging.

#### JAPAN'S EXPERIENCE OF RAPID CHANGE IN AGE STRUCTURE

##### *Proportion of the aged*

The age composition of Japan has undergone a very sharp transformation, from a broad-based, youth-heavy population to a more urn-shaped, top-heavy aging population, in a relatively short period of time. Table 5 shows the change in the age composition in terms of various indicators. Columns (2)-(4) show the well-known three major age categories—under 15, 15-64 and 65+. Columns (6)-(8) show age-dependency ratios—total dependency, child-dependency and old-age dependency. The last column indicates a relatively new concept—that is, the ratio of the elderly to children.

If the degree of aging is expressed by the percentage of the total population which is 65 years and over, the Japanese age structure at present is hardly very "aged", since that percentage is approximately 11—not particularly high in comparison with such countries as Switzerland, Sweden and the Federal Republic of Germany. However, according to the population projections prepared by the Institute of Population Problems, the future pace of aging in Japan will be rapid and, by the year 2025, Japan's population aged 65 and over will be 23.4 per cent, among the highest in the world. In the twenty-first century Japan will become one of the most aged countries in the world; in the first decades the mean age will continue to rise and will pass the mark of 40 years.

##### *Elderly/children ratio*

As mentioned above, one interesting indicator for showing the change in age structure is the elderly/children ratio, which is the number of the elderly (population aged 65 and over) divided by the number of children (population under 15), multiplied by 100. In 1930-1950 the ratio was as low as 13—that is to say, there were relatively few elderly persons in proportion to children. However, the proportion of the elderly has been increasing, and by 1987 it reached about 50 per 100 children. According to the projections prepared by the Insti-



TABLE 3. TOTAL FERTILITY RATES FOR 1980-1985, 1995-2000 AND 2020-2025, AS PROJECTED IN 1984, 1986 AND 1988, BY REGION

Region	1980-1985			1995-2000			2020-2025		
	1984	1986	1988	1984	1986	1988	1984	1986	1988
World total . . . . .	3.55	3.52	3.61	2.90	2.96	3.13	2.32	2.36	2.27
More-developed regions . . . . .	1.98	1.97	1.93	2.03	2.02	1.90	2.13	2.12	1.94
Less-developed regions . . . . .	4.09	4.06	4.19	3.20	3.20	3.45	2.35	2.40	2.33
Africa . . . . .	6.43	6.34	6.37	5.61	5.73	5.66	3.19	3.17	3.05
Latin America . . . . .	4.12	4.09	3.98	3.13	3.12	3.04	2.41	2.40	2.39
Northern America . . . . .	1.85	1.83	1.80	2.07	2.07	1.86	2.10	2.10	1.94
Asia . . . . .	3.56	3.54	3.72	2.63	2.65	2.99	2.03	2.11	2.07
East Asia . . . . .	2.30	2.34	2.33	1.92	1.94	2.00	1.92	2.10	1.81
South Asia . . . . .	4.65	4.59	..	3.19	3.20	..	2.09	2.12	..
Southern Asia . . . . .	4.78	4.72	5.14	3.24	3.25	4.04	2.08	2.08	2.16
Europe . . . . .	1.90	1.88	1.81	1.87	1.85	1.75	2.08	2.05	1.86
Oceania . . . . .	2.71	2.65	2.64	2.49	2.41	2.43	2.25	2.05	2.13
USSR . . . . .	2.36	2.35	2.35	2.34	2.29	2.25	2.25	2.25	2.10

Sources: 1984: *World Population Prospects: Estimates and Projections as Assessed in 1982* (United Nations publication, Sales No. E.83.XIII.5); 1986: *World Population Prospects: Estimates and Projections as Assessed in 1984* (United Nations publication, Sales No. E.86.XIII.3); 1988: *World Population Prospects: 1988* (United Nations publication, Sales No. E.88.XIII.7).

TABLE 4. LIFE EXPECTANCY AT BIRTH FOR BOTH SEXES FOR 1980-1985, 1990-1995 AND 2020-2025, AS PROJECTED IN 1984, 1986 AND 1988, BY REGION

Region	1980-1985			1995-2000			2020-2025		
	1984	1986	1988	1984	1986	1988	1984	1986	1988
World total . . . . .	58.9	59.5	59.6	63.5	64.1	64.5	70.0	70.5	71.3
More-developed regions . . . . .	73.0	73.1	72.3	75.4	75.5	75.4	77.2	77.2	78.7
Less-developed regions . . . . .	56.6	57.3	57.6	61.8	62.5	63.1	68.9	69.5	70.4
Africa . . . . .	49.7	49.4	49.9	55.7	55.2	55.7	64.9	64.5	65.2
Latin America . . . . .	64.1	64.2	64.5	68.3	68.3	68.7	72.2	72.3	72.8
Northern America . . . . .	74.1	74.4	74.6	76.2	76.4	77.0	77.5	77.5	79.7
Asia . . . . .	57.9	59.1	59.3	63.7	65.0	65.5	70.8	72.1	72.8
East Asia . . . . .	68.0	68.4	68.4	71.4	72.3	72.5	75.2	75.9	77.1
South Asia . . . . .	53.6	54.9	..	59.8	61.6	..	68.7	70.1	..
Southern Asia . . . . .	51.8	53.5	54.4	57.6	60.1	61.5	66.7	68.9	70.5
Europe . . . . .	73.2	73.1	73.2	75.4	75.4	75.9	77.3	77.2	79.1
Oceania . . . . .	67.6	67.9	68.0	71.6	70.7	70.8	75.7	74.9	75.6
USSR . . . . .	70.9	70.9	67.9	74.0	74.0	72.1	76.7	76.7	76.7

Sources: 1984: *World Population Prospects: Estimates and Projections as Assessed in 1982* (United Nations publication, Sales No. E.83.XIII.5); 1986: *World Population Prospects: Estimates and Projections as Assessed in 1984* (United Nations publication, Sales No. E.86.XIII.3); 1988: *World Population Prospects: 1988* (United Nations publication, Sales No. E.88.XIII.7).

TABLE 5. CHANGES IN THE AGE COMPOSITION OF JAPAN IN TERMS OF PROPORTIONS BY MAJOR GROUPS, MEAN AGE, DEPENDENCY-RATIO AND ELDERLY/CHILDREN RATIO

Year (1)	Age composition <sup>a</sup>			Mean age (5)	Dependency ratio <sup>a</sup>			Elderly/children ratio (9)
	0-14 (2)	15-64 (3)	65+ (4)		Total (6)	Children (7)	Old-age (8)	
1890.....	28.15	65.16	6.69	30.7	53.5	43.2	10.3	23.8
1910.....	33.89	60.68	5.43	28.0	64.8	55.8	8.9	16.0
1920.....	36.48	58.26	5.26	26.7	71.6	62.6	9.0	14.4
1925.....	36.70	58.24	5.06	26.5	71.7	63.0	8.7	13.8
1930.....	36.59	58.66	4.75	26.3	70.5	62.4	8.1	13.0
1935.....	36.89	58.46	4.66	26.3	71.1	63.1	8.0	12.6
1940.....	36.08	59.19	4.73	26.6	69.0	61.0	8.0	13.1
1947.....	35.30	59.90	4.79	26.7	66.9	58.9	8.0	13.6
1950.....	35.41	59.64	4.94	26.6	67.7	59.4	8.3	13.9
1955.....	33.44	61.24	5.29	27.6	63.3	54.6	8.7	15.9
1960.....	30.15	64.12	5.72	29.0	55.9	47.0	8.9	19.0
1965.....	25.73	67.98	6.29	30.3	47.1	37.9	9.2	24.4
1970.....	24.03	68.90	7.06	31.5	45.1	34.9	10.3	29.4
1975.....	24.32	67.72	7.92	32.5	47.6	35.9	11.7	32.6
1980.....	23.50	67.35	9.10	34.0	48.4	34.9	13.5	38.7
1985.....	21.51	68.18	10.30	35.7	46.7	31.6	15.1	47.9
1986.....	20.90	68.52	10.58	36.0	45.9	30.5	15.4	50.6
1987.....	20.24	68.86	10.90	36.4	45.2	29.4	15.8	53.8
1990.....	18.62	69.45	11.93	37.4	44.0	26.8	17.2	64.1
1995.....	17.55	68.33	14.12	38.7	46.3	25.7	20.7	80.4
2000.....	17.98	65.75	16.26	39.8	52.1	27.4	24.7	90.5
2005.....	18.74	63.23	18.02	40.6	58.1	29.6	28.5	96.2
2010.....	18.63	61.42	19.96	41.5	62.8	30.3	32.5	107.1
2015.....	17.56	59.89	22.54	42.4	67.0	29.3	37.6	128.3
2020.....	16.50	59.94	23.56	43.0	66.8	27.5	39.3	142.8
2025.....	16.40	60.24	23.37	43.3	66.0	27.2	38.8	142.5

Sources: For 1890-1985, Japan, Bureau of Statistics, *Population Censuses*; for 1990-2025, Institute of Population Problems, Ministry of Health and Welfare, *Population Projections for Japan, 1985-2085* (Tokyo, 1987).

<sup>a</sup> Percentage.

tute of Population Problems, the percentage will increase further and before the year 2010 (more exactly, in 2007) will reach 100. Astonishing as it may seem, by the year 2020 it will be 143—that is to say, the elderly will outnumber children by more than 40 per cent.

There is no country whose elderly/children ratio is more than 100 at the present time. Around 1987, despite the fact that the elderly/children ratio was only 50, the Japanese began to take note of their level of substantial population aging, and the current population is already described as turning grey. However, it is difficult to imagine a situation in which the elderly actually outnumber the young. It can be said that Japan is now entering an entirely new phase of demographic evolution, in which the people have to make a voyage to an unknown future without a navigational chart.

DECOMPOSITION OF THE CHANGES IN THE PROPORTION  
AGED 65 AND OVER

Calculations were made to decompose the difference between the percentages of the population aged 65 and over for Japan in two different years. The methodology of decomposition is Kitagawa's (1955). Some unique features of the present calculation of decomposition are that:

- (a) The age data used are by single years; hence, efforts are made to take into account changes in the age pyramid caused by the past annual fluctuations of births, deaths and overseas migration. The analysis by periods of five years may blur annual ups and downs of fertility and mortality for a country like Japan, thus rendering the conclusions crude and approximate;
- (b) Various time spans are examined in order to analyse every possible combination of time periods;
- (c) The rates obtained from forward and backward standardization are averaged so that the residual interaction term can be eliminated.

Table 6 shows the results of decomposition for various time periods—5-year, 10-year, 20-year, 30-year and 35-year.

In the analysis of five-year periods, apart from the effect of the initial age distribution, the effect of fertility was larger than the effect of mortality in the periods 1950-1955 and 1965-1970. The effect of the initial age distribution (col. 7) is the effect of the previous age distribution, or the cohort effect. It is obvious that, where the baseline age distribution does not have a smooth profile and is characterized by lumps and troughs, such irregularities often determine a good portion of the proportion of the elderly. To be sure, however, that effect of population distribution may itself be attributable to previous histories of fertility and mortality.

However, in the later years under analysis, nearing the year 1985, the effect of mortality becomes larger than that of fertility, again apart from the effect of the age distribution of the initial population. It is argued that, in the earlier half of the 35-year period between 1950 and 1985, the effect of fertility was definitely larger. In contrast to the common implications of the theory of stable population, however, population aging (in terms of an increase in the proportion of the elderly 65 and over) has been promoted by a decline in overall mortality and consequently by the prolongation of life expectancy, even in the middle of demographic revolution. According to the conventional interpretation of the theory of stable population, fertility is the predominant force causing population aging, while mortality decline generally has little effect or, at best, promotes population rejuvenation.

If a longer period is used to decompose the change in the percentage of the population aged 65 and over, the effect of fertility is always larger than that of mortality: see, for example, the 35-year time period between 1950 and 1985 in table 6, where the effect of fertility was even larger than the effect of the initial age distribution.

The essential question is whether the type of population dynamics existing in Japan, which has the highest life expectancy in the world at present, can also be observed in western and northern Europe, which also have very high levels of life expectancy. The section below will explore the question by employing the most recent United Nations population projections. Since the data are limited, calculations are made only of future prospects, not past and present trends, and since the projections are by five-year age groupings, they are relatively crude.

TABLE 6. CHANGES IN THE PROPORTION OF THE POPULATION IN JAPAN AGED 65 AND OVER, 1950-1985, FOR DIFFERENT TIME PERIODS

Period (1)	Population aged 65+ at beginning of time period <sup>a</sup> (2)	Population aged 65+ at end of time period <sup>a</sup> (3)	Absolute change (4)	Effect of fertility (5)	Effect of mortality (6)	Effect of the initial age distribution (7)
<i>5-year comparison</i>						
1950-1955	4.94	5.35	0.41	0.07	0.01	0.32
1955-1960	5.32	5.69	0.37	0.01	0.01	0.35
1960-1965	5.73	6.28	0.56	-0.04	0.07	0.53
1965-1970	6.29	7.01	0.72	-0.12	0.02	0.83
1970-1975	7.06	7.87	0.81	-0.01	0.04	0.78
1975-1980	7.92	9.08	1.16	-0.02	0.08	1.09
1980-1985	9.10	10.25	1.15	-0.05	0.09	1.11
<i>10-year comparison</i>						
1950-1960	4.94	5.70	0.76	0.32	0.05	0.39
1955-1965	5.32	6.24	0.93	0.06	0.11	0.76
1960-1970	5.73	7.03	1.30	-0.06	0.28	1.09
1965-1975	6.29	7.86	1.57	-0.26	0.28	1.54
1970-1980	7.06	8.99	1.93	0.11	0.37	1.45
1975-1985	7.92	10.22	2.30	0.01	0.42	1.88
<i>20-year comparison</i>						
1950-1970	4.94	6.96	2.03	0.91	0.40	0.70
1955-1975	5.32	7.82	2.51	0.17	0.75	1.59
1960-1980	5.73	9.04	3.32	-0.05	1.24	2.13
1965-1985	6.29	10.19	3.90	-0.36	1.40	2.87
<i>30-year comparison</i>						
1950-1980	4.94	9.01	4.07	1.74	1.32	1.00
1955-1985	5.32	10.18	4.86	0.52	2.04	2.30
<i>35-year comparison</i>						
1950-1985	4.94	10.19	5.25	2.38	1.93	0.94

<sup>a</sup> Percentage.

NOTE: In column 3, the value of the percentage of the aged population at the end of the comparison period is not necessarily the same as that of the actual population, although the percentage of the aged at the beginning of the period is always the same as that of the actual population. The difference is due to many types of errors: estimated survival ratios may not perfectly represent the real process of survivorship, even though life tables used were based on the actual vital statistics data; age-specific fertility rates used may not reflect the actual situation; there may be a negligible volume of international migration which was not considered in the estimates; and there may be errors in census-tabulated figures for both the beginnings and the ends of the periods and, likewise, there may be errors in vital statistics data on fertility and mortality.

## DECOMPOSITION OF THE CHANGES IN POPULATION STRUCTURE

### *Persons aged 65 and over in eight European countries*

A decomposition of changes in age composition according to changes in fertility and mortality for European countries was carried out, similar to the one done for Japan. It was performed on the basis of the four variants of the United Nations population projections prepared in 1988—namely, (a) the medium variant; (b) keeping the variant of constant fertility at the level of 1980-1990 while changing mortality according to the schedule used in the medium variant; (c) keeping the variant of constant mortality at the level of 1980-1985 while changing fertility according to the schedule used in the medium variant; and (d) keeping the variant of constant fertility and constant mortality at the level of 1980-1985.<sup>3</sup> In order to attribute the changes in proportion aged 65 and over to changes in fertility and mortality between 1985 and any following quinquennial years up to 2025, calculations were made for the eight European countries with life expectancy on a par with that of Japan—namely, Austria, France, the Federal Republic of Germany, the Netherlands, Norway, Sweden, Switzerland and the United Kingdom.

At the time this paper was drafted, projections by age group were not available for Europe and Northern America as a whole; thus decomposition by major regions and subregions was not possible. Moreover, as noted above, the European decomposition is different from the Japanese one in that it does not deal with past experience; it deals with future projections only, comparing the standard projections (the medium variant) with those holding fertility constant at the level of 1980-1985. Hence, decomposition can be performed only for the periods in which the initial year is 1985. For the other periods, such as 1990-1995 or 2000-2025, decomposition is not feasible since the constant variants do not hold constant the levels for periods other than 1980-1985. Another constraint in the decomposition for the European countries is that it is not on the basis of a quinquennial calendar year/five-year age groups; hence, it may not capture the effect of demographic change lasting for only a few years.

The result of the decomposition using future projections for the eight European countries (shown in table 7) is simply dependent on the assumptions of the future levels of fertility and mortality as well as migration. For the future course of population dynamics in European countries with market economies, according to the United Nations projections, assumptions were generally made in such a way that the total fertility rate would soon increase slightly or moderately while life expectancy at birth would rise substantially. Hence, the outcome of decomposition must reflect the future changes in fertility and mortality, as assumed, apart from the effect of the initial baseline age distribution in 1985. The exercise may therefore seem to be a tautological one, but it should be meaningful if the projected fertility and mortality levels are kept within a permissible range of error. In my opinion, the projected trajectories of fertility and mortality seem to be quite realistic.

TABLE 7. DECOMPOSITION OF CHANGES IN THE PROPORTION AGED 65 AND OVER: AUSTRIA, FRANCE, FEDERAL REPUBLIC OF GERMANY, NETHERLANDS, NORWAY, SWEDEN, SWITZERLAND AND UNITED KINGDOM

Country and period of comparison (1)	Population aged 65+ at beginning of time period <sup>a</sup> (2)	Population aged 65+ at end of time period <sup>a</sup> (3)	Absolute change (4)	Effect of fertility (5)	Effect of mortality (6)	Effect of the initial age distribution (7)
<i>Austria</i>						
1985-1990	14.12	15.02	0.89	-0.01	0.09	0.81
1985-1995	14.12	15.54	1.41	-0.02	0.25	1.19
1985-2000	14.12	15.79	1.67	-0.06	0.48	1.25
1985-2005	14.12	16.45	2.33	-0.13	0.76	1.70
1985-2010	14.12	17.80	3.68	-0.23	1.11	2.80
1985-2015	14.12	19.02	4.90	-0.38	1.51	3.76
1985-2020	14.12	20.17	6.05	-0.55	1.96	4.64
1985-2025	14.12	22.05	7.93	-0.78	2.45	6.26
<i>France</i>						
1985-1990	12.95	13.77	0.82	-0.01	0.07	0.76
1985-1995	12.95	14.54	1.59	-0.01	0.21	1.38
1985-2000	12.95	15.34	2.39	-0.01	0.41	1.99
1985-2005	12.95	15.53	2.58	-0.03	0.65	1.95
1985-2010	12.95	15.60	2.65	-0.06	0.93	1.77
1985-2015	12.95	17.42	4.47	-0.10	1.27	3.30
1985-2020	12.95	19.15	6.20	-0.14	1.61	4.73
1985-2025	12.95	20.62	7.67	-0.20	1.98	5.88
<i>Federal Republic of Germany</i>						
1985-1990	14.68	15.36	0.68	-0.06	0.12	0.63
1985-1995	14.68	16.04	1.36	-0.16	0.31	1.22
1985-2000	14.68	16.85	2.17	-0.31	0.56	1.92
1985-2005	14.68	18.87	4.19	-0.54	0.92	3.81
1985-2010	14.68	20.69	6.01	-0.83	1.36	5.48
1985-2015	14.68	21.19	6.51	-1.15	1.82	5.84
1985-2020	14.68	22.31	7.63	-1.60	2.31	6.91
1985-2025	14.68	23.91	9.23	-2.20	2.83	8.59
<i>Netherlands</i>						
1985-1990	12.07	12.91	0.84	0.01	0.06	0.77
1985-1995	12.07	13.53	1.46	0.01	0.19	1.26
1985-2000	12.07	14.18	2.10	-0.01	0.38	1.73
1985-2005	12.07	14.93	2.86	-0.05	0.61	2.30
1985-2010	12.07	16.22	4.15	-0.12	0.88	3.39
1985-2015	12.07	18.95	6.87	-0.24	1.22	5.89
1985-2020	12.07	21.14	9.07	-0.41	1.63	7.85
1985-2025	12.07	23.46	11.39	-0.62	2.12	9.90
<i>Norway</i>						
1985-1990	15.52	16.39	0.87	-0.00	0.07	0.80
1985-1995	15.52	16.35	0.82	-0.01	0.22	0.61
1985-2000	15.52	15.78	0.25	-0.03	0.43	-0.14
1985-2005	15.52	15.19	-0.33	-0.07	0.65	-0.92
1985-2010	15.52	15.57	0.05	-0.11	0.89	-0.73
1985-2015	15.52	17.59	2.07	-0.19	1.17	1.08
1985-2020	15.52	19.32	3.79	-0.28	1.52	2.55
1985-2025	15.52	20.97	5.45	-0.39	1.92	3.92

TABLE 7 (continued)

Country and period of comparison (1)	Population aged 65+ at beginning of time period <sup>a</sup> (2)	Population aged 65+ at end of time period <sup>a</sup> (3)	Absolute change (4)	Effect of fertility (5)	Effect of mortality (6)	Effect of the initial age distribution (7)
<i>Sweden</i>						
1985-1990 .....	17.86	18.30	0.45	0.05	0.09	0.31
1985-1995 .....	17.86	18.10	0.24	0.10	0.26	-0.12
1985-2000 .....	17.86	17.61	-0.25	0.11	0.48	-0.83
1985-2005 .....	17.86	17.69	-0.16	0.11	0.72	-0.99
1985-2010 .....	17.86	19.43	1.58	0.11	1.00	0.46
1985-2015 .....	17.86	21.60	3.75	0.12	1.36	2.26
1985-2020 .....	17.86	22.77	4.91	0.11	1.79	3.01
1985-2025 .....	17.86	23.41	5.55	0.10	2.26	3.19
<i>Switzerland</i>						
1985-1990 .....	14.56	15.29	0.73	-0.01	0.04	0.71
1985-1995 .....	14.56	16.07	1.52	-0.03	0.15	1.39
1985-2000 .....	14.56	17.12	2.56	-0.05	0.32	2.29
1985-2005 .....	14.56	18.30	3.74	-0.10	0.54	3.29
1985-2010 .....	14.56	20.35	5.79	-0.18	0.82	5.15
1985-2015 .....	14.56	22.58	8.02	-0.31	1.14	7.19
1985-2020 .....	14.56	24.28	9.72	-0.47	1.52	8.67
1985-2025 .....	14.56	25.95	11.40	-0.66	1.95	10.11
<i>United Kingdom</i>						
1985-1990 .....	15.11	15.55	0.43	0.00	0.13	0.30
1985-1995 .....	15.11	15.53	0.42	0.00	0.34	0.08
1985-2000 .....	15.11	15.43	0.32	-0.01	0.60	-0.27
1985-2005 .....	15.11	15.55	0.44	-0.03	0.92	-0.45
1985-2010 .....	15.11	16.12	1.01	-0.07	1.28	-0.20
1985-2015 .....	15.11	17.77	2.65	-0.13	1.69	1.09
1985-2020 .....	15.11	18.74	3.63	-0.19	2.12	1.70
1985-2025 .....	15.11	20.10	4.98	-0.27	2.62	2.64

Sources: Based on the four different variants of population projections prepared by the United Nations (Population Division) in 1988: medium; fertility constant at the 1980-1985 level; mortality constant at the 1980-1985 level; both fertility and mortality constant at the 1980-1985 level. The method of decomposition is essentially the same as that for the Japanese case shown in table 6.

<sup>a</sup> Percentage.

According to the decomposition, in every reference period in every country, the effect of mortality surpasses that of fertility. This means that mortality will become more important than fertility for the future course of population aging in the European countries where life expectancy is high, with high expectations that it will continue to rise, while fertility is likely to change slightly or to increase only moderately in the future.

The effect of the initial age distribution is generally larger than the effects of fertility and mortality change, except in Norway, Sweden and the United Kingdom. For the United Kingdom, the effect of mortality is greater than the effect of initial age distribution, except for the period 1985-1990. It is of considerable interest that even in a longer period of comparison, such as 1985-2020, the relative effect of initial age distribution diminishes, although it retains a great effect even in its longest period of comparison, 1985-2025. That

general trend in diminishing strength for the initial age distribution is similar to the case of Japan discussed above.

Apart from the immediate findings, it is interesting to note the considerable differences in the proportion aged 65 and over projected by the year 2025 according to the medium variant. The progression of aging expressed by the percentage of the population aged 65 and over is shown in column (3) of table 7. Switzerland shows 25.95 per cent in 2025, which will perhaps be the highest figure in the world, while the United Kingdom has the lowest figure among the eight, only 18.74 per cent. The relatively low level of aging in the United Kingdom seems to be attributable to its comparatively high fertility assumption for the future among the eight European countries.

#### IMPLICATIONS OF THE REVISED PROJECTIONS OF AGE STRUCTURE

From the observations made above, some pertinent implications can be drawn in regard to changing age structures. First of all, it has become evident that in the developed regions, notably in Northern America and Europe, and in some less developed regions, particularly East Asia, population aging is and will be faster than previously estimated. Although the importance of the changing population age structure was emphasized in the World Population Plan of Action and in the recommendations for further implementation, its extent and its momentum have been unprecedented and will be greater in some regions than earlier perceived. As a consequence of its previously unexpected scale and speed, population aging will have a more significant and far-reaching impact on the social and economic spheres of human life than was previously recognized. Hence, it seems that more emphasis on the issue is necessary, as is much closer monitoring of the global trends by region and country.

The observations also suggest that an increase in life expectancy at birth has become an important factor, with greater relevance to the acceleration in population aging.

The agreement between the upward revision of life expectancies and the increased percentage of the aged for Northern America and Europe in the 1988 projections means that there is still more room for improving life expectancy in the developed countries and that a further rise in life expectancy could contribute substantially accelerated population aging.

The United Nations study (1986), which includes the work of decomposing the changes in age structure for the more developed and less developed regions by attributing it to changes in fertility and mortality, demonstrates that, in the more developed regions between 1950 and 1985, the effect of mortality change was already fairly substantial in relation to that of fertility change, and between 1985 and 2020 the effect of mortality will be preponderant over that of fertility (United Nations, 1986).

The decompositional calculations for Japan and eight European countries have shown that the effect of mortality is larger than that of fertility in certain developed countries with very high life expectancy. I should like to suggest



that this is a new demographic phenomenon. It seems to become more prevalent in the low-mortality countries where a significant absolute reduction in death rates can be expected only at middle and old ages, because death rates in infancy and childhood are already very low. Hence, mortality effects will be more age-selective in the future. It should be emphasized that the World Population Plan of Action and the subsequent recommendations recognized only the effect of fertility change upon the age structure of population. In the new revision of the Plan of Action, the role of mortality reduction and prolongation of life expectancy should be stressed more strongly as important factors, perhaps superseding fertility, in the process of the demographic transition and population aging in the remaining twentieth century and the twenty-first century.

Another important change in the United Nations 1988 projections compared with earlier projections is the increased proportion of the population aged 0-14 and the decreased proportion of population aged 65 and over in the less-developed regions as a whole and in Asia as a whole, particularly in South Asia.

Since the 1988 projections for Africa, Latin America and Oceania show a lower proportion of the population in the young age group and a higher proportion in the older age group, the increase in the proportion of youth and decrease in the proportion of the elderly in the less-developed regions as a whole is mainly due to changes in the projections for Asia, particularly South Asia. A perusal of tables 1, 2, 3 and 4 reveals that the revised projections for age structure reflect corresponding upward revisions in total fertility rate and life expectancy in Asia and Southern Asia (a substitute for South Asia because of the lack of data for South Asia), chiefly consisting of the countries in the Indian sub-continent in the 1988 assessment. In the case of the less developed regions as a whole, it is very likely that the slower fertility decline now projected would contribute almost exclusively to the larger proportion of children, and the smaller proportion of the elderly in the 1988 projections as compared with earlier projections. On the other hand, it is highly likely that the projected mortality decline, along with the fertility decline, has and will have a substantial effect on the increase in the proportion of children and youth, since in regions of relatively high mortality, such as Southern Asia, mortality improvements are usually found in infancy and childhood and not so much in the middle and advanced ages. This does not augur well for the less-developed regions, particularly for Southern Asia, if their Governments wish to maintain economic development.

The above observations have interesting and often serious implications in that the less-developed regions as a whole and South Asia in particular appear to have experienced a setback in their fertility decline. The extremely large number and the high percentage of children relative to the working-age population are known to be obstacles to economic development and improved living standards. The shrinkage of the youth population, which appears now to be slower than expected, presents a caveat to the Governments of many countries

where fertility decline has been desired but actual declines appear slow and, in some cases, even deadlocked.

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#### NOTES

<sup>1</sup> It should be mentioned in this connection that the titles of the previous two projections "as assessed in 1982" and "as assessed in 1984" were somewhat misleading because the year of assessment is not the year of completion of projections, but rather the year of initiation of projection work. Hence, I arbitrarily assigned the words "as prepared", "as projected" or "as estimated", actually meaning the year of completion of work.

<sup>2</sup> See *Report of the United Nations World Population Conference, Bucharest, 19-30 August 1974* (United Nations publication, Sales No. E.75.XIII.3) and *Report of the International Conference on Population, Mexico City, 6-14 August 1984* (United Nations publication, Sales No. E.84.XIII.8 and Corr. 1 and 3).

<sup>3</sup> United Nations projections usually consist of four variants—medium, high, low, and constant fertility—but do not produce the constant mortality variant, whether or not fertility is held constant at the same time. Thus, additional calculations on holding mortality constant were made through the courtesy of the Population Division, United Nations Secretariat, and the author expresses deepest appreciation to Drs. Shunichi Inoue and Shiro Horiuchi for their assistance.

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# OLD CHALLENGES AND NEW AREAS FOR INTERNATIONAL CO-OPERATION IN POPULATION

*Nafis Sadik\**

## SUMMARY

Taking stock of accomplishments in the field of population reveals that significant progress has been made since the late 1960s but that very much remains to be done. Important challenges in population for 1990 and beyond include the implementation of more effective family-planning programmes, greater accessibility to better family-planning services at the local level, a wider range of choices in contraceptive methods, and better training and supervision of family-planning service-delivery personnel. Another major challenge is to give due attention to the various aspects of the role of women—beyond mere acknowledgement and to the actual implementation of programmes. Further, policies need to be formulated and implemented across several sectors to deal with the complex interaction between population, resources and the environment. To devise such policies, knowledge of the inter-relationships needs to be clarified and refined. Finally, still greater emphasis will have to be placed on improving the integration of population and development. Accomplishing that will require wider awareness, enhanced co-ordination and adequate resources—an increase of at least \$100 million per year from now to the end of the century over the current annual level of some \$550 million for all external assistance for population.

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This year—1989—is a significant one for those of us involved in the population sector. It marks the twentieth anniversary of the United Nations Population Fund (UNFPA), the last year of the Third United Nations Development Decade and the fifth year since the convening of the International Conference on Population at Mexico City. Thus, it offers a good opportunity to take stock of what has been done, discuss what we have accomplished, identify current needs and—perhaps most important—decide on strategies for the future. Such a stock-taking exercise is, simultaneously, exhilarating and disconcerting. Exhilarating, because we have, indeed, made progress on several fronts: almost all Governments now recognize the link between population factors and the achievement of their development objectives, and almost all Governments have specific population policies. Many countries have registered notable de-

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clines in mortality and fertility levels; and research, both biomedical and socio-economic, has yielded new information and insights on operational interventions. What is disconcerting, however, is the realization that so much remains to be done. Reduced mortality rates mask the still unnecessarily high levels of maternal and infant death. Research findings underscore how tenuous is our understanding of the interrelationship of population and other development factors. Experience has shown how difficult it can be to translate even our limited knowledge into action programmes.

The World Population Plan of Action, adopted by the World Population Conference at Bucharest in 1974, and the recommendations for the further implementation of the Plan, adopted by the International Conference on Population at Mexico City in 1984, have provided us with a road map for working in the population sector. However, in the less than five years since the Mexico City conference, several developments have taken place that have and will have considerable impact on how we operate in the population sector. The debt burden of many developing countries has necessitated extensive restructuring of their economies. Such arrangements have frequently exacerbated the plight of the poorest, thus giving voice to a call for restructuring in a way that will not compromise further the needs of those at the margin of existence. The situation in sub-Saharan Africa has become more acute, as economic and environmental factors have worsened that continent's development prospects. Both the developed and developing worlds have had to face the outbreak of a new disease, acquired immunodeficiency syndrome (AIDS), which in a relatively short time has assumed pandemic proportions. Phrases that were largely unheard of in the conference hall at Mexico City—"adjustment with a human face", "sustainable development" and "the AIDS epidemic"—are now commonplace in our lexicon. Mindful of these changes, I would like to examine selected issues which I believe pose important challenges to us as we chart our course for the 1990s and beyond. Many of them were discussed at the Bucharest and Mexico City conferences and remain critical concerns. Others are issues that have evolved or have taken on new urgency in light of changing circumstances.

#### BETTER HEALTH FOR WOMEN AND CHILDREN

Both the Plan and the recommendations underscored the need to reduce morbidity and mortality among infants and among women in the child-bearing ages. Two international conferences held at Nairobi—Safe Motherhood (February 1987) and Better Health for Women and Children through Family Planning (October 1987)—amplified the health benefits of family planning. It has long been known that childbirth at either end of a woman's reproductive cycle and at too short intervals seriously undermines the health of the mother and the newborn. In developing countries, after a young woman reaches puberty, the single greatest health risk she faces is childbirth. The estimated lifetime chance of a woman in developing countries dying from pregnancy-related causes is 1 in 21 in Africa; in Asia 1 in 54; in South America 1 in 73; and in the Caribbean

1 in 140. By way of comparison, in North America the risk is 1 in 6,366 and in northern Europe 1 in 9,850. Worldwide it is estimated that 500,000 women die as the result of pregnancy every year; nearly 99 per cent of the deaths occur in Africa, Asia and Latin America.<sup>1</sup>

The presentations at both the Nairobi conferences and the recommendations of the Mexico City conference clearly recognize the efficacy of family planning as a health, as well as a demographic, measure and call on Governments to improve the quality and effectiveness of family-planning services. Building on the sentiments of paragraph 14 (F) of the Plan, participants at the Mexico City conference adopted a comprehensive recommendation on family planning:

Governments should, as a matter of urgency, make universally available information, education and the means to assist couples and individuals to achieve their desired number of children. Family planning information, education and means should include all medically approved and appropriate methods of family planning, including natural family planning, to ensure a voluntary and free choice in accordance with changing individual and cultural values. Particular attention should be given to those segments of the population which are most vulnerable and difficult to reach. (Recommendation 25)

According to a recent study of 131 developing countries, 99 countries provide direct assistance in family planning and 14 furnish indirect assistance; thus, over 90 per cent of the population of the developing world lives in countries where family planning is provided for demographic or health reasons or as a human right.<sup>2</sup> There is, however, considerable variation in the rigour with which the assistance is provided and in the quality of the family-planning programmes. Solid political commitment has long been recognized as essential to an effective family-planning programme. Yet, in many countries the political commitment has been only rhetoric; no appropriation of the necessary financial and human resources has been made. Often family-planning efforts are thwarted by the prevailing socio-cultural value systems, and thus it is important for interventions to be designed to be compatible, to the extent possible, with those systems. Research findings on the socio-cultural/anthropological posture of a country would go a long way towards ensuring more appropriate services. Research of that nature might address traditional or religious beliefs and attitudes towards various methods of family planning and attitudes towards different types of service providers. The incorporation of operational and behavioural findings into family-planning programmes is vital to their successful operation.

The challenge facing family-planning programmes in the coming decade is to provide high-quality and widely accessible services at a time of relatively limited resources. In terms of programme planning, that means greater recognition of the need for wider participation in the design and implementation phases and taking into account issues and viewpoints that may in the past have been somewhat neglected. The contributions of central and regional managers

and personnel at the district level should be seriously sought, especially since in many countries greater responsibilities are given to local management staff for programme implementation. Contributions to the planning process from service providers and the client groups within the community are also vital to ensure that programmes are feasible, appropriate and effective. For programmes to achieve relatively high prevalence in the use of family planning and, hence, to contribute significantly to national, demographic health and human-rights objectives, it is necessary to ensure a high level of accessibility in geographical, economic and psycho-social terms. Broad-based accessibility would include a high density of service locations; convenience of service hours; information and services specifically designed to meet the needs of particular groups—e.g., adolescents; functional integration of all MCH/FP services; facilities offering privacy; well-trained and responsive staff; and suitable counselling services. Programmes must “reach out” to respond to the needs of the “hard-to-reach”, be they scattered rural populations, urban slum dwellers or the growing number of adolescents seeking information and services in the area of reproductive health.

Relatively high prevalence rates tend to be associated with a wide selection of contraceptive methods. In fact, it would appear that each addition of another contraceptive alternative leads to a significant increase in prevalence; thus, programmes should be encouraged to include as wide an array of methods as is feasible, given financial and provider constraints. In that connection it is clear that much greater emphasis must be placed on contraceptive research and development. It is rather ironic that while family planning has been increasingly recognized as a health measure, many women are still reluctant to use modern methods of contraception because they fear the detrimental health consequences. Resources must be committed to upgrading already known methods. Improving barrier methods is particularly critical, both for contraceptive purposes and as a health measure to stem the spread of sexually transmitted diseases and AIDS, as is biomedical research in the pursuit of new methods that are safe, effective and acceptable. Efforts to broaden the range of contraceptive choice must be accompanied by the provision of adequate counselling services. The more successful programmes have met the challenge of availability by developing “multisource” strategies, which tend to include, in addition to clinic-based services, post-partum family-planning services at all units where births are attended, community-based distribution, and the use of the private sector in furthering goals of government-sponsored initiatives.

In the coming decade, family-planning programmes will have to consider evolving issues as well as perennial managerial concerns. MCH/FP programmes will have to be modified to respond to the needs of mothers and newborns who are suffering from AIDS. Programmes will have to address the ethical and human-rights issues related to developments in reproductive health technology. Questions relating to programme design will become increasingly important. Recent studies have shown that, in order to enhance the effectiveness of family-planning programmes, interventions must be designed in light of the circumstances in a country which influence family-building. Trends and

levels in child survival and the associated family-building strategies must be taken into account in determining the mix of contraceptive methods—e.g., the balance between permanent and non-permanent methods—that a programme will offer.<sup>3</sup>

Operational issues will continue to demand attention. The need for training will be considerable, both in those countries where service cohorts are being prepared for the first time—principally in Africa and parts of the Middle East—and in those where the introduction of new methods and the time elapsed since initial training necessitate the “updating” of personnel. Inadequate logistics systems have contributed in many countries to a lack of availability of contraceptive alternatives; those will have to be improved if coverage goals are to be met. Supervision, which in the past has too often been construed simply as an exercise in accountability, will have to be utilized for improving the performance of personnel and the quality of service. Service statistics and management information systems are important decision-making tools, and countries must be encouraged to develop and employ them among other management approaches.

#### WOMEN, POPULATION AND DEVELOPMENT

As we embark on a fourth development decade, I think it can be said that the key role women play in the achievement of population and development goals is widely acknowledged. Unfortunately, there is still a wide gap between that acknowledgement and the actual implementation of programmes that will enable women to participate fully in the development process, both as beneficiaries and as agents of change.

Improving the role and status of women is integral not only to socio-economic development but also to reductions in unwanted fertility and in needlessly high rates of maternal and infant death. Thus, if a population policy is to be successful, it must give due attention to the various aspects of the role of women. It must be cognizant of the society's attitude towards women and must take into account the economic status of the family, which, to a significant extent, rests on the contribution made by women.

Where women have legal and social rights—to free marriage, land ownership, political power, health care and family planning, and paid employment in the modern sector—they tend to have smaller families. Their children tend to be healthier and better educated. Research has confirmed that women with some education are more likely to utilize health services which enhance prospects for child survival, which often translates into lower birth rates. The effects tend to be synergistic: access to family planning strengthens the effects of education on family size, and higher levels of education are associated with higher incomes. The common feature of the above-mentioned rights is that they contribute to every woman's ability to control her own destiny. Increasing them may be the most cost-effective way of attaining the goal of smaller, healthier families. Such an approach represents a considerable commitment on

the part of Governments. But it is an investment that produces a significant resource for economic development—namely, a population and, in particular, a workforce that is prepared to make the most of economic opportunities. A multifaceted programme designed to improve the status of women is crucially needed. It should be headed and staffed by those who know most about the issues; frequently, they will be women. Yet, very few women are to be found at the executive or policy-making level in social development and population organizations, and still fewer are in control of economic power.

The lack of women in decision-making positions raises a pivotal question: how serious is the international community about ceding to women power over their own future and that of their communities and countries? The answer will have a critical influence on development prospects and will depend on realistic commitment. Development planners at the national and international levels must take seriously the needs and interests of women. They themselves need education and training in how to incorporate women into the decision-making process, and they need more—they need reinforcement in their own lives and attitudes.

Change will begin with the documentation of women's importance to the economy at the macro and the household levels. Censuses and surveys must collect such information so that women's contributions to national income and furthering the development process can be given full credit. When their economic role is fully recognized, women are more likely to be given access to credit, extension services and other means of increasing their economic role. Moreover, a strong case can be made in economic terms for educating girls and women. But it is clear that services such as maternal and child health care and family planning should also be assigned an economic value, because they have an effect on women's work.

The Plan of Action, the Programme of Action for the Second Half of the United Nations Decade for Women, the recommendations of the 1984 Mexico City conference, and Forward-looking Strategies for the Advancement of Women<sup>4</sup> delineate, *inter alia*, several paths of opportunity for women. Now the challenge is "to enable" women to avail themselves of those opportunities. Education, employment, quality health care and access to information and services to regulate their reproductive role are essential elements of that "enabling" process.

#### SUSTAINABLE DEVELOPMENT

At the time of the Mexico City conference, the phrase "sustainable development" had not been coined, although many of the premises on which it rests were expressed in both the Plan of Action and the recommendations of the Mexico City conference. Today, the concept has become a watchword of socio-economic initiatives. The interaction between population, the environment, resources and development strategies is emerging as a major issue of international and national interest. The growing human demands on the natural



resource base—land, water and air—upon which all life depends is a critical concern for the coming decades. Following the pioneering work of the World Commission on Environment and Development (the Brundtland Commission), there is now a need for a thorough examination of the links between population, the environment and resources and for carefully articulated guidelines for policies and action programmes in that area.

The 1987 UNFPA report,<sup>5</sup> "The state of world population", focused on the fragile balance between people and resources and expressed concern at the increasing rate at which sustainable development was being eroded. Population growth and patterns of population distribution have serious ramifications for the environment and for the utilization of resources. The growing number of landless poor in rural areas in many developing countries has precipitated an alarming destruction of the resource base. To meet the need for food, marginal land is being farmed, forest land is being cleared for cultivation and prudent farming practices of earlier decades—e.g., letting fields lie fallow in order to restore nutrients—are being abandoned.

Faced with rural poverty and scarcity, many landless peasants have migrated to primate cities, thus intensifying the burden that urban infrastructures and ecosystems must sustain. In the period 1950-1985, the urban population of the developing world increased from 286 million persons to 1.14 billion. By the year 2000, it is projected that 2.9 billion persons, or approximately 47 per cent of the world's population, will live in urban areas. In the developing countries, 1.97 billion (almost 40 per cent of the population) will live in cities; in developed countries, the figure is 944 million, or almost 75 per cent of the population.<sup>6</sup> The burgeoning demands of the city for food, water, energy and waste management are likely to exact a heavy toll on the ecology of the surrounding countryside. The Food and Agricultural Organization of the United Nations estimates that about 1.3 billion people in developing countries have an inadequate supply of fuelwood; by the year 2000, approximately 3 billion persons could face such shortages.

The interaction between population, resources and the environment are complex and, hence, require policy responses across several sectors. Moreover, our knowledge of those interrelationships needs to be clarified and refined if appropriate population/resources/environmental strategies are to be formulated. Even today, despite our imperfect knowledge, certain approaches appear to be successful. For example, national policies of sustainable development are considerably more effective when communities are empowered to make critical decisions on population matters and on the utilization of their resource base. Also, recognizing the role that women play in the utilization and management of natural resources, Governments should enlist women's involvement in the shaping and implementation of conservation strategies. Sustainable development is a vital concern both nationally and globally. The mutuality of concern dictates that both developed and developing countries assign high priority to research that will refine our knowledge of sustainable development and that will enable us to delineate development policies that will

restore and protect the tenuous balance between population, resources and the environment.

### POLICY FRAMEWORK

Experience in development co-operation during the past several decades has clearly shown that separate, isolated and sector-specific approaches often fall short of achieving the expected improvements. Furthermore, lack of progress in one sector has consequences for the achievement of progress in other sectors. Increasingly it is realized that development goals cannot be pursued without considering the totality of issues and constraints that affect population, resources, the environment and development. If we are to address successfully the challenges of the coming decade, it is imperative that greater emphasis be placed on improving the integration of population and development and on the promotion and utilization of knowledge essential to solving developmental problems.

The actual integration of population and development will remain elusive unless the population dimension is explicitly incorporated into a country's planning exercise. Such explicit attention will also help to ensure the complementarity of policies and enhance the synergy to be derived from mutually supportive activities in population and other development sectors. Targeting population activities at those groups whose needs are the greatest will increase their impact and that of other sectoral initiatives. In order to formulate appropriate programme strategies, a wide variety of research is needed—socio-cultural, programme-related studies—in order to assess the appropriateness and eventual impact of programme interventions. The persistence of high fertility in many developing countries, despite the presence of population programmes, raises questions regarding the adequacy of the concept, design and content of the programmes. The formulation of population policies must receive due attention, in both financial and substantive terms, and should be formally incorporated into the development planning process. Each country will have to devise its own approach to bringing about that integration. Some countries have established population units; others have set up national population commissions. The lack of proper data, research and analysis and the shortage of trained staff to utilize the information for policy and planning purposes has hampered progress in achieving integration of population and development.

If the larger interests of programme development and implementation are to be served, it is essential that data collection and analysis be institutionalized. There is urgent need to collect, process and present integrated statistics in a usable format. Data collection and analysis should also become much more gender-specific and gender-sensitive than they have been in the past. Much methodological and empirical work is needed to better assess the contributions of women to national income accounts and to the welfare of the population in general. While the call for the generation and utilization of new knowledge is

both urgent and timely, it should nevertheless be recognized that a lot of data have already been and continue to be collected. It is essential for the international community systematically to take stock of what has been done. An inventory should be made of existing data on vital issues of population and development, and the findings of major research that has been undertaken should be synthesized. Based on such reviews, a research agenda should be drawn up. It should address the content of research, modalities for sponsorship and mechanisms for the dissemination and utilization of findings.

One central element in any international strategy on the promotion and the utilization of knowledge should be training population and development specialists in the developing countries. While academic education and practical training have generally enhanced the capabilities of people in developing countries, the concept and the practice of policy analysis have not been emphasized enough and deserve to be high on the curriculum.

#### ALLOCATION OF RESOURCES

In mid-1987, world population reached 5 billion. The latest projections of the Population Division indicate that the world's population will grow by an additional 1.1 billion, to 6.2 billion, by the year 2000 and that well over 90 per cent of that growth will occur in developing countries. By the year 2000, about 5 billion people will be living in the developing countries, a number equivalent to the population of the entire world in 1987. The increase in population, combined with the growing commitment of the Governments of developing countries to enact population programmes, means that there will be tremendous demand for financial resources.

Recently, UNFPA undertook a study of levels of population assistance which differentiated the source of funds according to sectoral sources—bilateral, multilateral or private—and identified the disbursements among recipient countries. The assessment revealed that total annual commitments to the population sector, measured in current dollars, increased from \$168 million in 1971 to \$512 million in 1985 (the latest year for which data are available). When measured in constant dollars, however, the picture is less encouraging: the average annual increase of \$24 million in current dollars translates into an average increase of \$2 million per year.<sup>7</sup>

External assistance for population now amounts to approximately \$550 million a year. The growing population in developing countries, the concomitant interest of those countries in addressing population issues and the increasing complexity of population and other development sectors amplify the urgency for population assistance. An annual increase of \$100 million in population assistance will be required from now until the end of the century simply to maintain the momentum of population activities world-wide, to meet needs already identified and to achieve a modest reduction in growth rates. To increase the pace of fertility decline would require a still greater commitment of

resources. Increased resources are especially critical if we are to respond effectively to the urgent and diverse needs in sub-Saharan Africa.

#### AWARENESS AND CO-ORDINATION

The need to increase awareness of population issues, emphasized at the population conferences at Bucharest and Mexico City, is one of the cardinal tenets of the UNFPA mandate. Today, there is almost universal recognition of the importance of the population question. That recognition should not, however, lull us into thinking that our work is done. Indeed, increasing awareness is a continuous task and crucial to maintaining and expanding consensus on population and development concerns. If there is anything that the record of the past 25 years has taught us, it is that the population field is a changing one and that, periodically, different aspects assume new importance. The perception of population issues keeps evolving, as new circumstances emerge and as experience and research yield new information.

As we approach the 1990s, many of the perennial issues are still with us, and several new concerns are surfacing. Moreover, while the population sector is now recognized as a valid one for programme work, some of the initial sensitivities still linger and, from time to time, coalesce into voices of opposition. Thus, there is constant need to provide information that presents an objective assessment of the whole picture in order to offset the arguments and allay the anxieties of the ill-informed. More broadly speaking, as a new understanding of complex population and development interrelationships emerges, it is essential for that information to be conveyed to the world at large.

Because population issues cut across all sectors, both conceptually and operationally, it is essential to enhance co-ordination in population and related sectors. Also, since the availability of funds is always likely to fall short of the demand for assistance, dynamic co-operation is crucial to the effective deployment of scarce resources. Co-ordination has several dimensions—between donors and recipient Governments, among donors themselves and between the public and private sectors. The growing role of the private sector—non-profit voluntary, non-governmental and for-profit organizations—underscores the need to forge an effective partnership between public- and private-sector initiatives.

UNFPA is particularly concerned with improving co-ordination within the United Nations system. Success of population programmes depends on making population concerns integral to the regular activities of other organizations and agencies in the United Nations system. Co-ordination of donor contributions is primarily the responsibility of Governments themselves. There is no uniform pattern of co-ordination applicable to all countries, whose needs differ and change over time. Some countries welcome and request assistance from their United Nations aid partners to help them set up and perform various co-ordination functions; others decide to exercise all such functions themselves, utilizing their own resources. While the nature and type of contribu-

tions required differ widely from one country to another, the common objective is to help the Government to improve its capability to carry out its co-ordinating role in an effective manner.

#### SOME CONCLUDING OBSERVATIONS

As we contemplate the population and development horizons of the 1990s, replete with both familiar issues and new concerns, it is essential that we intensify our efforts, our dedication and, certainly, our resources. New bridges of co-operation must be built, and new links of communication must be established. The issues of the next decade are likely to be more complex than those we encountered in the past, simply because of the acknowledgement of the interdependence between population factors and all other aspects of development. Moreover, there is increasing variation in the countries we serve. Neither the countries nor the issues are monolithic in composition or response. In addressing the range of issues, we shall have to be open to new approaches and willing to rethink our options. In the spirit of the Amman Statement on Human Development: Goals and Strategies for the Year 2000,<sup>8</sup> we must work to bring about an "enabling environment"—one which will encourage people—particularly women—to partake in the design and implementation of population and development programmes.

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#### NOTES

<sup>1</sup> *Preventing the Tragedy of Maternal Deaths: A Report on the International Safe Motherhood Conference, Nairobi, February 1987*, pp. 10-13.

<sup>2</sup> *World Population Trends and Policies: 1987 Monitoring Report* (United Nations publication, Sales No. E.88.XIII.3), p. 100.

<sup>3</sup> Cynthia B. Lloyd and Serguey Ivanov, "The effects of improved child survival on family planning practice and fertility", *Studies in Family Planning*, vol. 19, No. 3 (1988), pp. 141-161.

<sup>4</sup> See *Report of the World Conference to Review and Appraise the Achievements of the United Nations Decade for Women: Equality, Development and Peace, Nairobi, 15-26 July 1985* (United Nations publication, Sales No. E.85.IV.10), chap. I.

<sup>5</sup> New York, UNFPA, 1989.

<sup>6</sup> *World Population Prospects: 1988* (United Nations publication, Sales No. E.88.XIII.7).

<sup>7</sup> United Nations Population Fund, *Global Population Assistance Report*, p. 8.

<sup>8</sup> Adopted at the fourth session of the Roundtable on "Development: the Human Dimension", held at Amman, 3-5 September 1988, under the joint sponsorship of the UNDP Development Study Programme and the North/South Roundtable of the Society for International Development.





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