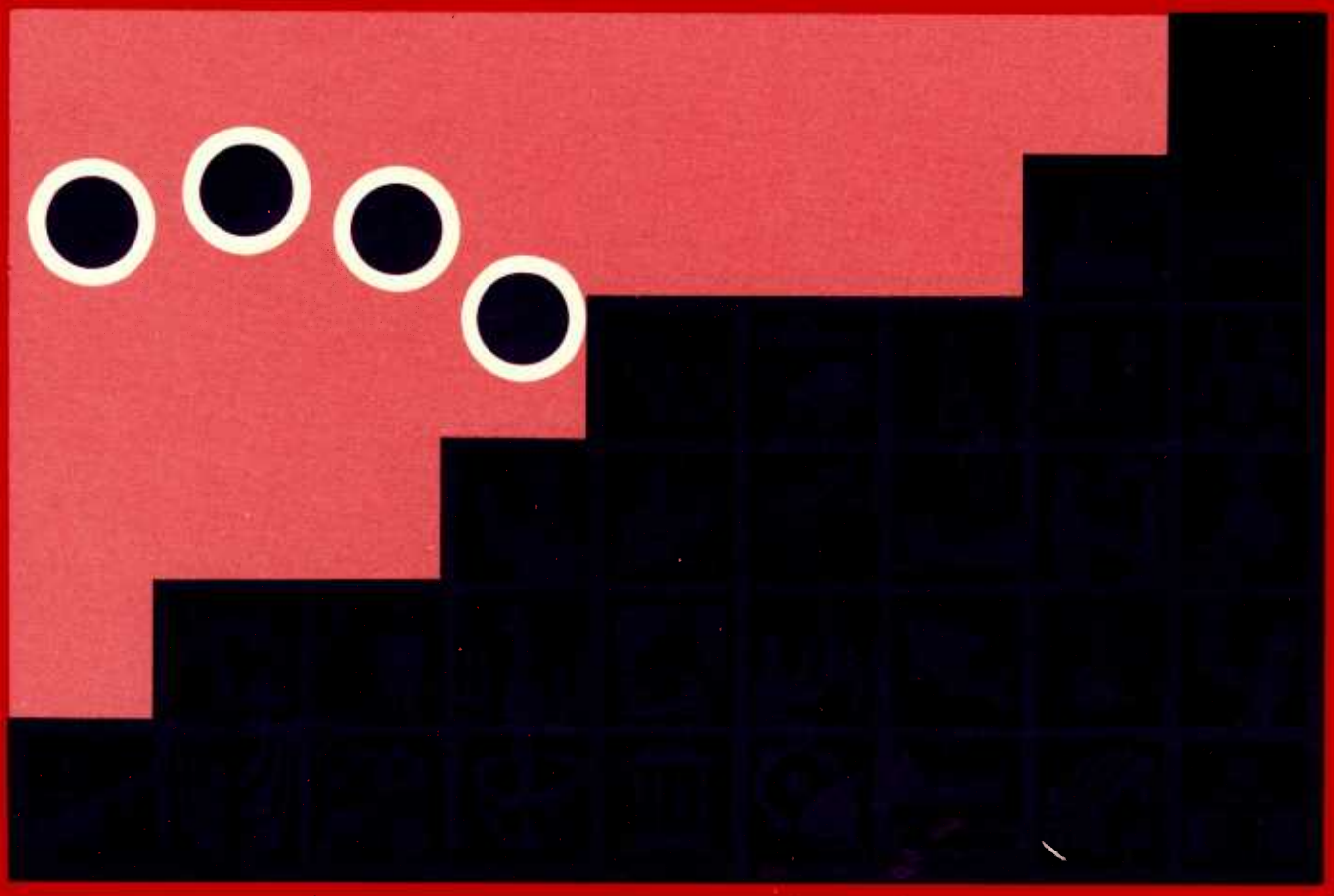
WORLD POPULATION TRENDS, POPULATION AND DEVELOPMENT INTERRELATIONS AND POPULATION POLICIES

1983 Monitoring Report

VOLUME II

Population and Development Interrelations and Population Policies



UNITED NATIONS

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VOLUME II
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NOTE

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Where the designation "country or area" appears in the headings of tables, it covers countries, territories, cities or areas.

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.

In the present publication, references to "China" are to be understood in the light of General Assembly resolution 2758 (XXVI) of 25 October 1971.

The views expressed in signed papers are those of the individual authors and do not imply the expression of any opinion on the part of the United Nations Secretariat.

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PREFACE

The World Population Plan of Action, adopted by the United Nations World Population Conference at Bucharest in 1974, recommended that monitoring of population trends and policies "should be undertaken continuously as a specialized activity of the United Nations and reviewed biennially by the appropriate bodies of the United Nations system, beginning in 1977".[1] This recommendation was reaffirmed by the International Conference on Population in 1984. Furthermore, the Economic and Social Council at its 1948th meeting, on 6 May 1975, decided to request the Population Commission "to examine on a biennial basis the results of the continuous process of monitoring the World Population Plan of Action in accordance with paragraph 107 of the Plan of Action and to bring its findings to the attention of the Council" (decision 87 (LVIII)). The present report is the fourth in a series of reports in this activity. The report of the first round was prepared in 1977,[2] the report of the second round was prepared in 1979[3] and the report on the third round was prepared in 1981.[4]

As this report was the last to be prepared before the International Conference on Population was convened in Mexico in 1984, an attempt has been made to analyse the evolution of the population trends and policies not only since 1981 but since 1974, in order to provide readers with an overview of the most significative demographic events that have occurred since Bucharest.

In addition to a general survey of the world population situation, which constitutes the first part of this report, the second part, which concerns population and development, includes special topics dealing with the interrelations between population, resources, the environment and development. The monitoring of population policies, which constitutes the third part of the report, was prepared on the basis of official governmental sources and draws intensively on the answers received to the "Fifth Population Inquiry among Governments", undertaken in 1983.

Prior to the report on the first round of monitoring, the Population Division of the Department of International Economic and Social Affairs of the United Nations Secretariat had carried out numerous assessments of population trends. Mention should be made, for instance, of *The World Population Situation in 1970*,[5] *Population Bulletin of the United Nations, No. 7, 1963, with special reference to conditions and trends of fertility in the world*,[6] *Levels and Trends of Fertility throughout the World, 1950-2000*,[7] *The Situation and Recent Trends of Mortality in the World*,[8] *Growth of the World's Urban and Rural Population, 1920-2000*,[9] and the consecutive reports on *World Population Prospects as Assessed in 1963, 1968* and *1973*.[10] Recent assessments can be found in *World Population Trends and Prospects by Country, 1950-2000: Summary of the 1978 Assessment*,[11] *Selected Demographic Indicators by Country, 1950-2000: Demographic Estimates and Projections as Assessed in 1978*,[12] *World Population Prospects as Assessed in 1980*,[13] *Demographic Indicators of Countries: Estimates and Projections as Assessed in 1980*,[14] and *World Population Prospects: Estimates and Projections as Assessed in 1982*.[15]

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NOTES

[1] *Report of the United Nations World Population Conference, 1974. Bucharest, 19-30 August 1974* (United Nations publication, Sales No. E.75.XIII.3), part one, chap. I, para. 107.

[2] United Nations publications, Sales Nos. E.78.XIII.3 and 4.

[3] United Nations publications, Sales Nos. E.79.XIII.4 and 5.

[4] United Nations publications, Sales Nos. E.82.XIII.2 and 3.

[5] United Nations publication, Sales No. E.71.XIII.4.

[6] United Nations publication, Sales No. 64.XIII.2.

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[8] United Nations publication, Sales No. 62.XIII.2.

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[10] United Nations publications, Sales No. 66.XIII.2, E.72.XIII.4 and E.76.XIII.4.

[11] United Nations publication, non-sales (ST/ESA/SER.R/33).

[12] United Nations publication, non-sales (ST/ESA/SER.R/38).

[13] United Nations publication, Sales No. E.81.XIII.8.

[14] United Nations publication, Sales No. E.82.XIII.5.

[15] United Nations publication, Sales No. E.83.XIII.5.

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Explanatory notes

The following symbols have been used in the tables throughout this publication:

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

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

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

A minus sign (−) before a figure indicates a decrease.

A point (.) is used to indicate decimals.

A slash (/) indicates a crop year or financial year, e.g., 1980/81.

Use of a hyphen (-) between dates representing years, e.g., 1980-1982, signifies the full period involved, including the beginning and end years.

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

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

Reference to "billion" indicates a thousand million.

Reference to "tons" indicates metric tons, unless otherwise indicated.

The following abbreviations of organizations or bodies have been used in this volume:

CSDHA	Centre for Social Development and Humanitarian Affairs
DAC	Development Assistance Committee
ECA	Economic Commission for Africa
ECE	Economic Commission for Europe
ECLA	Economic Commission for Latin America
ECWA	Economic Commission for Western Asia
ESCAP	Economic and Social Commission for Asia and the Pacific
FAO	Food and Agriculture Organization of the United Nations
ILO	International Labour Organisation
OAU	Organization of African Unity
OPEC	Organization of Petroleum Exporting Countries
UNCTAD	United Nations Conference on Trade and Development
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations Children's Fund
UNIDO	United Nations Industrial Development Organization
WHO	World Health Organization

Other abbreviations used are:

CEB	number of children ever born
GDP	gross domestic product
GNP	gross national product
LIDO	Lido Industrial Development Objective

Part Two

POPULATION AND DEVELOPMENT INTERRELATIONS

INTRODUCTION

The following chapters on population and development are based mainly on contributions made by the specialized agencies and regional commissions of the United Nations to the Expert Group on Population, Resources, Environment and Development, which met at Geneva from 25 to 29 April 1983. The discussions here seek to take into account various aspects of the complex interrelations between population, resources, environment and development. In each of these chapters, the role played by population factors is carefully considered. Part two begins with an overview of the various issues developed later: food and nutrition; the land resources base; energy and the environment; socio-economic development, including income distribution; health and education, and provision for the elderly; and, lastly, the integration of population policies and programmes into development policies, plans and programmes.

Although world agricultural resources are sufficient to meet the nutritional requirements of the world population, many developing countries,[1] particularly those of Africa, face increasingly serious food deficits. In part, these deficits, as indicated by the Food and Agriculture Organization of the United Nations (FAO) and the Economic Commission for Africa (ECA), are linked with a deterioration of the agricultural land resource base in many countries. Meeting the nutritional needs of the world population will require a broad range of economic and environmental policies, in conjunction with appropriate population policies.

The United Nations Industrial Organization (UNIDO) has explored the future adequacy of the resource base, particularly that of minerals and energy resources, and concludes that, given projected economic and demographic trends, it should be possible to meet the long-run goals set forth in the International Development Strategy for the Third United Nations Development Decade. UNIDO indicates also that if the targets of the Third United Nations Development Decade are met, the problem of unemployment and underemployment might be replaced by one of labour shortage.

The United Nations Conference on Trade and Development (UNCTAD) warns, however, that if economic growth is not rapid, the numbers of unemployed may grow substantially. In any event, as is stressed in the contributions both of the Economic Commission for Europe (ECE) and of the Centre for Social Development and Humanitarian Affairs (CSDHA) of the Department of International Economic and Social Affairs of the United Nations Secretariat, the aging of population, due to reduced fertility and slowing population growth, is not likely significantly to reduce the proportion of the working-age population.

Inequality, labour force participation of women and educational attainment are causes as well as consequences of demographic processes. The empirical support for hypothesized linkages between socio-economic variables and fertility is reviewed in chapter X. In general, the results confirm the inverse relationship between fertility and various indicators of socio-economic progress.

The United Nations Educational, Scientific and Cultural Organization (UNESCO) documents the considerable progress made by developing countries in educating their populations and thus expanding their stock of human resources. But it also notes the growth in the number of illiterates, particularly among women, as a result of rapid population growth.

In considering the socio-economic implications of demographic trends, emphasis has been placed on the interactions between population growth and inequality; and the International Labour Organisation (ILO) describes the difficulty of establishing empirically that population growth contributes significantly to inequality in incomes. The contribution of the Economic Commission for Latin America[2] (ECLA) goes further in stressing that the manner of development, rather than demographic factors, is primarily responsible for the high degree of inequality observed in countries of its region.

The World Health Organization (WHO) details the linkages between health, population and all other aspects of development. It describes the contribution to health made by primary health care and, in particular, the contribution that family planning programmes can make to the health of women and children. WHO, along with CSDHA, calls attention to the health problems posed by rapidly growing elderly populations.

Lastly, the Department of Technical Co-operation for Development of the United Nations Secretariat and the Economic and Social Commission for Asia and the Pacific (ESCAP) set forth both the importance of integrating population factors into planning and the difficulty of doing so. Problems of data collection, research, staff training and institution building are outlined, and possible solutions to these problems are suggested. Although such integration may take many forms and utilize many mechanisms, it is still too early to state definitely whether it is possible successfully to integrate population factors into development policies, programmes and plans.

Notes

[1] For convenience, the largest groupings used in part two of this report are the categories of "less developed regions" and "more developed regions" as established by the Population Division of the Department of International Economic and Social Affairs of the United Nations Secretariat, on the basis of socio-economic and demographic criteria. The former category includes all regions of Africa and Latin America, five regions of Asia (excluding Japan) and two regions of Oceania (excluding Australia-New Zealand). The latter category includes Northern America, Japan, all regions of Europe, Australia-New Zealand and the Union of Soviet Socialist Republics. Within these two broadest groupings, there are six major regions. Each of two major regions, Americas and Asia, comprises two medium regions. These larger regional groupings are further subdivided into 24 minor geographical regions, which are used at numerous points in the text and tables. In chapters using different groupings, the regional or geographical divisions employed are identified.

[2] This regional commission is currently called the Economic Commission for Latin America and the Caribbean (ECLAC).

VI. INTERRELATIONS BETWEEN POPULATION, RESOURCES, ENVIRONMENT AND DEVELOPMENT*

At the World Population Conference held at Bucharest in 1974, statesmen began to stress the importance of understanding the linkages between population, resources, environment and development.[1] Other meetings also have illuminated these linkages. To an ever-increasing degree, the demographic community has translated the issues they introduce into the study of the determinants and consequences of fertility, mortality and migration. Researchers have now accumulated much more information on levels and trends in each of these four factors and from that information have learned more about their interrelations.

In this introduction, the conferences and other meetings that provide a background for the present chapter on the interrelations between population, resources, environment and development are briefly reviewed; and recent levels and trends with respect to these factors are highlighted and discussed. The role of population is delineated and the four substantive sections of the chapter are briefly described.

The acceptance by the international community of the importance of the interrelations between population, resources, environment and development has been in large measure an outgrowth of the search for development alternatives that would reduce the disparities between developed and developing countries and ameliorate poverty within countries. A series of international conferences, convened in the 1970s and early 1980s, advanced the understanding of development as a complex, multidimensional process involving strong interrelations with population, resources and the environment. Initiating this process was the United Nations Conference on the Human Environment, held at Stockholm in 1972, where it was noted that in many countries underdevelopment was, in itself, an environmental problem. The Conference called upon States to adopt an integrated approach to planning which would ensure that development should be compatible with the need to protect and improve the environment for the benefit of their populations.[2]

The role of population was introduced explicitly in two symposia held in 1973: the first, on population and development, met at Cairo; and the second, on population, resources and the environment, at Stockholm. The first gathering examined the effects of social and economic development on population trends, as well as the impact of population growth on economic development.[3] The second symposium recognized that natural, institutional and political factors posed barriers to human development, the elimination of which was rendered more difficult by rapid population growth.[4]

Consistent with the work of the two symposia, the World Population Conference, as previously mentioned, gave recognition to population as a critical factor in preserving the environment and available natural resources and suggested that the supplies and characteristics of natural resources and the quality of the environment should be considered in formulating population goals and policies.

Shortly thereafter, a symposium was convened at Cocoyoc, Mexico, to consider whether the outer limits of the planet's resources were at risk. It called upon the world's statesmen to move towards a new system more capable of meeting the inner limits of basic human needs for all people, without at the same time overtaxing the planet's resources and environment.[5] In 1974 also, the World Food Conference in Rome stressed the importance of adopting measures urgently needed to increase the output of food while protecting land and water resources and considering the effects of alternative technologies on the quality of the environment.[6]

The United Nations Conference on Human Settlements, meeting at Vancouver, emphasized that while providing for the satisfaction of basic human needs, such as shelter, due concern should be given to protecting the environment, the common heritage of all peoples.[7] In addressing an equally important human need, the International Conference on Primary Health Care, held at Alma-Ata, Union of Soviet Socialist Republics, noted that improvements in health and in socio-economic development were mutually supportive.[8] In particular, it took note that anti-poverty measures, food production and environmental protection all contributed to health.

In 1977, the United Nations Water Conference, held at Mar del Plata, focused attention on the need for scientific, systematic and comprehensive studies of the impact of water and other development projects on the environment and other natural resources.[9] In the same year, the United Nations Conference on Desertification, which met at Nairobi, pointed out that the climatological and ecological aspects were only part of the desertification problem and cited the need also to consider social, economic and political factors.[10]

Many of these themes were brought together in the United Nations Symposium on Interrelations: Resources, Environment, Population and Development, held at Stockholm in 1979 at the invitation of the Government of Sweden. Viewing people as both agents

* Prepared by the Population Division of the Department of International Economic and Social Affairs of the United Nations Secretariat.

and objects of development, the Symposium recognized that the interaction of rapid population and economic growth could lead to a continuing degradation of the environment and diminished resource productivity. But the Symposium also concluded that Earth's carrying capacity could be expanded through technological advances combined with careful management of resources and well-designed development strategies. In particular, note was taken that a greater understanding of the interrelations between population, resources, environment and development would help to identify points of leverage for the application of appropriate policies.[11]

In order to generate such proposals for action, the United Nations Environment Programme (UNEP) convened a high-level group on interrelations, which met in 1980 and 1981 and drafted an action-oriented programme of work in this field for the United Nations.[12]

Since that time, there have been four other United Nations conferences bearing on this subject. The United Nations Conference on New and Renewable Sources of Energy was convened at Nairobi in 1981 to promote, particularly in developing countries, the development and utilization of ecologically sustainable sources of energy so as to meet anticipated future energy requirements.[13] In 1982, the Governing Council of UNEP held a session of a special character at Nairobi, to assess progress in implementing the Stockholm Action Plan for the Human Environment; it concluded that its goals had been only partially met and called for improved environmental assessment and management.[14] Later in the same year, the World Assembly on Aging, meeting at Vienna, examined the humanitarian and developmental issues related to the aging of individuals and populations.[15] Lastly, in 1983, the Expert Group on Population, Resources, Environment and Development was convened at Geneva in preparation for the International Conference on Population in 1984.[16]

These international conferences and meetings developed many of the themes embodied in the International Development Strategy for the Third United Nations Development Decade.[17] That Strategy recognizes that accelerated development could enhance the capacity of the developing countries to improve their environment and stresses the need to take into account the environmental implications of poverty and underdevelopment, as well as the interrelations between development, environment, population and resources.

The meetings demonstrated that it was imperative to clarify the part played by population in this complex and almost seamless web of interrelations. This task may be facilitated by reviewing briefly the important trends in population, resources, environment and development.

Between 1970 and 1980, the world population grew from about 3.7 billion to approximately 4.5 billion.[18] By the year 2000, this figure is projected to reach slightly over 6.1 billion, growing to almost 8.2 billion in 2025 and ultimately achieving stability at approximately 10.5 billion persons at about 2110.[19] These projections assume a declining rate of population growth, falling from an annual rate of increase of slightly more than 1.7 per cent in 1980 to about 1.5 per cent in the year 2000 and about 1.0 per cent in 2025. However, it is important to recall that, because of the continuing growth in the base population, the absolute increments to world population will still be very large, 77.8 million persons annually for the period 1980-1985, and will peak at 89.5 million during the period 1995-2000. In the less developed regions,[20] the absolute increase in population is expected to peak at 83.0 million during the same period.

The growth rates of total world population conceal the great diversity between the developed and developing countries. In the former group, the growth rate was almost 0.7 per cent in 1980 and is projected to fall to about 0.5 per cent in the year 2000, while in the developing countries the annual growth rate was about 2.1 per cent in 1980 and is projected to decline to just over 1.7 per cent in the year 2000. Consequently, the proportion of the world population living in the developing countries will increase from about three fourths in 1980 to four fifths in the year 2000.

The recent slowing in rates of population growth has largely been due to declines in fertility, with the result that the median age of world population has been increasing. It is projected that this figure will increase from 22.4 years in 1980 to 26.4 in 2000. As a consequence of this aging trend, overall age dependency ratios are expected to decline as increases in the dependency ratio of the group aged 65 years or over will be outweighed by declines in the dependency ratio of the group aged 15 years or younger.

In years past, the needs of a rapidly growing population have been largely met by an even more rapid growth in world output. However, this is the third successive decade of decelerating rates of growth of production. If recent trends were to continue, the United Nations projections[21] indicate that annual growth rates of production between 1980 and 2000 would average 2.6 per cent for the developed market economies, from 3.5 to 3.6 per cent for the developed centrally planned economies and 4.8 per cent for the developing market economies. The last figure is significantly lower than the 7 per cent called for by the International Development Strategy. Continuation of current trends would imply annual growth rates of income per capita of about 2 per cent in the developed market economies and 3 per cent in the developed centrally planned economies and the developing market economies.

Prospects for future production are, of course, intimately linked with expected supplies of labour, capital and natural resources, as well as with the pace of technical change. With regard to labour, the International Labour Organisation (ILO) projects that the world labour force will increase from 1.8 billion to 2.5 billion between 1980 and 2000, while the labour force in developing countries will increase from 1.2 billion in 1980 to 1.9 billion in 2000.[22]

If the rates of growth of output called for by the International Development Strategy are to be realized, rates of investment would have to increase over levels

achieved between 1960 and 1980 until they reached 28 per cent of gross national product in 1990. At the same time, the productivity of new and existing capital would have to be raised. However, a continuation of recent trends would result in lower rates and lower productivity of investment.

The following trends with regard to natural resources can be discerned. Estimates of the world's arable-land potential indicate that roughly half is currently under cultivation, most of the remainder being in Africa and Latin America. Since 1970, the growth in the catch of fish has been erratic and slow, leading to a decline in consumption per capita. Closed forest and other woodlands now cover about 4,000 million hectares but approximately 12 per cent of tropical forest is likely to disappear by the year 2000.[23]

Between 1950 and 1973, annual production of petroleum increased from 1.5 to 5.3 barrels per capita. Since that time, world oil prices have quadrupled, with the result that rates of growth in petroleum production have been below rates of population growth.[24] There remain, however, large reserves of natural gas and coal, and a variety of other energy sources are available. Supplies of non-fuel minerals would also appear to be adequate for many decades to come, even though prices may rise.

Primarily through the destruction of habitat, it has been estimated that between 1980 and 2000, a million species of plants and animals now inhabiting the planet will be permanently lost.[25]

Trends in the environment are more difficult to assess. However, it has been estimated that if unchecked, by 2000, desertification would treble the current world desert area.[26] In irrigated areas, waterlogging, salinization and alkalinization affected some 111.5 million hectares in 1975. If recent trends were to continue to 2000, an additional 3.1 million hectares would be damaged.[27]

In 1976, the atmospheric content of carbon dioxide had increased by about 5 per cent over the preceding 20-year period and significant increases in levels are projected for the year 2000.[28]

Before examining the interrelations between population, resources, environment and development, it would be useful to review each of these concepts. The term "population" refers not only to the number of persons and their location, age and sex composition but to their socio-economic characteristics, such as levels of education, health and family status. The term "development" refers to an integrated process of interrelated economic, social and political change, the ultimate aim of which is the improvement of the well-being of the entire population. This goal would imply full participation in the process of development and a fair distribution of the benefits therefrom. The term "resources" includes human resources, capital goods and natural resources, the last being the components of nature that can be used in the productive process. Lastly, resources are treated as an aspect of the environment. The environment is thus conceived of as the ecosystem that both supplies resources and acts as a repository for the wastes generated by consumption and production.

In examining the interrelations between population, resources, environment and development, it must always be kept in mind that population trends not only affect these other factors but are profoundly affected by them. Since the impact of development in conjunction with changes in the environment and resource availability is dealt with in part one of this report,[29] emphasis here is placed on the role played by population, in conjunction with other factors, in determining trends in development, resources and the environment and, in particular, on the effects of changes in the size and age structure of populations.

A number of scholars have prepared mathematical models purporting to demonstrate that although slower rates of population growth would have short-term advantages, over the very long term (centuries), higher rates of population growth may be more beneficial.[30] Others have argued that current rates of population growth may not be merely an obstacle to improved levels of welfare, they may be an absolute barrier. Arguing that the current demographic trends cannot be sustained, they call for establishing goals for slowing population growth. For example, it has been suggested that population size should ultimately be stabilized at about 6 billion persons.[31]

If Governments, in their planning and policy-making, are to take an informed view of the nature of population pressures, ways must be found to determine how many persons can be supported at an appropriate level of living in various parts of the world. It is not an easy task to treat these interrelations in an exhaustive and comprehensive manner; and although a topical approach has been chosen, each issue should be viewed as a selected example of a key problem area, which is better understood when considered as an aspect of the holistic and synergistic character of the interrelations.

It is important to identify more clearly the role of population within these interrelations — that is, to identify mechanisms through which the population characteristics condition and are conditioned by resource use, environmental effects and the developmental structure. This task requires an approach that goes beyond inquiries into the determinants and consequences of demographic change, involving a systems approach in which all factors are treated simultaneously and in which the closing of loops through feedback effects is of foremost importance.

The first section of this chapter deals with the crucial issue of food and agriculture, with particular emphasis on increasing food production in various parts of the world so as to eliminate hunger and undernutrition. Environmental and resource problems are described in the next section, giving special attention to the implications of meeting the needs of rapidly growing populations. The third section is devoted to issues considered crucial to the alleviation of poverty. Lack of health care, education, gainful employment and old-age security, along with low incomes per capita, perpetuate the

poverty that afflicts large numbers of people in developing countries and contributes to production and consumption patterns that undermine, through environmental and resource degradation, the very resources upon which these people depend for their livelihood. The fourth substantive section focuses on the need for integrating demographic variables into development planning so that population can be viewed as an endogenous variable which affects and is affected by development policies, programmes and plans.

A. Food and agriculture

The World Population Plan of Action stresses the need to give particular consideration to all aspects of the supply of food in the formulation of national population goals:

> "In order to increase the production and distribution of food for the growing world population it is recommended that Governments give high priority to improving methods of food production, the investigation and development of new sources of food and more effective utilization of existing sources".[32]

Looking at this question from another perspective, the World Food Conference in 1974 recognized the need to achieve a desirable balance between population and food supply. It called upon Governments and people everywhere to grow, and equitably distribute, sufficient food and income so that everyone might have an adequate diet, while at the same time supporting national population policies.[33] Furthermore, the elimination of hunger and undernutrition by the end of this century is one of the main objectives of the International Development Strategy for the Third United Nations Development Decade.[34]

The growth of world food production during the 1960s and 1970s more than kept pace with population increases. For the developing countries as a whole, food production per capita also increased. While their populations increased at about 2.5 per cent per annum in the 1960s and less than 2.5 per cent in the 1970s, total food output increased at an annual rate of 3 per cent during both decades. However, when compared with the target for growth in agricultural output in developing countries — at least 4 per cent per annum — called for by the World Food Conference and the Second United Nations Development Decade, the growth rate has been insufficient.

Between 1966 and 1980, the total agricultural production of 90 developing countries grew more rapidly than the total population. However, in more than half of these countries, considered individually, the rate of population growth exceeded the rate of growth of agricultural production. The problem of food production is particularly acute in Africa, where population was growing at nearly twice the rate of food production during the period 1970-1980. Furthermore, the number of African countries in which population growth has outstripped agricultural growth is steadily increasing.

If these trends continue, agricultural production would fall short of the target of 4 per cent annual growth as reiterated by the International Development Strategy for the Third United Nations Development Decade; and in some regions, levels of food production and consumption would fall, leading to unacceptable increases in numbers of the undernourished. Thus, changes in these trends are required to meet the goal of elimination of hunger and undernutrition by the end of the century.

Carrying capacity

The term "carrying capacity" describes the population size that can be supported by a country at a given level of welfare. Defined in this way, the carrying capacity of a region may be increased in a variety of ways, through: changes in cultural values; technological discoveries; improved agricultural practices and land tenure systems; improvements in education systems; modification of fiscal and legal arrangements; discoveries of new mineral sources; or the emergence of a new political will.[35] Furthermore, the carrying capacity of an area is not directly related to its capacity for food production; rather, its capacity to integrate itself into a system of international trade is the decisive measure of the population size an area can support at a given level of welfare. Thus, measurements of carrying capacity are crucially dependent upon whether carrying capacity is considered at a local, national or world level.

This broad concept of carrying capacity differs from the notion of agricultural carrying capacity in that it deals with more than nutritional requirements and therefore is perhaps more relevant for policy. However, an extremely difficult problem facing those who would quantify carrying capacity in this broader sense is finding a single unit in which to express aggregate output and requirements. To deal with this problem, the United Nations Educational, Scientific and Cultural Organization (UNESCO) is developing an approach that uses energy units as the common denominator. Plans are being made to link this work with the study on the potential population-supporting capacity of lands in the context of national situations[36] that is being undertaken by the Food and Agricultural Organization of the United Nations (FAO).

Measurements of agricultural carrying capacity are also extremely dependent upon the choice of technology, resource conservation practices and the mix of agricultural output. Therefore, in its study, FAO calculated three levels of carrying capacity: the "low" level involves a low level of input, no soil conservation measures and cultivation of the currently grown crops; the "intermediate" level assumes some modern input, some simple soil conservation measures and a combination of the currently grown and the most calorie-productive crops; and the "high" level assumes the most modern input, full soil conservation measures and only the most calorie-productive crops.[37]

Carrying capacity was calculated for the less developed regions and separately for each country. At the regional (and national) levels of aggregation, it was assumed that there could be unrestricted movement

within each region (or country) of surplus food, production potential and/or population.

If carrying capacity is calculated under the assumption of regional self-sufficiency, even at "low" levels, all regions but South-western Asia[38] appear to have been able to meet the nutritional requirements of their populations in 1975 and can meet those projected for 2000. Under a régime of national self-sufficiency in food, however, the situation would become critical in many developing countries by the year 2000. At that time, 65 developing countries could not feed their projected populations at the low level of production. Even at intermediate levels, population would exceed projected carrying capacity in 36 countries, and 19 countries would be unable to feed their projected populations even under the high-production régimes.[39]

When carrying capacity is calculated at the country level of aggregation, the importance of input/technology levels is highlighted. The population in excess of carrying capacity could be reduced by a factor of 10 by moving from low- to high-technology agriculture, which demonstrates that the reserve food production potential of developing countries lies less in the cultivation of now idle land than in improvements in production methods.

By facilitating the use of lands most appropriate for particular crops, international trade in foodstuffs should increase world productivity and thereby expand aggregate carrying capacity. In this regard, it can be recalled that the "law of comparative" advantage states that trade will be mutually beneficial to all regions if each specializes in the product in which it has the greatest relative efficiency. Although increased international trade can promote a more efficient use of world resources leading to increased productivity, shifts in the international division of labour in line with evolving comparative advantage require a stable and liberal international trade environment; and it is doubtful whether such an environment exists.[40]

Instead, there has been a unification of the world food market under a régime of very few exporters of foodstuffs. In the matter of grain, for example, five countries account for the bulk of exports. Under such a concentrated system, importing countries face the risk of hunger if there is a crop failure in a major exporting country, if there is a fall in the price of their own exports or if they are denied international credits. The importation of foodstuffs not only exposes developing countries to the hazard of hunger, it diverts limited foreign-exchange earnings from the purchase of capital goods and thus impairs programmes of industrial development.

The unifying of the world grain market has allowed producers of meat products in developed countries to compete with direct consumers of grain in developing countries for the existing supplies. Furthermore, if developing countries begin to import grains when world prices are depressed, they may discourage domestic agricultural production and foster the growth of urban populations, leaving themselves in a position where they must continue to import foreign grains even after world prices have risen substantially.

Undernutrition

In many poor countries, food production is not keeping pace with population growth, thereby aggravating their already serious undernutrition problems. It is projected that the number of undernourished will rise by about one third to 600 million persons by the year 2000 and that import requirements for cereals alone will grow from 100 million tons in 1981 to a level of 250 million tons for 2000. Unless domestic production can be sharply increased or cereal imports can be raised to this level, undernutrition will be more widespread, and nearly 700 million people will be undernourished by 2000.[41]

Among the major causes for the continued prevalence of undernutrition in developing countries are: low productivity in agriculture; competing demands for agricultural production; and unequal distribution of income. For a variety of reasons, productivity in food production is very low in many developing countries, particularly those in Africa. This situation is due in part to the fact that farmers have for many years been denied adequate prices for their agricultural produce. On the other hand, many Governments have subsidized the importation of food from abroad, primarily for the benefit of urban consumers. Such policies have kept domestic food prices low and deterred the growth in food production, often making it impossible for farmers to purchase a critical agricultural input, such as fertilizers. These subsidies have also led to increased rates of urbanization and changed dietary preferences in favour of imported products, resulting in further increases in imports and aggravated balance-of-payments problems.

The growth in population is but one of a complex pattern of interacting factors leading to sub-optimal production and distribution of food and hence widespread undernutrition. In order to assess better the role played by population growth, FAO mapped out alternative possibilities for the development of world food and agriculture up to the end of the century, given alternative rates of population growth.[42] It found that the reduction in total agricultural demand would be roughly proportional to the reduction in population, whereas there was little impact on production, since lower rates of population growth would have little impact on the agricultural labour force in a 20-year period. Thus, decreases in population growth may relieve pressure on agriculture and in many countries could mean an improvement in the agricultural trade balance. However, the end of the population explosion should not foster any false hopes that the task for world agriculture to produce sufficient quantities of food would become easy, only that it would become slightly more manageable.

Considering the world as a whole, income gains in the past two decades far outdistanced population increases. While population grew by about 44 per cent, incomes per capita nearly doubled between 1960 and 1980. The result has been a significant increase in meat consumption, with a consequent diversion of grain supplies from direct human consumption to animal feed.[43] In 1980, almost 40 per cent of total cereal production was used

for animal feed. Had this grain been made available for direct human consumption, it could have done much to eliminate undernutrition. However, it is difficult to determine whether this would have been the actual outcome or whether the result of reduced meat consumption would simply have been a lower level of cereal production.

The food/feed problem is linked to the distribution of income both among and within countries. Since about one fourth of the grain devoted to animal feed is consumed in the developing countries, an increase in meat prices might reduce consumption of the middle classes and thus make more cereals available for the poor. On the other hand, it might be argued that increased meat prices in developing countries might simply lower the price of cereals and thus reduce production incentives.

Energy crops also compete with food production for land and other agricultural resources; they therefore tend to increase food prices by reducing food production. However, for reasons already cited in the food/feed controversy, it cannot be demonstrated conclusively that the net effect of increased energy-crop production would be to reduce the available food supply.

The most important reason for undernourishment appears to be the poverty of households unable to produce or purchase their food. Even rising levels of national agricultural output in relation to population size would not be a sufficient condition for improving the overall state of nutrition if incomes and resources were distributed in a highly unequal manner. Currently, hunger is less an economic and technical phenomenon involving inadequate production than a social phenomenon involving an unequal distribution of resources and income. For the present and the foreseeable future, it is technically possible to provide an adequate diet for all. The persistence of the population and food problem is thus due to the fact that nationalism, poverty, cultural preferences in food and inefficient agriculture are factors that cannot be easily or rapidly changed.

If crisis situations in regard to food and nutrition are to be avoided, a number of major non-demographic policies ought to be considered in the area of agricultural and environmental management. Among the most important issues are the worsening of climatic conditions through mismanagement of the environment, indiscriminate cutting of trees, overgrazing and poor husbandry and farming methods. Adoption of policies to encourage an expansion in the stock of cultivable land could also be of great importance. Other policy areas concern redressing the imbalance between food production for domestic use and cash-crop production; practices designed to reduce post-harvest food losses; improved and comprehensive policies on agricultural extension services, backed up by the availability of simple but improved implements and improved seeds; and access to fertilizers and irrigation. Closely allied to this group would be policies to improve all aspects of rural infrastructure, from road networks to health services. Within the agricultural sector of developing countries, improved access to land, water and services will have to be ensured and life in rural areas will have to be upgraded in such matters as health, education and housing. Furthermore, significant improvements in other aspects of infrastructure, such as roads and irrigation works, will be required.

Particularly relevant to the questions both of meeting nutritional needs and of achieving an equitable social order is the improvement of land tenure systems. The importance of broadly based rural programmes to reduce poverty and undernutrition was emphasized in 1979 at the World Conference on Agrarian Reform and Rural Development.[44]

Although it is technically feasible to improve substantially the levels of world food production per capita between now and 2025, it is not certain whether it can be done without serious environmental effects. Furthermore, a large part of that increase would have to take place in the currently developed countries. Thus, in order to equalize consumption levels in the two groups of countries, the developing countries would need to import vast quantities of grain from the developed countries.

These imports could be paid for by increased exports or increased borrowing from abroad; however, both approaches involve significant costs. Countries may pay for increased imports of food by increased exports of cash crops, other commodities or industrial output. Although the Lima targets do call for an expansion of industrial exports from developing to developed countries, considerable time will be required before the former group of countries can develop the capacity to compete effectively in world markets.

In the short run, grain purchased at concessionary prices or favourable credit terms can help meet the nutritional requirements of a rapidly growing population. However, in the long run, these imports may promote the growth of large urban populations who would be dependent upon the continued inflow of low-cost foreign grain and thus defenseless against the effects of crop fluctuations in the major exporting countries.

In addition to increasing agricultural production and, if necessary, increasing grain imports, countries can reduce the number of people who are undernourished by reducing competing demands. Given the importance of population growth as a factor in determining total food consumption, policies to slow the rate of population growth would contribute to increasing the availability and lowering the price of food to the poor. Slowing the rate of rural-urban migration might also reduce the demand for imported foods. Most important is the implementation of policies to promote a more equal distribution of income, which would enable all to produce or purchase enough food for proper nutrition.

Even though average rates of production may be sufficient to meet nutritional requirements, it is necessary to have reserves that act as a buffer to convert fluctuating rates of production into a continuous supply to households. Although most countries have their own

immediately accessible reserve, the cost would be prohibitive if each country were to try to be self-sufficient in the face of all contingencies. Since the world grain crop shows less fluctuation from year to year than does the grain production of individual countries, the need for maintaining national reserves can be significantly reduced by ensuring that the channels of international trade shall be kept open so that surpluses can flow to countries in deficit.

B. Resources and environment

As noted earlier, the environment can be viewed both as a source of natural resources and as a repository for the wastes generated by consumption and production processes. In other words, the supply of natural resources can be treated as an aspect of the environment.

Since requirements for natural resources increase both with growing populations and growing consumption per capita, the World Population Plan of Action calls for consideration of the supplies of natural resources in planning population policies and directs attention to the need for a "just distribution of resources and to the minimization of wasteful aspects of their use throughout the world".[45] In particular, the Plan states that "it is imperative that all countries, and within them all social sectors, should adapt themselves to a more rational utilization of natural resources".[46]

The need to husband the world's resource base is reiterated by the International Development Strategy for the Third United Nations Development Decade, which states that "the rational development, management and utilization of natural resources should be encouraged in order, *inter alia*, to prevent early exhaustion of finite resources and overburdening of renewable resources".[47]

With regard to the environment, the World Population Plan of Action calls for consideration of the quality of the environment in developing national population policies and goals.[48] In particular, it recommends that Governments take into account not only short-term economic returns but social and environmental costs and benefits in planning development.[49]

The need to avoid environmental degradation is also cited by the International Development Strategy, which states:

> "There is need to ensure an economic development process which is environmentally sustainable over the long run and which protects the ecological balance. Determined efforts must be made to prevent deforestation, erosion, soil degradation and desertification".[50]

Land resource base

During the period from 1860 to 1980, the area of the world's farm land increased between two and three times its original level while the world population increased by about three and one-half times. This represents an intensification of a long-term trend.[51] Between 1860 and 1920, the world average increase in arable land area was 0.77 hectare per additional person, but between 1920 and 1978, this figure had fallen to only 0.17 additional hectare per additional person.

On a world-wide basis, and to a large extent within regions, the increase in irrigated areas allowed the intensity of cultivation, i.e., the number of crops grown per hectare per annum, to increase as well. In other words, the definition of arable land crucially depends upon the level of technology, the levels of input use in agriculture and the specific output mix. Thus, although many countries are confronted with increasing scarcities of arable land, the combination of increasing yields and cropping intensity may still offer a considerable margin of safety.

Currently, many countries of Africa and Latin America have relatively ample land resources and favourable man/land ratios. Thus, the stock of arable land in Africa is projected to increase by 86 per cent for the 45 years between 1980 and 2025; and in Latin America, it is projected to increase by about 52 per cent during the same period. In fact, the expansion of the agricultural frontier is one of the most noteworthy trends in Latin America, where growth in agricultural production has been and continues to be based chiefly on an increase in area harvested. Although productivity growth is making increasing contributions to the total produced, 60 per cent of the expansion of agricultural production in Latin America during the 1970s was accounted for by harvesting of more extensive areas.[52] Less sanguine are the prospects for Asia, a major region that is marked by a high degree of land scarcity. Most, if not all, of the potentially arable land outside the humid tropics in Asia is already cultivated; therefore, the newly cultivated 0.02 hectare per additional person observed between 1920 and 1978 should diminish to zero or even become negative during the next few decades.

Although the trends in land availability and expansion lead to some relatively optimistic conclusions, when the environmental dimension is added a more pessimistic view emerges. Thus, while the carrying capacity of land could be increased through agricultural modernization, that capacity is being endangered by numerous factors, including erosion, desertification, shortening of fallow periods and use of organic matter as fuel instead of as fertilizer.

In many countries, land maintenance leaves much to be desired and the considerable increase in population in most developing countries has already contributed to desertification, deforestation, loss of soil fertility, waterlogging and soil salinization. For example, the deserts of Africa have been encroaching on useful agricultural land at an annual rate of 60,000-70,000 square kilometres and are affecting the livelihood of about 60 million people directly. Furthermore, some 25,000 square kilometres of land in Africa is being lost annually for food production because of soil erosion.[53]

Thus, the apparent availability of large unused land areas in Africa and Latin America is misleading. In Africa, there are large areas where climate, soils or other ecological factors make farming or even sustained grazing impossible. Soil conditions and meagre rainfall

necessitate lengthy fallow periods if soil productivity is to be maintained, and economically feasible technologies for more intensive agriculture are often not available. In the semi-arid zones, farmers are forced to move into low rainfall areas, which can turn into dust bowls during droughts. This spread of cultivation forces herders into areas that are not suited for grazing and the problem of overgrazing is intensified. Often the emerging inadequacy of the land base in relation to population and available technology is partially concealed by a decline in the soil-preserving fallow period, a process that is turning large fertile areas of semi-arid Africa and Asia into deserts.

In Latin America, at least 66 per cent of the land expansion will take place in areas where the ecological impact will be high, such as the Amazon ecosystem. Furthermore, studies of Latin America indicate that although an increasing number of small farmers can cause considerable damage in their attempts to obtain more land, the environmental damage derived from the activities of large agri-businesses may be even more serious.[54] While the introduction of modern technology into agriculture would make food production in Latin America grow faster than population, it would aggravate the concentration of land, capital and production, thereby contributing to landlessness. Also, in some ecosystems, this agricultural development pattern may lead to disruptions of an environment to which the technologies applied are not appropriate. In the long run, this would imply the failure of the whole effort to obtain a sustainable level of production from such ecosystems.

Forests

The spread of agriculture outside the traditional farming zones is currently the largest single cause of deforestation in the developing countries. Where lands are suitable and proper technologies are available, forest clearance for farming is often desirable, as long as it is accompanied by watershed protection, preservation of natural areas and enforcement of sustainable land uses. However, much of the current deforestation occurs in lands that are ill-suited for agriculture. The spread of peasant farming, shifting cultivation, commercial farming and unregulated logging are the principal causes of rain-forest clearance. Throughout Africa, Asia and Latin America, the vegetative cover of huge areas is being severely degraded through overgrazing, fuel-wood collection and a decline in crop fallow cycles.

If current trends in forest conversion continue, thousands and possibly millions of plant and animal species will become extinct over the next two decades. In addition to the adverse effects on the ecological balance, the cost of these extinctions in terms of the loss of potential industrial and agricultural products, new medical substances, genetic materials for use in genetic engineering and genes useful in crop-breeding will be substantial.

Deforestation in hilly and mountainous regions is particularly damaging. In these areas, farmers struggling to meet the food requirements of increasing populations are clearing steep slopes that should be kept in forest or tree crops. Often, the topsoil washes away within a few years, destroying the productive potential of the hills and causing serious problems downstream as reservoirs, canals and harbours fill with silt. Deforestation also contributes to an increased concentration of carbon dioxide in the atmosphere as carbon is released through this land-use conversion and as reduced forest-cover diminishes the absorption of carbon dioxide.

Water

Although the supply of fresh water is more than adequate at the global level, prospects for the future are characterized by regional water shortages, especially where population density is high. Since large volumes of water are required for the production of grain and most other crops and considering the importance of irrigation to agricultural production and more efficient land use, it is usually essential to develop an inexpensive and reliable supply of water. Because of the increased price of energy, the cost of developing such supplies, especially for irrigation, could become exceedingly large. Furthermore, the increased competition for water by urban and industrial uses is likely to make it more difficult to provide adequate supplies of water for agricultural use.

Environmental problems also affect the supply of water. For example, changing the vegetative cover by overgrazing in the Sahel area of Africa has affected the ground-surface absorption characteristics — the albedo — of solar radiation. The change in albedo, increased reflection of sunlight from the denuded surface, has further decreased rainfall. Hillside deforestation, on the other hand, especially of smaller watersheds, has led to disruptions of the hydrological cycle, resulting in increased flooding in rainy periods and desiccation of springs and streams in dry periods.

Climate

Climate can be regarded as a common property resource belonging to all countries. Thus, international problems arise from national actions that may affect the climate in other countries. Growth in population usually results in increased energy use, which can affect climate globally, regionally and locally. In particular, the increase of carbon dioxide in the atmosphere caused by burning fossil fuels may in the future have large adverse effects on global climate. It has been estimated that a doubling of the carbon dioxide concentration in the atmosphere would increase the average global temperature by from 1 to 4 degrees Celsius, which in turn could lead to an altering of the distribution of global rainfall. Furthermore, it is estimated that this doubling will occur sometime between 2030 and 2080.

Although most effects of increased carbon dioxide in the atmosphere are negative, higher concentrations may serve as natural fertilizer, aiding in the photosynthetic process of plant life and thereby contributing to food production.[55]

Climatic changes can also have profound consequences for population in terms of both migration and mortality. As one-time desert lands become arable and some arable lands become deserts, movements of large populations may be the result.

Non-fuel minerals

The supply of mineral resources for accelerated development is less a problem of absolute scarcity than one of having to exploit less accessible sources, which results in reduced productivity. Therefore, the primary concern with regard to future mineral resources is directed to the matter of rising costs and consequent rises in price.

In this context, it is important to take note of the difference between natural-resource reserves and total resources. The former are known deposits that, under current economic and technological conditions, are economically recoverable. Resources, however, include both reserves and mineral deposits that, under current economic and/or technological conditions, are not recoverable. The term "resources" used in this sense also includes deposits that are presumed to exist but have not yet been discovered.

Changes in technology and economic conditions bring about shifts between estimates of reserves and resources, as previously inaccessible or low-grade deposits, through new techniques or increased demand, become worth while for exploitation. Similarly, previously exploitable deposits of minerals may, due to changed economic conditions, become no longer worth extracting and would thus be regarded as resources rather than reserves. Historically, estimates of both reserves and resources tend to be revised upward over time.

Although reserves of most minerals may be adequate to meet projected requirements to the end of the century, for the period 2000-2025, there will be a need to rely upon resources rather than reserves; and this reliance may have serious implications for investment, technological progress, conservation and recycling. In all of these areas, international co-operation will be essential to achieve an efficient, equitable and rational exploitation of resources. If this goal is not achieved, a serious disruption of economic growth on a world-wide basis could result.

Energy

The United Nations Industrial Development Organization (UNIDO) has shown that in terms of reaching the Lima targets, reserves of crude petroleum and natural gas are sufficient to the year 2000 but not much beyond that time.[56] Coal reserves, on the other hand, would not be exhausted before 2050. Thus, the initial indications are that these conventional energy sources would not be exhausted by 2000, even at the high growth rates necessary to reach the Lima targets. If currently estimated resources become available, they would be more than sufficient to sustain further growth of the world economy to 2025 and beyond.

Although projected global balances between the demand and supply of conventional energy resources appear to give no reason for concern until well into the twenty-first century, such calculations provide no assurances as to future regional balances. For example, even though Latin America has abundant resources of hydrocarbons, hydroelectricity and coal, they are distributed very unevenly in the region. Consequently, new patterns of international trade, finance and co-operation would be needed to achieve a harmonious exploitation of these resources.

Despite these relatively optimistic projections, it is a matter of concern that the developing countries account today for only 14 per cent of the total petroleum consumption and that some 25 per cent of their energy consumption needs is being met from renewable sources of energy. It is reasonable to assume that as development progresses, they will meet a smaller fraction of their energy needs from renewable sources and will account for a considerably larger proportion of petroleum consumption. Furthermore, rapidly growing population and shortages of wood can act, at least with respect to rural energy supplies, as a constraint on development.

Role of population

Although agricultural resources are sufficient to satisfy the nutritional needs of a much larger population, satisfaction of other wants and needs arising out of development is likely to prove more difficult. At the same time, many developmental options are lost as population increases. One broad class of options concerns preservation of desirable characteristics of the natural environment. The accommodation of large populations at increasing income levels may result in a steady disappearance of many important environmental amenities.

Although it can be argued that increased population in a given territory may mean reduced availability of natural resources per capita, an increase in population on a fixed land area may also lead to technological responses which, in turn, make it possible for a larger population to live in the same area. In the same vein, it can be argued that the date of attaining the ultimate world population size is far enough in the future to permit most current technological constraints to be overcome and perhaps also to permit a change in the structure of international trade, so that densely populated countries can greatly reduce their current dependence upon land or other natural resources through industrial production.

Internal migration, including urbanization, can be viewed as an adjustment to local shortages of resources. Furthermore, it has been argued that there is no necessary relationship between the degree of urban concentration and the degree of environmental deterioration, because the distribution of the costs and benefits derived from environmental change will depend more upon the pattern of urban development than upon the size of urban areas or the rate of their growth.[57]

Rural-rural migration to new frontier areas can also perform a number of important functions. For the rural population, it provides an escape from land scarcities in their areas of origin, while avoiding the possibility of long periods of unemployment in urban areas.

At the international level, the existing distribution of the world population between countries does not correspond to relative resource endowments. International migration, by bringing about a better adjustment of the world population to supplies of other resources, could result in a higher total world product. However, achieving this end by means of international migration would pose exceedingly difficult problems in the current world context.

C. Economic and social aspects of development

In the developing countries, poverty is the underlying cause of many, if not most, of the problems arising out of the interrelations between population, resources, environment and development. Conversely, the misuse of affluence is a cause of many of the environmental and resource problems of developed countries and also has serious negative effects on the developing countries. Therefore, in discussing socio-economic development, emphasis is placed on factors critical to the lessening of the differentials in levels of living between and within countries. The topics include income distribution, employment, health, education and old-age security.

Income distribution

One of the major purposes of international economic co-operation is to restructure the world economy so as to bring about a more balanced and equitable distribution of income, wealth and economic activity. Accelerating the development of developing countries would help to reduce disparities in income among countries and would contribute to the eradication of world poverty.

Despite the relatively high growth rates of gross domestic product (GDP) of the 1960s, the gap in income per capita between developed and developing countries widened during that decade as the rapid rate of population growth in the latter countries caused their growth rate per capita to be smaller than that of the developed countries. Primarily because of the poor economic performance of the developed market economies in the 1970s, there was a narrowing in the relative gap in incomes per capita of the developed and developing economies. However, the absolute size of the gap was larger in 1980 than in 1960.

These aggregate growth figures conceal even greater disparities among various groups of developing countries. Of particular concern are the low-income petroleum-importing countries. Growth rates in GDP per capita in these countries barely exceeded the growth rates of their populations during the 1970s. Moreover, given the economic recession of the early 1980s, it will be exceedingly difficult for this group of countries to achieve the targets of 7 per cent growth in GDP and 4.6 per cent growth in GDP per capita specified in the International Development Strategy for the Third United Nations Development Decade. Furthermore, even the achievement of the growth target set by the Strategy would make only a modest beginning towards narrowing the relative income gap between developed and developing countries by the end of the century. For example, according to the growth scenario for reaching the Lima target, those developing countries which in 1980 had a GDP per capita of just over 10 per cent of that of developed countries will in 2025 still have a level that is less than 19 per cent of that of the developed countries.[58] The high growth rates of GDP, which are used in the scenario, little more than compensate for the high rates of population growth.

Although population growth is often cited as an obstacle to economic growth and an important factor leading to inequality in the distribution of income, the relationship between population growth and income distribution is exceedingly complex. There is reason to expect that income distribution both affects population growth and is affected by it. Also, the lags in the effect of inequality on population growth are likely to be shorter than those in the effect of population growth on the distribution of income.

In some countries, the nature of the process of economic growth and social change has led and still leads to the formation of highly inequitable societies in which there is a very high concentration of income and wealth in small segments of the population. Meanwhile, very large strata of population live in conditions of extreme poverty and high labour-force underutilization, and, as a consequence, they suffer from undernutrition.

Where the income distribution continues to be highly concentrated and large fractions of the population remain below the poverty line, the slow-down in mortality decline may become more acute. Where the pattern of development has not contributed to improving the distribution of income and to reducing extreme poverty, the result has probably been a slower rate of population growth due to higher than expected mortality. Moreover, some studies have shown that the impact of inequality on population growth is fairly weak because greater inequality appears to be associated not only with higher fertility but with higher mortality.[59]

Indeed, growth in GDP per capita cannot be considered the most important developmental variable influencing rates of population growth. There are examples from some developing countries and from regions within such countries that have experienced reductions in rates of fertility while at the same time exhibiting low economic-growth rates.

The qualitative aspects of development adopted by a country appear to be more important for lowering rates of fertility. A development pattern or "style" that enables a larger number of people to benefit from the fruits of development has generally been more conducive to reducing rates of population growth than one in which the benefits are largely concentrated in the upper- and middle-income strata of a society.

In this context, it is generally recognized that development means much more than simply economic

growth. Rather, it involves a political, cultural and socio-economic transformation that includes improvements in income distribution, education, health care, employment opportunities and the status of women. The World Population Plan of Action is quite explicit in this respect, stating that "the principal aim of social, economic and cultural development, of which population goals and policies are integral parts, is to improve levels of living and the quality of life of the people".[60] Consequently, the Plan lists among those aims the development goals that tend to moderate fertility levels: "The promotion of social justice, social mobility and social development, particularly by means of a wide participation of the population in development and a more equitable distribution of income, land, social services and amenities".[61]

Employment

Population growth is a major determinant of labour force growth; and as a result of high birth rates combined with falling mortality rates, an unprecedented expansion of over 2.4 per cent per annum is expected to take place in the world labour force from now until the end of the century.[62] Given the already high levels of unemployment and underemployment in many developing countries, the task of providing enough productive employment to absorb fully the increments to their labour force will be formidable.

During the coming decade, most of the growth in the potential labour force in developing countries will be concentrated in the non-agricultural sector. For example, in many countries of Africa, where the majority of the population depend upon agriculture, growth in the agricultural labour force has not always increased food production. Instead, it has contributed to already serious problems of underemployment and unemployment.

The rate of urbanization has not been accompanied by an equal rate of increase in employment. Furthermore, the population that has moved out of agriculture contains a disproportionately large number of people of working age and hence the potential labour force in the non-agricultural sector has grown faster than its population. As a result, unemployment and underutilization of skills are prevalent and are often a direct cause of urban poverty. For example, it is estimated that in Latin America, unemployment and underemployment affect the equivalent of 28 per cent of the economically active population.[63]

Some studies indicate that with sufficiently high economic growth rates, the available labour force could be absorbed by the year 2000.[64] In other words, the increase in employment opportunities could be sufficient to provide work for the rapidly growing labour forces, including, in particular, those of the developing countries. Whether unemployment may be a problem, at least at the global level, depends very much upon the rate of world economic development; and it already appears that the growth targets, as presented in the International Development Strategy, will be difficult to attain.

Furthermore, merely providing employment is not sufficient. It is necessary to create productive jobs that provide sufficient remuneration. Such jobs often require capital accumulation and thus postponement of current consumption, a requirement that is more difficult to achieve under conditions of rapid population growth. The rapid growth of the working-age population makes labour relatively more plentiful, discourages the adoption of modern technologies and aggravates unemployment, while making capital accumulation more difficult.

Many developed countries must contend with a declining trend in the size of the labour force, a trend that is expected to continue. Currently, the growth in the labour force exceeds the growth of employment because of the prolonged recessionary conditions and the increasing participation of women. However, it is expected that in the longer run a return to normal labour force growth could lead to serious labour shortages.[65]

High labour costs in developed countries have led to the development and introduction of new technologies that are labour-saving rather than capital-saving. This capacity for technological change is, however, highly unevenly distributed internationally. Given the projected trends in factor endowments, innovations originating in the developed countries are likely to be even more labour-saving and less relevant to the developing countries than before. Consequently, there is a need to provide support for more research and development activities in the developing countries. Technical innovations that promote capital accumulation produced by local labour using local materials will be particularly useful in creating jobs for the unemployed and accelerating development.

Health and education

As in the case of food and nutrition, poverty is one of the most important reasons for inadequate levels of education and health care. Unlike the case of food supply, however, the ability of developing countries to provide education and health services is not likely to be significantly constrained by the absence of physical resources and the inhospitability of the environment. Still, schooling and health care facilities are, in most cases, dependent upon government interventions; and population growth either raises the total cost of these programmes or reduces the fraction of the population they can reach.

A major shortcoming of national accounting systems is that recurrent education and health expenditures are not treated as investments. Thus, while schools and hospitals are considered capital goods, the expenditures made for the services of health practitioners and teachers are treated as consumption expenditures.

In developing countries, there is generally a need for the Government to play a major role in providing these services, particularly under conditions of high fertility and dependency, where the capacity of parents to save or to invest in the education or health of their children is severely limited. This constraint is felt much more intensely among the poor, leading to inequality in the

formation of human capital and therefore to inequality of incomes in the next generation.

Although there is a clear relationship between population growth and the demand for various types of educational services, this relationship involves a variety of time-lags. Thus, while only the cumulation of 5-10 years of population growth is likely to cause major changes in the student populations of the elementary, secondary and tertiary school systems, there are almost immediate pressures on the teaching systems to train a sufficient number of future educators.

Rates of fertility and mortality are generally considered to be negatively correlated with levels of education and health care. This is particularly true in the case of infant mortality. Currently, it is estimated that about 40,000 children die each day mainly because of the combined effects of undernutrition and poor sanitation.[66]

Access to safe drinking-water is a crucial component in the provision of health care; and, in the year 2000, access in the developing countries may be even more remote than it is today, as available investment resources become scarcer. Therefore, judicious development expenditures on provision of safe drinking-water, as well as health, education and nutrition, are important not only to improve the general well-being of the population but because they ultimately yield returns greatly in excess of the size of the expenditures by improving the productive potential of labour.

Significant economic improvement in the developing countries requires rapid accumulation and effective application of human and physical capital. Growth in human capital, in turn, involves achievement of improved standards of health and nutrition, the elimination of illiteracy and the acquisition of technical and entrepreneurial skills through formal education and through work experience. Reducing rates of population growth may facilitate the achievement of these objectives.

Social security

An important issue facing many developed countries is the economic and social consequences of the progressive aging of the population associated with slow and declining population growth. This phenomenon is, however, not solely confined to the developed countries, as there will continue to be an increase over the next few decades in the absolute and relative size of the aging population in all regions of the world. This trend has become significant in a number of developing countries and will accelerate by the turn of the century in many other developing countries.

In general, the aging of populations involves an increase in the proportion of older people accompanied by a decline in the proportion of the young. Therefore, the aging process and its consequences should be viewed not merely as an evolution in a selected age segment but as part of the structural transformation of the population as a whole, and, moreover, as a process associated with a slowing of the rate of increase of the population. In this respect, it should be remembered that future patterns of aging need not be the result of sustained negative rates of population growth but may occur in the context of fluctuations in both the growth and the structure of populations.

Also, it could be argued that the age limits currently used for calculating dependency ratios should be changed systematically to take into account increased life expectancy, which generally accompanies development and economic growth. This development process affects both the age of retirement and the ages at which young people become economically active. That is, as economic development proceeds, entry into the labour force is delayed in order for younger workers to obtain increased schooling and technical skills; and retirement at an early age becomes increasingly prevalent. Thus, even though an analysis of dependency ratios indicates that, in general, slowing population growth and the concomitant aging of populations in developing countries should raise the proportion of the population that is economically active and lower the dependency ratio, these beneficial effects of population aging may, in certain circumstances, be outweighed by declines in the age of retirement and later entry of the young into the labour force.

A number of other aspects of the aging of populations can be discerned. The health care costs per capita associated with elderly dependency are greater than those resulting from youth dependency. In particular, the costs of supporting the very old are likely to increase with further declines in mortality rates at higher ages and with the advancement of medical expertise. Also, with the high potential outflow of older workers from the labour force, these trends have been a source of serious pressures on social security systems, which, in most developed countries, play an essential role in providing income and health care to the elderly. The problem of transferring resources from the working population to the elderly may become increasingly serious. Except for education, support for children is almost entirely provided by parents and does not require special institutions or taxation, or transfers outside the household. In contrast, the elderly in many developed countries often live in separate households and receive limited support from their children, thus making a system of public transfers necessary. This issue has important implications for trends in fertility, because, to a considerable degree, decisions on family size may depend upon the means available for providing an income after one has ceased to work.

It appears that a continued aging of populations will require even greater intergenerational transfers in the future. The necessary costs of old-age pensions and medical care may result in lowering individual benefits or reducing the number of beneficiaries. The latter development might be accomplished by adopting a more flexible age of retirement, based on the rise in life expectancy.

D. Integration in policy, planning and programmes

There have been significant changes in the planning process over the past few decades. During the 1950s, virtually all attention was focused on economic planning. During the 1960s, social planning was added; and during the 1970s, population planning was introduced in the planning exercise. For the 1980s, two new dimensions, namely, resources and the environment, are becoming increasingly important in the overall planning process. However, integrated planning is still at an experimental stage and there is no guarantee of its success.

The formulation of a fully integrated plan, which would include population, resource and environmental concerns, requires the solution of a number of difficult problems. Often, demographic studies have not been useful for development planning purposes, in part because demographers are not familiar with the requirements of development planning and in part because of the limited knowledge base relating to complex population-development interrelations. On the other hand, some planners have a limited view of population problems, focusing largely on population size and growth. Furthermore, planners are too often concerned only with promoting the economic aspects of development. Many Governments with vertical ministerial structures are ill-equipped to handle problems that cut across sectoral boundaries, such as unemployment and environmental degradation. In addition, planning approaches and structures are overly rigid.

In general, the search for specific development activities that can be expected to influence population growth rates has yet to produce a sufficient number of implementable policies. Therefore, the consideration of population variables in national planning is still very incomplete; they continue to be treated as exogenous planning components. Population policies and targets are often set independently of social and economic policies and of the major socio-economic aspects of development plans. Therefore, a need exists for a broader approach to the adoption of both population and development policies.

Efforts have been made to identify the influence of changes in the size and structure of population on the major development sectors. However, though progress has been made, especially in health and education, demographic factors have not been sufficiently incorporated into overall development planning in a broad multi-disciplinary context. Conversely, the effects of sectoral development on population change have often been neglected. For example, the impact of developments in health, education and food supply on mortality reduction, and of urban housing and social welfare programmes on rural-urban migration, are still inadequately considered.

It should also be stressed that the interrelations between population, resources, environment and development differ in form and intensity among sectors and countries, and even among areas within most countries. Many of these differences depend upon the level of development and upon social and cultural considerations.

The findings on interrelations underline the importance of an integrated multi-disciplinary perspective in the formulation of long-term objectives. Therefore, a knowledge of the interrelations of population, resources, environment and development is a prerequisite of integrated planning and policy-making. In this context, population policies will have a critical role. Therefore, policy-makers and institutions will have to learn how to make use of a more integrated and systemic approach.

Population size can change only slowly and the young age structures of the developing countries will result in great demographic inertia. Because population policy will require such a long time to have an appreciable effect on population size, there is a need for planning exercises based on a long time-horizon, between 20 and 30 years.

Three demographic factors can be identified as possible areas of intervention to reduce rapid rates of national population growth: international migration; mortality; and fertility. Of these three, only fertility appears to be significantly amenable to policy intervention.

In regard to international migration, national policies for controlling these movements are not likely to make a significant contribution to the solution of problems caused by rapid population growth. The goal of reducing mortality has generally been pursued without regard to its possible impact on population growth. Consequently, policies affecting fertility are the only remaining option for reducing rates of population growth in so far as such growth is considered undesirable. In that regard, the dichotomy between family planning and general socio-economic development is no longer valid as the provision of family planning has become part of the development agenda of most countries.

Summary

The delegates to the World Population Conference in 1974 stressed the importance of understanding the linkages between population, resources, environment and development. The recognition of the importance of these linkages was, in large measure, an outgrowth of the search for development alternatives that would reduce the disparities between developed and developing countries.

Identifying more clearly the role of population within these interrelations remains a critically important task. In this respect, food and nutrition, environmental and resource problems, income distribution, health care, education, employment and old-age security are some of the issues that need to be addressed.

The growth of world food production during the 1960s and 1970s more than kept pace with population increases. For the developing countries as a whole, food production per capita increased as well. However, in many of these countries, considered individually, the

rate of growth of population exceeded the rate of growth of agricultural production, thereby aggravating their already serious undernutrition problems.

Although increasing agricultural production and, if necessary, increasing grain imports can contribute much to reducing the number of undernourished people, much can also be achieved by reducing competing demands. Given the importance of population growth as a factor in determining total food consumption, policies to slow the rate of population growth could contribute to increasing the availability and lowering the price of food to the poor.

In many countries, land maintenance leaves much to be desired; and the considerable increase in population in most developing countries has already contributed to desertification, deforestation, loss of soil fertility, waterlogging and soil salinization.

Although agricultural resources are sufficient to satisfy the nutritional needs of a much larger population, satisfaction of other wants and needs arising out of development is likely to prove more difficult. One broad class of options concerns preservation of desirable characteristics of the natural environment. The accommodation of large populations at increasing income levels may result in a steady disappearance of many important environmental amenities.

In the developing countries, poverty is the underlying cause of many of the problems arising out of the interrelations between population, resources, environment and development. Conversely, the misuse of affluence is a cause of many of the environmental and resource problems of developed countries and has serious negative impacts on the developing countries as well. Therefore, the lessening of the differentials in levels of living between and within countries is of critical importance.

The increase in carbon dioxide in the atmosphere caused by burning fossil fuels may in the future have large adverse effects on global climate. It has been estimated that a doubling of the carbon dioxide concentration in the atmosphere would increase the average global temperature by 1-4 degrees Celsius, which in turn could lead to an altering of the distribution of global rainfall.

Population growth is a major determinant of labour force growth; and as a result of past high birth rates and falling mortality rates, an unprecedented expansion of over 2.4 per cent per annum is expected to take place in the labour force from now until the end of the century. Given the already high levels of unemployment and underemployment in many developing countries, the task of providing enough productive employment fully to absorb the increments to their labour forces will be formidable.

Achieving significant socio-economic improvements in the developing countries requires rapid accumulation and effective application of human and physical capital. Growth in human capital, in turn, involves achievement of improved standards of health and nutrition, the elimination of illiteracy and the acquisition of technical and entrepreneurial skills through formal education and through work experience. Reducing rates of population growth may facilitate the achievement of these objectives.

The findings on interrelations between population, resources, environment and development underline the importance of an integrated multi-disciplinary perspective in the formulation of long-term objectives. Therefore, knowledge and understanding of the interrelations are prerequisites of integrated planning and policy-making. In this context, population policies will have a critical role.

NOTES

[1] *Report of the United Nations World Population Conference, 1974, Bucharest, 19-30 August 1974* (United Nations publication, Sales No. E.75.XIII.3), pp. 95-106.

[2] *Report of the United Nations Conference on the Human Environment, Stockholm, 5-16 June 1972* (United Nations publication, Sales No. E.73.II.A.14).

[3] See "Report of the Symposium on Population and Development", in *The Population Debate: Dimensions and Perspectives; Papers of the World Population Conference, Bucharest, 1974* (United Nations publication, Sales No. E/F/S.75.XIII.5), vol. II, annex I, pp. 677-686.

[4] See "Report of the Symposium on Population, Resources and Environment", in *The Population Debate* ..., vol. II, annex II, pp. 687-699.

[5] "The Cocoyoc Declaration", adopted by the participants in the United Nations Environment Programme/United Nations Conference on Trade and Development Symposium on Patterns of Resource Use, Environment and Development Strategies, Cocoyoc, Mexico, 8-12 October 1974.

[6] *Report of the World Food Conference, Rome, 5-16 November 1974* (United Nations publication, Sales No. E.75.II.A.3)

[7] *Report of Habitat: United Nations Conference on Human Settlements, Vancouver, 31 May-11 June 1976* (United Nations publication, Sales No. E.76.IV.7).

[8] *Primary Health Care: Report of the International Conference on Primary Health Care, Alma Ata, Union of Soviet Socialist Republics, 6-12 September 1978*, jointly sponsored by the World Health Organization and the United Nations Children's Fund (Geneva, World Health Organization, 1978), p. 17, para. 18.

[9] *Report of the United Nations Water Conference, Mar del Plata, 14-25 March 1977* (United Nations publication, Sales No. E.77.II.A.12).

[10] "Report of the United Nations Conference on Desertification", Nairobi, 29 August-9 September 1977 (A/CONF.74/36).

[11] *Interrelations: Resources, Environment, Population and Development*, proceedings of a United Nations symposium held at Stockholm, Sweden, 6-10 August 1979 (United Nations publication, Sales No. E.80.II.A.8).

[12] "Recommendations of the High-Level Group of Experts on Interrelationships between People, Resources, Environment and Development" (UNEP/GC.8/10 and UNEP/GC.9/2/Add.4).

[13] *Report of the United Nations Conference on New and Renewable Sources of Energy, Nairobi, 10-21 August 1981* (United Nations publication, Sales No. E.81.I.24).

[14] "Report of the Governing Council of the United Nations Environment Programme on its session of a special character and tenth session", *Official Records of the General Assembly, Thirty-seventh Session, Supplement No. 25* (A/37/25).

[15] *Report of the World Assembly on Aging, Vienna, 26 July-6 August 1982* (United Nations publication, Sales No. E.82.I.16), chap. VI.

[16] See *Population, Resources, Environment and Development: Proceedings of the Expert Group on Population, Resources, Environment and Development, Geneva, 25-29 April 1983* (United Nations publication, Sales No. E.84.XIII.12).

[17] See General Assembly resolution 35/36, annex.

[18] *World Population Prospects: Estimates and projections as assessed in 1982* (United Nations publication, E.83.XIII.5).

[19] United Nations, "Long-range global population projections" (ESA/P/WP.75).

[20] The more developed regions include Northern America, Japan, all regions of Europe, Australia-New Zealand and the Union of Soviet Socialist Republics. The less developed regions include all regions of Africa and Latin America, five regions of Asia (excluding Japan) and two regions of Oceania (excluding Australia-New Zealand).

[21] "Long-term trends in economic development: report of the Secretary-General" (A/37/211), 26 May 1982.

[22] International Labour Office, *Labour Force Estimates and Projections, 1950-2000*, vol. V, *World Summary*, 2nd ed. (Geneva, 1977), p. 53, table 4.

[23] Food and Agriculture Organization of the United Nations, *Agriculture: Toward 2000* (Rome, 1981), p. 129.

[24] Lester R. Brown, *Building a Sustainable Society*, A World Watch Institute Book (New York, London, W. W. Norton, 1981), chap. 4, pp. 58-59.

[25] Norman Myers, *The Sinking Ark* (Oxford, Pergamon Press, 1979), pp. 3 and 31.

[26] *The Global 2000 Report to the President: Entering the Twenty-First Century*, vol. two, *The Technical Report*, report by the Council on Environmental Quality and the United States Department of State (Washington, D.C., Government Printing Office, 1980), chap. 13, p. 227.

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[28] *The Global 2000 Report* ..., pp. 259-261.

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[30] Julian L. Simon, *The Ultimate Resource* (Princeton, N.J., Princeton University Press, 1981), chap. 20.

[31] Brown, *op. cit.*, chap. 7.

[32] *Report of the United Nations World Population Conference, 1974*, p. 19, para. 70.

[33] United Nations, *Report of the World Food Conference*, resolution IX.

[34] General Assembly resolution 35/56, annex, para. 28.

[35] United Nations Educational, Scientific and Cultural Organization, "Interrelationships between population, resources, environment and development", in *Population, Resources, Environment and Development: Proceedings of the Expert Group* ..., pp. 351-358.

[36] See Food and Agriculture Organization of the United Nations, "Meeting the agricultural needs of growing populations: the prospects to 2000", chap. VII in the present volume.

[37] *Ibid.*

[38] In this context, South-western Asia includes Afghanistan and Iran (Islamic Republic of) in Southern Asia; and Bahrain, Democratic Yemen, Iraq, Israel, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Syrian Arab Republic, Turkey, United Arab Emirates and Yemen in Western Asia.

[39] Food and Agriculture Organization of the United Nations, "Meeting the agricultural needs of growing populations ...".

[40] United Nations Conference on Trade and Development, "International economic relations and population", chap. IX in the present volume.

[41] United Nations, "Long-term trends in economic development ...".

[42] Food and Agriculture Organization of the United Nations, *Agriculture: Towards 2000.*

[43] Food and Agriculture Organization of the United Nations, "Meeting the agricultural needs of growing populations ...".

[44] See *Report of the World Conference on Agrarian Reform and Rural Development, Rome, 12-20 July 1979* (WCARRD/REP) (Rome, 1979).

[45] *Report of the United Nations World Population Conference, 1974*, p. 8, para. 14 (*j*).

[46] *Ibid*, p. 18, para. 70.

[47] General Assembly resolution 35/56, annex, para. 32.

[48] *Report of the United Nations World Population Conference, 1974*, p. 8, para. 14 (*j*).

[49] *Ibid.*, p. 15, para. 46 (*c*).

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[52] Economic Commission for Latin America, "Development, population, environment and life-styles in Latin America", chap. XVII in the present volume.

[53] Economic Commission for Africa, "Food production in relation to population growth in Africa", chap. XVIII in the present volume.

[54] Economic Commission for Latin America, "Development, population, environment and life-styles in Latin America".

[55] Revelle, *loc. cit.*

[56] United Nations Industrial Development Organization, "Industrial carrying capacity: a second study", chap. VIII in the present volume.

[57] Economic Commission for Latin America, "Development, population, environment and life-styles in Latin America".

[58] United Nations Industrial Development Organization, "Industrial carrying capacity ...".

[59] Gerry Rodgers, "Relation of population growth to poverty and inequality of income", chap. XIV in the present volume.

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[61] *Ibid.*, p. 12, para. 32(*c*).

[62] International Labour Office, *Labour Force Estimates and Projections, 1950-2000*, vol. V, *World Summary*.

[63] Economic Commission for Latin America, "Development, population, environment and life-styles in Latin America".

[64] United Nations Industrial Development Organization, "Industrial carrying capacity ...".

[65] Economic Commission for Europe, "Aspects of population and development in the region of the Economic Commission for Europe", chap. XVI in the present volume.

[66] National Audubon Society, "Population, environment and human needs", in *Population, Resources, Development and Environment: Proceedings of the Expert Group* ..., pp. 293-300.

VII. MEETING THE AGRICULTURAL NEEDS OF GROWING POPULATIONS: THE PROSPECTS TO 2000*

The purpose of the Food and Agriculture Organization of the United Nations (FAO) is to promote agricultural and rural development and to contribute to the improvement of people's nutritional levels. A basic concern of FAO is the frailty of the balance between population and resources. The fragile natural conditions that exist in certain countries and the lack of agricultural input, including technology, that prevails in many countries severely limit the potential for agricultural and rural development.

The first section of this chapter broadly delineates the physical limits of land to support human populations according to pressure on resources, as ranked in a recent project.[1] FAO has also analysed[2] the challenges that world agriculture faces in accommodating population and economic growth to the end of the century, under alternative strategies. The next section of the chapter takes off from that analysis to examine the impact that an abatement of population growth could have by 2000 on resources in general and on the performance of the agricultural sector of developing countries in particular. High performance of agriculture in relation to the level of population pressure is a necessary but not a sufficient condition for improving people's nutrition. The poverty of persons who are unable to produce or to buy their food can offset the gains from agricultural growth and lead to increases in the numbers of undernourished. In the third section, poverty is linked to malnutrition. The last section deals with one specific aspect of the relation between distribution and undernutrition. Intuition alone suffices to suggest that, should the incomes of the poor increase through redistribution, the incidence of hunger will decline. On the other hand, little attention has been paid to the symmetrical proposition that rapid increases in the incomes of the non-poor might also contribute to increasing the numbers of undernourished. In this section, certain issues of the "food/feed competition", which deserve further attention, are highlighted.

A. Pressure of population on resources: supporting capacities of lands

Greatly varying results have predictably been obtained in estimating the cultivable land and its capacity to support human populations. The definition of arable land crucially depends upon the level of technology, the levels of input use in agriculture and the specific output mix. The supporting capacity of a land area, on the other hand, depends upon the nutritional intake of its human population, upon the form in which it is consumed and possibly upon various other institutional and socio-economic factors. Lastly, the level of aggregration at which supporting capacity is considered can make a vast difference in the results reached.

The FAO work on the potential population supporting capacity of lands (also referred to as the "carrying-capacity project") has the following significant characteristics: the improved soil and climatic data from which it begins; and the explicit specification of the assumptions made about technology, input and nutritional-intake requirements. By superimposing a climatic inventory of a region on its soil maps, an inventory of the length of the growing period and soil of different lands is obtained.[3] Next, the crop-growing potentials and yields of each inventoried land unit are evaluated by matching the requirements of each of 18 most important crops with the land attributes. Thus, the food production potential of lands, expressed in calories, is obtained. Then, the physical food production potential of lands is converted into estimates of the population-carrying capacity of each country by applying the standard nutritional requirement per capita in daily calories. Lastly, the existing population is compared with the supporting capacity of the land in order to determine food-deficit and food-surplus areas.

Meaning and measurement of supporting capacity

Data for both sides that enter into the calculations of the population-supporting capacity of lands — the "supply" side and the "demand" side — were derived under three assumptions involving three distinct levels of input/technology.[4] All cultivable land is devoted to food crops for final use (on the supply side) and all populations are fed at their standard nutritional requirement per capita (on the demand side). Such assumptions compensate for their simplicity by providing a strong standard against which actual situations can be gauged. The resulting index of supporting capacity (the ratio of supporting capacity to population) is an index of the pressure on resources. As such, it is not intended to indicate the "optimum" pressure but merely to set the upper limits of the capacity of land to support human populations. Within this framework, the simplifying assumptions involved should not impair the usefulness of the resulting index, in the same way that the abstraction of the idea of "zero temperature" does not render the thermometer useless.

* Prepared by the secretariat of the Food and Agriculture Organization of the United Nations (FAO). The views and opinions expressed in this paper, however, do not necessarily reflect those of the FAO governing bodies and may not be shared by some of the FAO member countries.

The results of the study on supporting capacity are presented at several levels of aggregation, corresponding to the entire continuum of the application of the assumption that population follows food and the converse. As a first approximation, the results are presented for the developing countries as a whole and at the regional level: Africa; Central America; South America; South-eastern Asia; and South-western Asia.[5] This approximation allows for unrestricted movement of surplus food production potential and/or population within each region. The results, shown in figure I, contrast the actual payload for each region with the potential supporting-capacity payload, both expressed as persons per hectare, for the years 1975 and 2000. The three levels of input/technology are shown separately.

South-western Asia is clearly shown to be a "critical" region. In 1975, the density of population, 0.20 person per hectare, exceeded the potential population-carrying capacity of 0.16 person per hectare at the low input/technology level. Barring interregional net imports, at least intermediate levels of input/technology are necessary to carry the population as of 1975, even under the extreme assumption of having devoted all land to food-crop production. According to the medium variant of the United Nations population projections as assessed in 1978, the situation in this region will become more critical by the year 2000. By that time, in order for the potential carrying capacity to exceed the projected population, it would be necessary to attain a high level of input/technology. The situation in the other regions and the developing countries as a whole (excluding China) is much better: the "margin of safety" by which supporting capacity exceeds actual population per hectare ranges from 1.1 (South-eastern Asia in 1975) to 6.0 (South America in 1975) for a low level of input/technology; and it has a considerably broader range for the year 2000 and with better input/technology use.

The results of the supporting capacity at a lower level of aggregation presupposes unrestricted movement of surplus food production potential and/or population within each country. The standard of comparison is national self-sufficiency for each developing country rather than regional self-sufficiency for the developing countries as a whole. Table 1 gives the results in terms of the number of countries and millions of population in each region that become "in deficit", i.e., exceed the supporting capacity of the countries. If the safety-valve of intraregional trade is closed, the situation in 2000 will become critical at low input/technology levels in 65 developing countries, more than one half of the total number studied. Even with high input/technology levels, 19 countries continue to remain in deficit; many of these, however, are small island countries or areas or are petroleum exporters. The population of deficit countries ranges from 47 million to 441 million, respectively, for the high and low input/technology alternatives.

These findings, although the results of a first approximation study, clearly identify a major problem area in the complex population/food equation, namely, national land-resource endowment.

TABLE 1. NUMBER OF COUNTRIES AND POPULATIONS EXCEEDING SUPPORTING CAPACITY IN 2000, BY REGION AND LEVEL OF INPUT/TECHNOLOGY

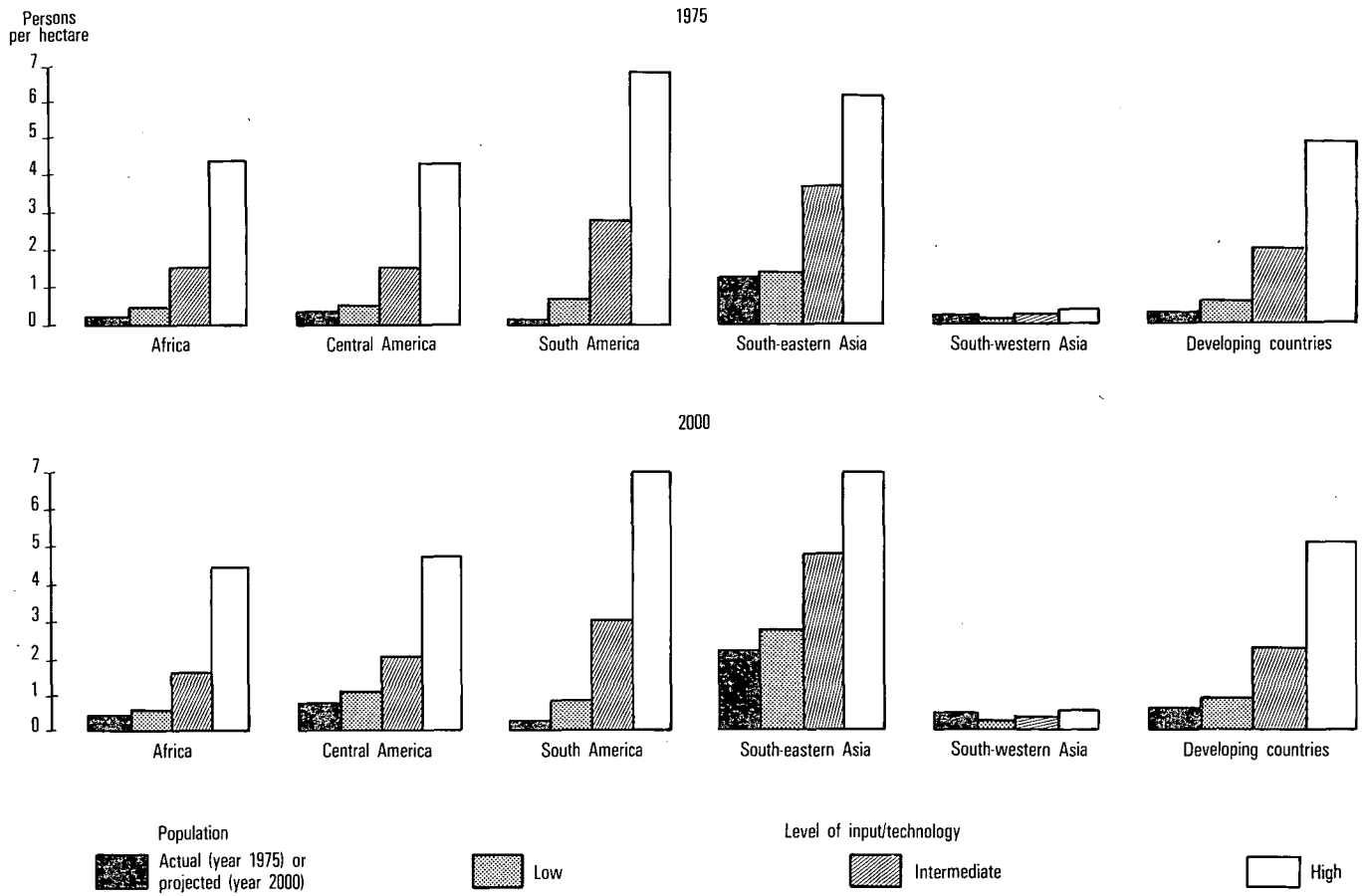
Deficit situations	*Africa*	*Central America*[a]	*South America*	*South-eastern Asia*[b]	*South-western Asia*[c]	*Total*
Countries (number)						
Total	51	21	13	16	16	117
Countries in deficit at various input/technology levels:						
Low	30	14	—	6	15	65
Intermediate	12	7	—	2	15	36
High	4	2	—	1	12	19
Population (millions)						
Total	828.5	215.2	392.2	1 937.1	264.7	3 638.1
Population in excess of supporting capacity at various input/technology levels:						
Low	200.9	18.0	—	70.7	107.6	447.2
Intermediate	43.3	6.9	—	7.7	78.5	136.4
High	1.8	0.5	—	3.1	41.9	47.3
Land area (millions of hectares)						
Total	2 878.1	271.6	1 770.2	897.6	677.4	6 494.9

[a] Including Antigua, Bahamas, Barbados, Cuba, Dominican Republic, Guadeloupe, Haiti, Jamaica, Martinique, Netherlands Antilles, Puerto Rico, Saint Lucia, and Trinidad and Tobago in the Caribbean subregion; and Belize, Costa Rica, El Salvador, Guatemala, Honduras, Mexico, Nicaragua and Panama in Central America.

[b] Including Brunei Darussalam, Burma, Democratic Kampuchea, Indonesia, Lao People's Democratic Republic, Malaysia, Philippines, Singapore, Thailand and Viet Nam in South-eastern Asia; and Bangladesh, Bhutan, India, Nepal, Pakistan and Sri Lanka in Southern Asia.

[c] Including Afghanistan and Iran (Islamic Republic of) in Southern Asia; and Bahrain, Democratic Yemen, Iraq, Israel, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Syrian Arab Republic, Turkey, United Arab Emirates and Yemen in Western Asia.

Figure I. Actual payload of population and potential population-supporting capacities in five less developed regions, 1975 and 2000



Note: For names of countries in Central America, South-eastern Asia and South-western Asia, see table 1.

Policy implications

In critical areas, many social, economic and institutional policies, within the context of all human, national and material resources, undoubtedly must be applied in order to achieve remedial measures. Quantification of the physical land potential is begun in this study, and emphasis is placed on the need for this data base in considering viable development alternatives. Use of the results of the study on the population-supporting capacity of lands to formulate precise policy prescriptions is limited by certain assumptions that were made as well as by the objective of producing rank-order indices of the pressure on land. Nevertheless, some unmistakable broad trends that emerge from the analysis can lead to policy conclusions relating to international trade, technology and migration.

There is a stark contrast between figure I, which shows almost no deficit situations, and table 1, which reveals the widespread inability of some countries to live within the bounds of their supporting capacities. The difference is accounted for by interregional trade. In South-eastern Asia, for example, which has a safe margin of excess supporting capacities at the interregional trade level, 6 of the 16 countries will be in deficit if net imports are ruled out. Africa is an even more striking case: although the region has a comfortable margin of excess capacity under all technological alternatives, in 2000 it will have 30 of its 51 countries in deficit and almost one third of its total population in excess of the capacity of the land. The implication is that the remaining 21 countries are responsible for the surplus capacity at the regional level.

Both figure I and table 1 refer exclusively to developing countries. If the developed countries were included in the trade framework, there would be a much greater excess of supporting capacity at the world level. In fact, given the distribution and growth of both population and resources, it is likely that the real margin of safety for food requirements lies with the developed countries not included in the analysis, which are already using high levels of input/technology.

When one studies the safety margin for human nutrition at the country level (table 1), the role of input/technology becomes evident. The population in excess of carrying capacities increases 10-fold, to 441 million, as one goes from high to low input/technology. Thus, the real reserve potential lies not so much in idle land as in raising technology levels.

Because technology changes the supporting capacity of lands, it appears to be the major factor determining the dynamics of human settlements. The huge rural-urban migratory movements that have become a primary feature of development during the past 25 years are, to a large extent, correlates of the "transportation revolution", which made it possible to deliver food at low cost to massive concentrations of population. In other words, the new transportation technology, the internal combustion engine with a huge infrastructure in railways, roads, airways and water transport, increased the supporting capacity of the land of urban centres to accommodate unprecedented numbers of migrants from rural areas.

Quantum technological change applied to the agriculturally unutilized land reserves of the world could increase the carrying capacity of land and provide the springboard for a new rural-rural migration movement. Determination of the supporting capacity at alternative assumptions of input/technology can provide an indication of the agro-ecological zones that may become the future poles of rural-rural migration.

The land of three countries and of all Africa is classified according to length of growing period in table 2. An interesting feature is the high ratio of potential to current population (as indicated by the high values of the supporting-capacity index) that exists at the upper end of the range of periods. Most of the remaining agriculturally unutilized land reserves of the world are in this ecological zone, which contains the high rainfall tropics where natural vegetation is high climax forest. Despite the substantial variation within this zone with respect to soil suitability for permanent cultivation, most lands could provide attractive production levels if they were well managed. The year-round opportunities for growth provided by adequate temperatures and moisture availability are the basis for the high production potential. Correspondingly, these areas have generally high potential population density per hectare, compared with the actual density, while in the middle-range, savannah-type lands, the current populations are close to the potential density.

These lands, of course, are not free of problems; and if they are to become important migration poles, there must be intensive application of technological and managerial input to overcome the obstacles. New institutional approaches will also be required in order to develop the economically and socially effective organizational forms that support rural-rural migration. Mounting population pressure may well provide the catalyst for such changes. If so, a Boserup scenario[6] will develop, with population growth as the exogenous variable inducing the technological change that alters the carrying capacity of lands and thus extends rural-rural migration.

B. Pressure of population on resources: performance of agriculture

In monitoring the world food situation, FAO periodically evaluates the record of agriculture and makes projections of observed trends. When the continuation of latent trends appears untenable, it becomes especially important to take stock and to present clearly defined policy alternatives. Such was the situation in the late 1970s, which gave rise to the FAO assessment of world food and agriculture prospects.[7]

From 1966 to 1980, agricultural production in 90 developing countries[8] grew at a healthy 3.0 per cent per annum, thus exceeding the 2.5 per cent annual growth rate of the population of the developing countries.[9] Incomes per capita also rose during the same period,

TABLE 2. CURRENT POPULATION AND POTENTIAL POPULATION-SUPPORTING CAPACITIES, BY LENGTH OF GROWING PERIOD, AFRICA

Length of growing period (days)	Country A				Country B				Country C				Total Africa			
	S-C index	Density		Percentage of total land	S-C index	Density		Percentage of total land	S-C index	Density		Percentage of total land	S-C index	Density		Percentage of total land
		Actual	Potential			Actual	Potential			Actual	Potential			Actual	Potential	
Warm tropics																
330-365	-	-	-	-	15.45	0.08	1.21	1.95	5.92	0.29	1.69	58.38	6.17	0.26	1.62	11.02
300-329	-	-	-	-	1.88	0.65	1.22	1.09	5.39	0.15	0.80	8.23	6.48	0.23	1.47	3.63
270-299	-	-	-	-	2.29	0.36	0.82	25.43	4.47	0.14	0.63	14.81	3.93	0.23	0.91	6.32
240-269	2.21	0.25	0.56	1.79	0.76	0.87	0.66	20.00	7.08	0.10	0.68	14.83	4.71	0.19	0.89	6.61
210-239	1.75	0.26	0.45	1.82	1.59	0.35	0.56	20.28	7.19	0.10	0.69	3.12	4.10	0.16	0.64	0.98
180-209	1.98	0.25	0.48	8.76	1.09	0.38	0.41	13.25	5.82	0.13	0.78	0.63	2.90	0.16	0.47	11.18
150-179	1.51	0.28	0.42	4.58	0.28	1.11	0.32	6.81	-	-	-	-	2.78	0.17	0.47	8.66
120-149	1.00	0.22	0.22	5.06	0.43	0.41	0.18	6.71	-	-	-	-	0.68	0.22	0.15	5.65
90-119	1.07	0.22	0.24	6.59	0.44	0.24	0.10	4.07	-	-	-	-	0.59	0.18	0.10	3.56
75-89	0.75	0.22	0.17	10.43	[a]	[a]	0.01	0.41	-	-	-	-	0.49	0.13	0.06	2.89
1-74	0.09	0.16	0.02	37.61	-	-	-	-	-	-	-	-	0.53	0.07	0.03	18.30
0	0.01	0.17	0.00	23.36	-	-	-	-	-	-	-	-	0.01	0.03	0.00	8.95
Average	0.68	0.19	0.13	(100.00)	1.15	0.51	0.58	(100.00)	5.84	0.22	1.27	(100.00)	3.44	0.15	0.50	(100.00)
Cool tropics																
330-365	0.14	0.28	0.04	2.42	0.05	0.82	0.04	9.31	0.16	0.14	0.02	47.72	0.09	0.36	0.03	4.74
300-329	0.42	0.28	0.12	2.22	0.61	0.20	0.12	1.25	0.80	0.12	0.10	13.46	0.27	0.48	0.13	3.36
270-299	1.19	0.19	0.23	14.94	0.32	0.53	0.17	4.65	0.68	0.12	0.08	14.83	0.39	0.44	0.17	11.48
240-269	0.67	0.36	0.24	15.84	0.02	1.14	0.02	7.83	-	-	-	-	0.59	0.45	0.27	16.63
210-239	0.73	0.35	0.26	15.85	0.01	3.77	0.02	8.06	3.61	0.07	0.25	23.99	0.90	0.29	0.27	15.08
180-209	0.83	0.28	0.23	16.91	0.07	2.04	0.15	10.33	-	-	-	-	0.84	0.27	0.23	13.81
150-179	0.76	0.29	0.22	8.25	0.14	1.32	0.18	35.07	-	-	-	-	0.59	0.39	0.23	6.63
120-149	0.43	0.22	0.10	7.85	0.13	0.81	0.10	11.81	-	-	-	-	0.46	0.30	0.14	6.10
90-119	0.07	0.23	0.02	8.31	0.05	0.30	0.01	8.51	-	-	-	-	0.10	0.22	0.02	7.41
75-89	0.07	0.32	0.02	6.51	[a]	[a]	0.01	3.18	-	-	-	-	0.08	0.28	0.02	4.01
1-74	0.03	0.19	0.01	0.90	-	-	-	-	-	-	-	-	0.28	0.17	0.05	2.30
0	-	-	-	-	-	-	-	-	-	-	-	-	0.01	0.00	0.04	4.28
Average	0.65	0.28	0.18	(100.00)	0.08	1.29	0.11	(100.00)	0.82	0.12	0.10	(100.00)	0.54	0.32	0.17	(100.00)
Overall average	0.62	0.23	0.14	-	0.99	0.56	0.55	-	5.78	0.22	1.25	-	2.75	0.14	0.39	-

NOTES: Density is expressed in terms of current (actual) population or potential population divided by area (hectares). Supporting-capacity index (S-C index) is defined as potential divided by current population.

[a] Current population zero.

roughly doubling in 15 years. As a result, apparent consumption of agricultural products grew more rapidly than production, at an annual rate of 3.3 per cent. The difference was fuelled by rapidly increasing food and agricultural imports. Developing countries increased their agricultural imports at a rate of 6.8 per cent per annum, compared with a 2.9 per cent increase in their exports. As a result, the balance of agricultural trade deteriorated.

Neither progress nor retrogression was uniform. In no fewer than one half of the 90 countries, growth in agriculture failed to keep up with population growth. In the poorer (low-income) developing countries, production growth at 2.5 per cent barely kept up with the population growth of 2.4 per cent per annum. The African region, in particular, registered the highest (and increasing) population growth rates in combination with rapidly falling production per capita.

When one extrapolates trends into the next 20 years, some untenable results are obtained. Even with appropriate bounds to the trend projections, it is not surprising to find that the problems of certain countries would be magnified by 2000. For example, the low-income countries, with two thirds of the population of the 90 countries, would continue to have low calorie supplies per capita — about 2,170, compared with 2,080 in 1980 — while the middle-income countries could reach a respectable level of 2,700 calories. Moreover, to achieve even this meagre improvement, the low-income countries would have to increase their net cereal imports from the developed countries. Thus, net imports of cereals would increase sevenfold, while the trade balance that represented 6 per cent of total production during 1966-1968 would amount to 21 per cent of the cereal production of the developing countries in 2000. In these circumstances, the number of undernourished people could increase further in these 90 developing countries, from 435 million in the mid-1970s to some 600 million. Indeed, the results of a continuation of current trends are definitely alarming, not so much because the developing countries as a whole are shown to continue on a slow path of change but because the most populous and poorest developing countries would be most affected. Many of them would be condemned to stagnation or, even worse, to deteriorating levels of living.

An alternative future

FAO has formulated alternative scenarios for the development of world food and agriculture up to the year 2000. Given the projections of population and the projections of growth of gross domestic product (GDP) set forth in the new International Development Strategy, the demand for agricultural output is estimated for 90 developing countries (excluding China), covering 28 commodities. On the basis of the demand projections, feasible rates of growth of production are worked out, again at the level of country and commodity disaggregation, based on the objective of improving agricultural self-sufficiency and subject to the natural, institutional and organizational constraints in each country.

The model given in *Agriculture: Toward 2000* can accommodate alternative assumptions with regard to a number of variables that move the world food economy. The impact of certain changes in assumptions mainly on population and income growth are illustrated here.

The United Nations medium-variant projections for the year 2000 are slightly lower in the 1980 assessment than in the 1978 assessment: 1.6 per cent for the world as a whole and 2.2 per cent for the developing countries (excluding China), as compared with 1.7 and 2.4 per cent per annum, respectively.[10]

Two different states of world population can be described by comparing the medium with the low population variant. According to the 1980 assessment, the world population in 2000 will be lower by 282 million (or 4.6 per cent), declining from 6,119 million to 5,837 million. The population in the 90 developing countries will be lower by 201 million (or 5.8 per cent), falling from 3,477 million to 3,276 million. These differences become more significant at the regional level: in 2000, the population of Africa would be 87 million (or 12.6 per cent) lower than under the medium variant. In fact, one third of the 90 countries (of which 28 countries are in Africa) would have population reductions of more than 10 per cent.

The question is how the two different levels of world population would reflect on the system of the world food economy. One set of assumptions that can be readily incorporated in the model would have population growth differentials trigger changes in demand and, to a lesser extent, in production. Change in demand will depend largely upon what happens to incomes per capita following different rates of growth of population. Theorizing a priori about the relationship between population and income growth rates is rather weak. A convenient assumption, and one that is consistent with the income projections of the International Development Strategy that are directed towards narrowing the gap between the rich and the poor by the year 2000, is to consider incomes per capita to remain unchanged under both population projection variants. That assumption would imply for the low variant a reduction in the rate of growth of GDP and a roughly proportional reduction in total demand.

Production can change as labour force changes following alternative population projections. This effect on production can be safely assumed away in a 20-year modelling exercise, because the addition to the labour force from people born after 1980 will be rather small. A more significant adjustment in production is likely to reflect the lower domestic (and possibly also export) demand that follows lower population growth rates. Alternative assumptions can be made on how changes in demand are transmitted to production levels in a system that is open to world trade. In this specific case, certain trade balances are considered to be constraints and the logic of production adjustments is based on a measure of population pressure on resources.

Prospects of agriculture with low population pressure

For a number of conceivable reasons, including "food security" considerations and foreign-exchange limitations, developing countries can be viewed as striving to achieve a certain self-sufficiency ratio in agriculture — but not always succeeding. Above 100 per cent self-sufficiency, countries become net exporters of agricultural commodities; otherwise, they are net importers. Should population growth abate, countries could respond with lower agricultural production subject to limitations of international trade. If population in 2000, for example, is lower than the "reference projection", an importing country could not, by the fact of lower demand, become an agricultural exporter if export markets were saturated. The "reference" export surpluses, in other words, should not be exceeded lest international trade does not balance. Notwithstanding the sometimes strong dampening effects of these constraints imposed by the market, countries have a certain latitude within these trade bounds to adjust their production to cover the projected slow-down in the rate of growth of demand — reflecting population growth lower than the "reference" rate.

Hypothetically, the adjustment of production can be linked to the resource constraints of a country. The more limited the agricultural resources, the greater will be the strain of meeting the agricultural self-sufficiency requirements of a growing population. For such countries, a decrease in population growth may offer the opportunity to relieve pressure on agriculture by lowering the target for agricultural output on a scale close to the decline in demand.[11] At the opposite extreme, countries with ample resource endowments are likely to maintain their production levels. Thus, lower domestic demand would mean an improved agricultural trade balance, with an ensuing release of foreign exchange (through lower import demand or increased exports). An operational criterion can be formulated to distinguish among alternatives of production behaviour based on the severity of resource constraints.

In the FAO study,[12] the resource constraints that can be readily measured refer to the three main sources of agricultural output (i.e., production = arable land × cropping intensity × yield). One might consider "arable land" a proxy for the physical resources available to agriculture, and "yield" and "cropping intensity" proxies for the technological and managerial resources. Moreover, based on these sources of growth, an index can be constructed to measure pressure on resources. The index involves the actual levels of resource utilization in 1975 with respect to arable land, yields and cropping intensity, on the one hand, and the "potential" levels of resource utilization as identified for each country in 2000, on the other hand. The ratio of the two, actual 1975 over potential 2000, gives an index of pressure for each individual resource; and the combination of the indices of arable land, yields and cropping intensity yields a total index of resource scarcity. Once the scarcity index of a country has been calculated, the elasticity of production with respect to demand is set at the square of the scarcity index. Given the change in demand and the elasticity, the response of production to population declines, always subject to the constraints on the international trade balance, is readily determined.[13]

The values of the indices of pressure on resources used to classify the countries are: 0-40, low scarcity; 40-70, medium scarcity; 70-90, high scarcity; and 90-100, very high scarcity. Table 3 indicates that, although many countries are running out of land, the combination of increasing yields and cropping intensity still offers a considerable margin of safety. Almost all countries of East and South Asia and the Middle East are marked by high scarcity, particularly with respect to land (10 out of 15 and 12 out of 14, respectively, have very high land scarcity) but also to a lesser degree with respect to total resources. The countries of Latin America, on the other hand, followed by the countries of Africa, still have relatively ample land resources and generally low indices of total resource scarcity.

TABLE 3. PRESSURE ON RESOURCES: CLASSIFICATION OF COUNTRIES, BY REGION, INTO RESOURCE-SCARCITY CLASSES

Resource-scarcity class	*Number of countries*	*Africa*	*Latin America*	*East and South Asia*[a]	*Middle East*[b]
	A. *Total resources index*				
Low scarcity	9	6	3	—	—
Medium scarcity	33	17	12	2	2
High scarcity	45	14	9	11	11
Very high scarcity	3	—	—	2	1
TOTAL	90	37	24	15	14
	B. *Arable land index*				
Low scarcity	19	9	10	—	—
Medium scarcity	9	2	4	2	1
High scarcity	18	8	6	3	1
Very high scarcity	44	18	4	10	12
TOTAL	90	37	24	15	14

[a] Excluding China and countries of Southern and Western Asia included in Middle East.
[b] Including Egypt, Libyan Arab Jamahiriya and Sudan in Northern Africa; Afghanistan and Iran (Islamic Republic of) in Southern Asia; and Cyprus, Democratic Yemen, Iraq, Jordan, Lebanon, Saudi Arabia, Syrian Arab Republic, Turkey and Yemen in Western Asia.

Table 4 shows the main results of the evaluation for total agriculture. For easy reference, the results are compared with the historical experience of the period 1966-1980. The medium population projection for 2000 implies an annual rate of growth in agricultural demand slightly above the rate registered for the period 1966-1980, although this is not true for all regions. In the low-population scenario, on the other hand, the rates of growth in demand fall to levels below the historical period, except in Africa. The feasible rates of production that correspond to the two demand projections are almost universally above the rates observed during 1966-1980. More specifically, in comparing the medium population variant with that for low population, an overall decline in the population growth rate from an annual rate of 2.2 to 1.9 per cent to the end of the century would lead to a decline in demand from 3.4 to 3.1 per cent per annum and to a smaller decrease in production, from 3.5 to 3.2 per cent. Correspondingly, the self-sufficiency ratio of the developing countries as a group would rise slightly from 104.5 to 105.5. These results are more pronounced for Africa, where a 0.6 reduction in demand growth (from 4.3 to 3.7 per cent) would be followed by a 0.4 decrease in production growth (from 4.2 to 3.8 per cent), raising the overall self-sufficiency from 97.6 to 102.2 and thus achieving a positive agricultural trade balance.

Table 5 presents the results of projections for the medium- and low-population variants in groups of countries classified according to their scarcity indices. Lastly, table 6 breaks down the growth of agricultural output to the year 2000 into three components: the contribution of the increase in arable land; yields; and cropping intensity, again by scarcity classification. Yield increases will predominate among the sources of growth over the next 20 years, in most cases accounting for half or more of the additional output. Individual country situations can differ widely: in Egypt, only 2 per cent of production growth is based on arable land expansion; in Brazil, however, 74 per cent of output growth is accounted for by land extension.

Conclusions and policy implications

To illustrate the impact of a lower population growth rate[14] on the world food economy in the year 2000, the FAO model was run with alternative population assumptions. Agriculture in the developing countries will have to grow at historically unprecedented levels (from 3.3 to 3.5 per cent per annum, depending upon population assumptions) to meet the challenge of population and income growth by the end of the century. Such growth rates are feasible with substantial input commitment. With more moderate population growth, however, a considerable margin of safety is achieved with regard to the mobilization of resources for agricultural growth. Such a safety margin is probably necessary for a sector that otherwise needs to perform consistently at top capacity and produce at unprecedented levels, despite the periodic vagaries imposed by weather or human institutions. More specifically, the situation of world agriculture in 2000 with medium and low population levels can be summarized as follows:

(*a*) The deceleration in population growth between the medium and low variants of the United Nations assessment in 1980 amounts to a population projection for 90 developing countries in the year 2000 that is 5.8 per cent lower than the medium-variant projection. This population will still be 1.0 billion, or 47 per cent higher than the base-year (1980) population;

(*b*) The decrease in population pressure between the two variants results in a slight decrease in the growth rate of demand, from 3.4 to 3.1 per cent per annum. Still, this slight change is significant because it brings the demand growth rates to levels below those for the period 1966-1980 (except in Africa);

(*c*) The corresponding annual deceleration in production growth rates is from 3.5 to 3.2 per cent. Either rate is higher than the rate of 3.0 per cent during the period 1966-1980. As a result, the massive inflow of resources that world agriculture will require to the end of the century is only abated — not stemmed;

(*d*) The total arable land area in the 90 developing countries will still have to be expanded by 137 million hectares, compared with 148 million under the medium variant. Of this total, 39 million (compared with 41 million) will have to be added to the existing 105 million hectares of irrigated land. Average cropping intensity will have to be raised to 85 per cent and average cereal yields to 1.83 tons per hectare (as against 86 per cent and 1.89 tons, respectively);

(*e*) Fertilizer requirements will still increase fourfold to reach 106 kilogrammes per hectare (compared with 112 kilogrammes under the medium scenario). Total gross investment will increase threefold to reach a level of $117 billion (1975 dollars) per annum, compared with $125 billion per annum.

In conclusion, "the end of the population explosion" — if this result is what is reflected in the low variant of the United Nations projections — should not foster any false hopes that the task ahead for world agriculture has become less difficult. It has only become slightly more manageable.

C. Evaluation of assessment of undernutrition

Considering the undernourished to be a subset of the poor is analytically safe;[15] and discussing undernutrition, rather than poverty, considerably simplifies both policy and measurement issues. The policy aspects of dealing with poverty have certain normative connotations that make measurement arbitrary. If society feels that people should not be permitted to die of exposure, it must define the minimum shelter necessary to maintain life. If education is considered one of the basic needs, the content of educational deprivation must be set with reference to a minimum standard of schooling. If "relative deprivation" becomes the content of poverty, the "conditions" of deprivation (if not also the "feelings" of deprivation) must be given an empirical counterpart. The concept of food-intake undernutrition, on

TABLE 4. GROWTH RATES OF POPULATION, DEMAND AND PRODUCTION; AND SELF-SUFFICIENCY RATIOS FOR TOTAL AGRICULTURE: OBSERVED RATES AND PROJECTIONS TO 2000 FOR MEDIUM- AND LOW-POPULATION SCENARIOS, BY COUNTRY GROUP

(Percentage)

Country group	1966-1980			Self-sufficiency ratio, 1978-1980	Population projections			Scenario projections, 1978-1980–2000				Self-sufficiency ratios, 2000	
					1978 assessment	1980 assessment		Demand		Production			
	Population	Demand	Production		Medium	Medium	Low	Medium	Low	Medium	Low	Medium	Low
90 developing countries	2.5	3.3	3.0	102.3	2.4	2.2	1.9	3.4	3.1	3.5	3.2	104.5	105.5
Africa	2.9	3.0	1.7	98.1	3.0	3.1	2.5	4.3	3.7	4.2	3.8	97.6	102.2
Latin America	2.6	3.3	3.1	113.7	2.6	2.2	2.0	3.4	3.2	3.6	3.4	117.7	117.7
East and South Asia[a]	2.3	3.1	3.2	102.4	2.1	1.9	1.7	3.0	2.8	3.1	3.0	104.4	104.5
Middle East[b]	2.7	4.4	3.2	84.4	2.6	2.6	2.4	3.3	3.1	3.5	3.3	87.8	88.6
Low-income countries	2.3	2.7	2.5	99.0	2.3	2.1	1.8	3.3	3.0	3.4	3.2	101.7	102.9
Middle-income countries	2.7	3.8	3.4	105.6	2.6	2.5	2.2	3.4	3.2	3.5	3.3	107.3	107.9
Other developing countries (including China)	1.8	3.5	3.3	96.9	c	c	c	c	c	c	c	c	c
All developing countries	2.2	3.4	3.1	100.4	c	c	c	c	c	c	c	c	c
Developed countries	0.8	1.7	2.0	99.8	c	c	c	c	c	c	c	c	c
Market economies	0.8	1.5	2.1	102.4	c	c	c	c	c	c	c	c	c
Centrally planned economies	0.9	2.1	1.7	94.8	c	c	c	c	c	c	c	c	c

NOTE: All past growth rates were derived from statistically fitted exponential trend equations. Future growth rates were measured from actual data for the average of the period 1978-1980.

[a] See footnote *a* to table 3.
[b] See footnote *b* to table 3.
[c] Not applicable in this chapter and data not calculated.

TABLE 5. GROWTH RATES OF POPULATION, DEMAND AND PRODUCTION; AND SELF-SUFFICIENCY RATIOS: PROJECTIONS TO 2000 FOR COUNTRIES GROUPED BY SCARCITY INDEX UNDER MEDIUM- AND LOW-POPULATION VARIANTS

Scarcity index	Number of countries	Percentage of total population	Growth rates, 1980-2000 (percentage)						Self-sufficiency ratios, 2000 (percentage)	
			Population		Demand		Production			
			Medium	Low	Medium	Low	Medium	Low	Medium	Low
Overall scarcity										
Low scarcity	9	3	2.9	2.3	4.6	4.1	4.3	4.1	94.4	101.3
Medium scarcity	33	22	2.7	2.2	3.8	3.5	4.0	3.7	112.3	114.9
High scarcity	45	71	2.1	1.9	3.2	3.0	3.3	3.1	103.2	103.4
Very high scarcity	3	4	1.9	1.7	2.5	2.3	2.6	2.4	85.1	85.1
Land scarcity										
Low scarcity	19	7	2.7	2.3	3.9	3.6	3.8	3.6	102.8	106.2
Medium scarcity	9	9	2.4	2.1	3.7	3.5	4.0	3.8	122.3	123.5
High scarcity	18	18	2.1	1.8	3.1	2.9	3.3	3.1	116.5	117.1
Very high scarcity	44	66	2.2	1.9	3.3	3.0	3.3	3.1	97.1	97.7

TABLE 6. SOURCES OF GROWTH OF AGRICULTURAL OUTPUT, BY RESOURCE-SCARCITY CLASS, 1980-2000

(Percentage)

Sources of growth	Total resources index				Arable land index			
	Low scarcity	Medium scarcity	High scarcity	Very high Scarcity	Low scarcity	Medium scarcity	High scarcity	Very high scarcity
Arable land	31	43	12	4	37	61	32	8
Yield	51	41	71	60	45	30	49	74
Cropping intensity	18	16	17	36	18	9	19	18
TOTAL	100	100	100	100	100	100	100	100

the other hand, is based on biological factors that make it less arbitrary. It commonly involves a critical limit of nutritional intake below which a person will almost certainly be undernourished.

This point, however, is where the simplification ends and the complication begins. Defining a "critical limit" implies that nutritional requirements can be determined unambiguously — an idea to which some take vigorous exception. The rather clear concept of nutritional intake turns out to be difficult to measure in empirically significant situations. Because of the lack of data on the joint distribution of calorie intake and requirements, it was necessary to develop a complicated methodology for this purpose. The rather detailed description of the FAO approach to estimating the extent of undernutrition serves to emphasize the caveats of the operation and to suggest areas of improvement in methodology and in data collection.

The approach

A report prepared jointly by FAO and the World Health Organization[16] (WHO) in 1973 defines recommended daily energy intakes, called "requirements", for its population of "reference" men and women. These requirements are the averages necessary to support moderate activity in the population of reference adults. The concept of such "fixed" energy requirements has been challenged, the pitfalls of the "average" requirements have been emphasized and the usefulness of the construct for measuring undernutrition has been questioned. Because some of the discussion arises from a misunderstanding of the FAO methodology, an attempt at clarification may be useful.

The variance around the norm of an "average requirement" has been extensively discussed in the literature.[17] There is evidence that substantial variation exists in the intakes of persons of the same age, sex and activity pattern, even after adjusting for differences in body weight. Moreover, there is certainly socio-economic, group-specific variance. The poor who are most likely to be undernourished may have different requirements than other groups. If poor families have higher fertility rates, the ratio of younger children to adults is higher and the group-specific nutritional requirement would be lower than the overall average requirement. This difference may be offset or over-compensated by the greater incidence among the poor of diseases that may impair calorie absorption. To the extent that the poor may have suffered from malnutrition in childhood, they have lower body weight and therefore lower total energy and weight-maintenance requirements. On the other hand, more pregnancies for the poor would require greater energy intakes. To the extent that the poor are more likely to be unemployed, they would require lower energy to support physical activity. The opposite would be the case to the extent that they engage in more labour-intensive activities.

Even disregarding the variations in intake between individuals or groups, basing the estimation of the undernourished on the norm of average requirements produces an overestimate. If the distribution of the reference population around the norm intake is normal,

half of those persons would have intakes below the average and thus would be considered undernourished. "This is like determining whether a group of soldiers who cannot swim could cross a river safely by comparing their average height with the average depth of the river."[18]

The method initiated by FAO first adjusts for some of the systematic components of the variance around the norm of the reference population: age/sex distribution; and average body weight. The average requirement is thus derived for each country. For developing countries, it ranges from 2,200 to 2,400 calories per capita per day. In contrast to some other studies, which use that requirement as a cut-off point for undernutrition, FAO first steps down to a lower requirement that relates to minimum, rather than moderate, activity.[19] If the energy level necessary to maintain the body at rest is the basal metabolic rate, then 1.5 times that rate is assumed to be sufficient to maintain the vital functions of the body, to provide for the growth of children and adolescents, and to support certain minimal activity for adults. This level is roughly equivalent to 2,380 calories (for a male adult), and it is assumed that a person receiving an intake below this level cannot easily adjust by reducing activity. Thus, having no margin of safety, that person will begin to lose weight; and in this sense, will be considered "at risk".

The basal metabolic rate is itself an average and variation in individual rates around that mean still exists.[20] The coefficient of variation is assumed to be 0.10. Taking two standard deviations from the mean, the critical limit is set at 1.2 times the basal metabolic rate, which is roughly 1,900 calories for an adult male. Persons below that critical limit are most likely to suffer from some form of energy deprivation because their calorie intake is insufficient to permit a healthy life with minimal physical activity.

Once the problems of defining calorie requirements have been solved, the actual calorie intakes must be measured in order to estimate the number of undernourished. Two problems arise because commodities — not calories — are observed, and data on actual commodity intake are rather scarce. The food balance sheets were used to derive the average calorie consumption in each country,[21] which is assumed also to be the mean of the distribution of calorie intake. However, the variation around this mean is still needed in order to describe the entire distribution and thus to associate the critical calorie level (at 1.2 times the basal metabolic rate) with a number of undernourished.

Even though no data are available on the distribution of calorie intakes, certain information about income distribution does exist. Even better information has been accumulated about Engel's curves — the proportion of income spent on food, at times even according to commodity classification. If one abstracts from habits, culture, relative prices and relative availability of commodities and services, one could go conceptually from income distributions and commodity distributions to calorie distributions and last to distributions of calorie intakes. If a relationship is assumed between calorie intake per capita and income per capita (or expenditure), the standard deviation of calories can be obtained from the coefficient of that relationship multiplied by the standard deviation of income.[22] The entire distribution of calories can then be defined. It has a lower limit, below which a person cannot subsist (750-800 calories); and an upper limit, above which a person cannot consume (4,500-5,000 calories). Knowing the lower and the upper limits of this distribution, its mean and its standard deviation, the proportion of population with calorie intake below the critical limit of 1.2 times the basal metabolic rate can be estimated by using appropriate tables.[23]

Results and implications

The foregoing description of the methodology used demonstrates that an estimate of undernutrition is obtained through lengthy, complex steps — from distributions of income to nutritional requirements. Yet, the issue is of sufficient importance to justify the effort and the occasionally extreme assumptions. Moreover, the results, with all the qualifications they may deserve, are probably quite reliable, compared with the results of measuring poverty, which entails even more arbitrariness.

The results of the most recent FAO assessment of undernutrition are given in table 7. Although the extent of undernutrition is greatest in the regions where agricultural production falls short of demand, over 10 per cent of the populations of Latin America and the Middle East, which have supplies above their requirements, are undernourished. It is suggested below that hunger is only partially an economic phenomenon involving production: it is more generally a social phenomenon involving distribution and the competition of social classes.

The method used to estimate undernutrition is admittedly imperfect and the validity of the results rests on the validity of certain crucial assumptions. In preparation for the Fifth World Food Survey, an FAO/WHO expert consultation was convened in 1983 to re-examine the practical application of nutritional requirements. However, the development of more adequate methodology that would address the criticisms voiced against the

TABLE 7. ASSESSMENT OF UNDERNUTRITION IN LESS DEVELOPED REGIONS, BY REGION, 1974-1976

Region	*Number of persons (millions)*	*Percentage of population*	*Supply to requirements ratio (percentage)*
Africa	72	23	93
East and South Asia[a]	304	28	91
Middle East[b]	19	11	104
Latin America	41	13	106
Total developing countries	435	23	95

Source: Food and Agriculture Organization of the United Nations, *Agriculture: Toward 2000* (Rome, 1981), statistical appendix, table 7.

[a] Excluding centrally planned economies and countries of Southern Asia and Western Asia included in Middle East.

[b] See footnote *b* to table 3.

current estimates must await the collection of firsthand data from the undernourished population. This task, in turn, might have to wait until the often-expressed will to fight against malnutrition is matched by commensurate efforts to locate the undernourished population and to define the socio-economic profile of these victims, so that remedies and not just provisional palliatives may be found.

D. Poverty and hunger: the roles of population and income

A frequent explanation for the deteriorating — or at least not improving — food balances and for the increasing incidence of undernutrition has been the unprecedented rate of population growth since the Second World War. Although this causal link between population growth and food scarcity is correct, its over-emphasis may have deflected the scrutiny that income growth deserves in explaining the world food situation. Yet, income gains during the past two decades far outdistanced population increases: population grew by about one half (44 per cent); incomes per capita roughly doubled between 1960 and 1980. It is ironic that the world food problem is as grave today as it ever was, despite the fact that the world as a whole — most countries in general and most persons in particular — is as well off today as ever before. The question is to what extent population alone and/or poverty can be considered the principal cause of world hunger.

The food/feed controversy

Cereals are the major source of calorie intake for the poor in the majority of developing countries. At a relatively low level of subsistence, inadequate cereal consumption is synonymous with undernutrition. Cereals, coarse and often soft grains as well, are also used for animal feed, being converted to protein for human diets.[24] "Chicken twice a week" is probably the first luxury that people in many countries acquire as they reach "middle-class" levels of income. The quantities involved are certainly substantial. In 1980, animal feed accounted for 550 million tons, or 40 per cent of the total volume of cereals produced.

The question then arises whether one can make the case that, if a smaller amount of cereals went to animals, a larger volume would go to people. This question, which sounds rather simple, is both complicated and controversial. The great bulk of animal feed (72 per cent of the total) is used in the developed market and centrally planned economies. Even if it became available for direct human consumption, it is unclear that it would have found its way to the needy — it would have to be financed, transported and distributed. Moreover, the first likely outcome of reducing the use of cereals for feed is that cereal production would fall because total demand would be less and prices would be lower. The main issue of inadequate cereal consumption by the poor is essentially one of insufficient incomes and demand.[25]

The demand for animal feed in developing countries is certainly not insignificant, although the phenomenon is almost exclusively concentrated in the middle-income class of those countries. During the period 1966-1980, demand grew at 5.3 per cent per annum — having begun from low levels. This high rate of growth of cereal utilization for animal feed reflected more the rapid rate of growth of the middle-income classes, and their appetite for animal protein, and less the overall rate of development in the developing countries. Curtailment of the use of cereals for animal feed in the developed countries might not help the poor but controlling the appetite of the middle-income class in the developing countries would probably have a salubrious effect. An increase in the price of cereals would lower the demand for animal feed, but it would also increase the cost of subsistence for the poor. On the other hand, cheap food prices for the poor and for urban consumers result in subsidies for indirect consumption by the middle-income class, by diverting cereals to animal feed. It is suggested, on the other side of the controversy, that hunger is not being alleviated and periodic food crises occur not so much because incomes have been insufficient (they always will be) but mainly because of the rapid increase of middle-class incomes.

Caveats and policy implications

Limitations of both data and methodology have hampered the study of the dynamics of the demand for food and animal feed. The food/feed controversy therefore remains unresolved.

Several empirical questions arise that are of special interest in studying the interactions between income and population growth. Consumption behaviour, especially with respect to direct and indirect consumption of cereals, must be investigated across socio-economic classes (poor and middle class) and not only for the entire population as a function of income. The increase of the middle-income class must be examined both as a function of "graduation" and as a function of population growth. It is necessary to ascertain the graduation rules into the middle-income class and the ways in which they are related to overall economic growth, and to determine whether population growth occurs differentially among socio-economic classes. Obviously, the same increase in population among the poor and among the rich would have two different effects.

The most important policy questions probably arise with respect to prices, concerning: the extent to which high farm prices would stimulate agricultural production and curtail the use of cereals for animal feed and how much they would aggravate the nutritional problem of the poor; and, conversely, what the impact of cheap food prices is on production and on the diversion of cereals from the poor to use by the middle-income class. If, indeed, a problem exists, the question arises whether there is need for special intervention, such as pursuing cereal self-sufficiency, or whether international trade and market prices could be relied upon to provide a solution. These broader issues in the study of the

interrelations between population, agricultural growth and income growth are in the FAO research agenda. Some of them are currently being examined in an ongoing study of agricultural price policies and agricultural/rural development in developing countries.

Summary

In this chapter, the discussion centred on certain aspects of population, resources and development that enter importantly into the work of FAO. In the first three sections, results on the specific issues also were presented and their policy implications explored. The section on the food/feed competition, on the other hand, briefly covered both sides of a controversial issue in order to provoke reaction and to stimulate research in an area that is crucially important in planning agricultural and economic development.

Questions requiring further research also were raised in connection with the other issues covered. First, the discussion of the population-supporting capacity of lands analysed the potential human payload of lands in the developing countries with respect to three levels of input/technology. None of these levels, however, refers to the actual situation prevailing in a specific country normally having a mix of all three levels of input/technology. The description of the actual situation on the basis of the same rules is an important piece of unfinished business. More generally, a better and more detailed assessment of the lands is necessary in order to specify their optimal development for permanent use.

Both that project and the results of *Agriculture: Toward 2000* emphasize the importance of technology in world agriculture in the future. Technology, however, is not free; and its cost should be compared with alternative solutions. Moving people — migration — is one option that suggests itself in relation to the carrying-capacity project. Another group of suggestions that may arise with respect to *Agriculture: Toward 2000* and the food/feed competition concerns changes in certain institutions, including land reform, farm size, market systems and pricing régimes. Moreover, the ultimate nagging question still remains: whether high agricultural technology can be used on a world agricultural scale without dire environmental and other effects.

The agricultural employment data used in *Agriculture: Toward 2000* are inadequate. Data on labour force composition were not available. Better documentation of employment in agriculture at the aggregate level is hampered by the lack of systematic micro-economic data on farm management that could yield employment coefficients for different ecological, institutional and technological régimes. Unless this problem is tackled, the analysis of the absorptive capacity of agriculture or the migration movement will remain inadequate.

These questions concern only a few of the issues relating to population, agriculture and development that need to be reflected in the World Population Plan of Action.

Notes

[1] See *Potential Population Supporting Capacities of Lands in the Developing World,* by G. M. Higgins, A. H. Kassam and L. Naiken (Food and Agriculture Organization of the United Nations); and G. Fischer and M. M. Shah (International Institute for Applied Systems Analysis), technical report of Project INT/75/P13 undertaken by the Food and Agriculture Organization of the United Nations, the International Institute for Applied Systems Analysis and the United Nations Fund for Population Activities (Rome, 1982).

[2] Food and Agriculture Organization of the United Nations, *Agriculture: Toward 2000* (Rome, 1981), p. 36.

[3] The length of the growing period is obtained by using a simple water-balancing technique between rainfall and potential evapotranspiration and taking account of temperature conditions.

[4] These levels are: (*a*) low level of input, assuming only land labour, no fertilizer and pesticide applications, no soil conservation measures and hence full productivity losses arising from land degradation, and cultivation of all currently grown mixtures of crops on potentially cultivable rain-fed lands; (*b*) intermediate level of input, assuming the use of improved hand tools and/or draught implements, some fertilizer and pesticide application, some simple soil conservation measures lessening productivity losses from land degradation and cultivation of a combination of the currently grown and the most calorie-productive crops on cultivable rain-fed lands; (*c*) high level of input, assuming complete mechanization, full use of optimum genetic material, necessary farm chemicals and soil conservation measures, and cultivation of only the most calorie/protein-productive crops on potentially cultivable rain-fed lands. The actual situations, of course, involve a mix of all three input/technology levels. The project is not intended to describe the existing situation in a country.

[5] The countries included in the regional divisions used in this chapter do not in all cases conform to those included in the geographical regions established by the Population Division of the Department of International Economic and Social Affairs of the United Nations Secretariat. In section A, "Central America" includes Antigua, Bahamas, Barbados, Cuba, Dominican Republic, Guadeloupe, Haiti, Jamaica, Martinique, Netherlands Antilles, Puerto Rico, Saint Lucia, and Trinidad and Tobago in the Caribbean subregion; and Belize, Costa Rica, El Salvador, Guatemala, Honduras, Mexico, Nicaragua and Panama in Central America. "South-eastern Asia" includes Brunei Darussalam, Burma, Democratic Kampuchea, Indonesia, Lao People's Democratic Republic, Malaysia, Philippines, Singapore, Thailand and Viet Nam in South-eastern Asia; and Bangladesh, Bhutan, India, Nepal, Pakistan and Sri Lanka in Southern Asia. "South-western Asia" includes Afghanistan and Iran (Islamic Republic of) in Southern Asia; and Bahrain, Democratic Yemen, Iraq, Israel, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Syrian Arab Republic, Turkey, United Arab Emirates and Yemen in Western Asia.

[6] See Ester Boserup, *The Conditions of Agricultural Growth* (London, Allen and Unwin, 1965).

[7] *Agriculture: Toward 2000.*

[8] The countries included in the regional divisions used in this chapter do not in all cases conform to those included in the geographical regions established by the Population Division of the Department of International Economic and Social Affairs of the United Nations Secretariat. In sections B and C, the "Middle East" includes Egypt, Libyan Arab Jamahiriya and Sudan in Northern Africa; Afghanistan and Iran (Islamic Republic of) in Southern Asia; and Cyprus, Democratic Yemen, Iraq, Jordan, Lebanon, Saudi Arabia, Syrian Arab Republic, Turkey and Yemen in Western Asia.

[9] The list accounts for 98.5 per cent of the population of the developing countries (excluding China). Reference to developing countries in this section covers only those 90 countries.

[10] More specifically, the 1980 revision of the medium-variant population projections indicates that in 2000 the population in the 90 developing countries covered here could be 153 million (or 4 per cent) below the 3,630 million projected in the 1978 assessment. This difference is the net result of upward and downward revisions for individual countries: in 48 of the 90 countries, the population in 2000 was revised upward (32 countries in Africa); for 42 countries, it was revised downward (18 in Latin America and 11 in Asia). Hence, while the population of Africa shows a net increase of 20 million (from 668

million to 688 million), that of Latin America shows a decrease of 44 million (from 601 million to 557 million) and that of Asia has a decline of 124 million (from 2,008 million to 1,884 million).

[11] Allowing countries that have not reached self-sufficiency to decrease their production targets in response to lower population pressure amounts, of course, to relaxing the general assumption that countries always strive for maximum self-sufficiency.

[12] *Agriculture: Toward 2000.*

[13] This rule linking demand to production through the scarcity index, by way of an assumed elasticity, amounts to an average elasticity value of 0.12 for the low-scarcity countries (index from 0 to 0.4), which means that the average decline in demand by 10.4 per cent is followed by an average decrease in production of only 1.2 per cent. In the countries with very high scarcity, on the other hand (index between 0.9 and 1.0), the average value of the elasticity is 0.83 and the average decline in demand of 4.3 implies a 3.6 per cent decrease in production.

[14] United Nations assessment in 1980, low variant.

[15] This approach distinguishes between undernutrition and malnutrition, since the latter term refers to "inappropriate" diets and may affect all income groups. See Shlomo Reutlinger and Marcelo Selowsky, *Malnutrition and Poverty: Magnitude and Policy Options,* World Bank Staff Occasional Papers, No. 23 (Baltimore, Md., Johns Hopkins University Press, 1976); S. Reutlinger and H. Alderman, "The prevalence of calorie deficit diets in developing countries", *World Development,* vol. 8 (1980), pp. 399-440; and T. N. Srinivasan, "Malnutrition: some measurement and policy issues", *Journal of Development Economics,* vol. 8 (1981), pp. 3-19. It also abstracts from considering the other substandard quality-of-life indicators that are often correlates of poverty, such as poor health or housing. The latter relationship has led certain researchers to treat nutrition as an indicator of household welfare. See A. S. Denton, "Three essays on a Sri Lanka survey", Living Standards Measurement Study, working paper No. 11, Washington, D.C., World Bank, 1981; and R. Martorell, "Nutrition and health status indicators: suggestions for surveys of the standard of living in developing countries", Living Standards Measurement Study, working paper No. 13, Washington, D.C., World Bank, 1982.

[16] Food and Agriculture Organization of the United Nations, *Energy and Protein Requirements: Report of a Joint FAO/WHO* Ad Hoc *Expert Committee,* Rome, 22 March-2 April 1971, FAO Nutrition Meetings Report Series, No. 52; WHO Technical Report Series, No. 522 (Rome, 1973).

[17] For a review of that literature and a vigorous attack of the concept of energy requirements, see T. N. Srinivasan, "Hunger: defining it, estimating its global incidence and alleviating it", paper presented at the Conference on the Role of Markets in the World Economy, 1982 (mimeographed).

[18] *Ibid.*

[19] V. M. Dandecar and N. Rath, "Poverty in India", *Economic and Political Weekly* (Bombay), Nos. 1 and 2 (1971); and Reutlinger and Selowsky, *op. cit.*

[20] It is based on laboratory measurements of a sample of 2,200 persons over a period of 15 years.

[21] For an example of such data, see food balance sheets; and also Food and Agriculture Organization of the United Nations, *Agricultural Commodities Projections, 1970-1980* (Rome, 1971).

[22] The relationship is postulated as $C = a + b \ln X$.

[23] For more detail on the methodology, see Food and Agriculture Organization of the United Nations, *The Fourth FAO World Food Survey* (Rome, 1977), pp. 47-55.

[24] Animals are rather inefficient protein converters, with the calorie equivalent grain/meat conversion ratio (and thus the "shrinkage" of cereals) varying from 2.1 to 7.1.

[25] Food and Agriculture Organization of the United Nations, *Agriculture: Toward 2000.*

VIII. INDUSTRIAL CARRYING CAPACITY: A SECOND STUDY*

For a system-wide analysis of the interrelations between population, resources, environment and development being undertaken by the United Nations Secretariat,[1] the United Nations Industrial Development Organization (UNIDO) prepared an earlier study on industrial carrying capacity.[2] This chapter is a revision of that study.

The Lima Industrial Development Objective (LIDO) model[3] was used in the first study to develop an economic scenario of the achievement of the Lima target and further progress to 2025. The consequent demand for labour, key minerals and energy was then examined and compared with the estimated supply of each of these essential resources. The basic conclusions were that shortages would not arise in any of these areas; thus, the world had the resource capacity, in terms of global balances, to meet its development goals.

The sequence of discussions used in the earlier study is again followed: (*a*) economic scenario for world regions,[4] incorporating the achievement of the Lima target and showing the associated structural changes; (*b*) labour force demand and supply; (*c*) adequacy of supply of key non-fuel minerals; and (*d*) energy supply and requirements. The conclusions are then summarized.

There are, however, some differences between the two studies. First, the LIDO model was updated for the present study, in particular, by moving its base year from 1975 to 1980, for which new data are available. Secondly, new population projections[5] were incorporated; and the analyses of key non-fuel minerals and energy were revised, using new sources of information.

A. Economic scenario for world regions

LIDO model

The LIDO model was again used to prepare the economic scenario for the years up to 2025. The present study provides details on five world "regions": Africa, Latin America, Asia[6] and the Middle East, which constitute the developing countries; and the developed countries.[7] The scenario has an input/output accounting basis, dealing with four sectors: agriculture; mining; manufacturing and others. (The fourth sector includes construction and services.) The base year, as mentioned above, is 1980; and the present model gives results for 1990, 2000 and 2025.

The model produces a brief quantitative sketch of the economy in the solution year for each region. This sketch includes an estimate of gross domestic product (GDP) and a four-sector decomposition of value added, consumption, investment, foreign trade and input/output structure, with all variables measured in constant 1975 prices. To generate the output, the model requires three input groups: (*a*) "economic technology", comprising base-year information and various economic relationships (many of which change with GDP per capita); (*b*) exogenous targets, which are usually a regional distribution of the Lima targets; and (*c*) exogenous assumptions about each region's population and trade balance and about the growth of GDP in developed countries over the projection period. The trade balances reflect the net transfer of resources to each area in the solution year, but the GDP assumption provides the main driving force of the model. The gross domestic product of one region (thus far, it has been the developed countries) determines (through "economic technology") their manufacturing value added; and these data (again through "economic technology") give the overall economic growth rates of the less developed regions.

Scenario assumptions

The principal assumptions for the present scenario are:

(*a*) The Lima target will be achieved in 2000, with the following distributions: Africa, 2 per cent; Latin America, 13 per cent; Asia, 7 per cent; Middle East, 3 per cent;

(*b*) Annual average growth rates of GDP will be:

1980-1990: Developed countries, 3.7 per cent; developing countries, 7.4 per cent as a whole. The rates for individual regions are based on historic rates. The International Development Strategy for the Third United Nations Development Decade[8] contains a (rounded) target of 7 per cent for developing countries;

1990-2000: developed countries, 3.9 per cent. The growth rate for the developing countries for this period is part of the model solution and is determined by the Lima targets;

2000-2025: developed countries, 4.0 per cent; developing countries, 6.0 per cent;

(*c*) The overall trade surplus of the developed countries in 1990, with respect to all less developed regions except the Middle East will be 0.8 per cent of their GDP; in 2000 and 2025, it will be 1 per cent. The trade surplus of the Middle East will be halved by 1990 and zero by 2000;

(*d*) Agriculture in the developing countries, in terms of value added in that sector, will grow at no more than 3.6 per cent per annum.[9]

* Prepared by the United Nations Industrial Development Organization.

Gross domestic product and population

From the assumptions made, it can be seen that the exogenously given GDP growth rates will strongly influence the values of the generated scenario. Table 8 gives the annual average percentage figures for the regions and time-periods of the scenario.

For 1980-1990, the overall growth rate of 7.4 per cent for the developing countries will be distributed among each of the four less developed regions in accordance with their historical performance in the years 1975-1980. This pattern of growth for the different less developed regions will change again for the decade 1990-2000, because the growth rates are those necessary to achieve the regional distribution of the Lima target. Thus, the growth rate for Africa during this period will be lower than that for 1980-1990, because its share of the Lima target (2 per cent) is relatively low. The Middle East will keep approximately the same growth rate, but Latin America and Asia must increase their GDP growth rates for 1990-2000 in order to attain their required shares (13 and 7 per cent, respectively). The growth rate of Latin America is extremely high, fully reflecting its large share of the target. The figures for the period 2000-2025 were obtained by supplying exogenous growth rates for the developed countries and less developed regions. The figure of 4 per cent per annum for the developed countries represents a slight improvement over the period up to 2000. The figure for the developing countries as a whole, however, represents a decrease and reflects an expectation that the high growth rates necessary to achieve the Lima target cannot be indefinitely sustained.

The exogenous assumptions as to population growth are important to the scenario in two ways: first, the structure of the LIDO model itself changes accordingly as GDP per capita of the region concerned increases; secondly, the GDP per capita figures themselves give an indication of the extent to which such a scenario represents a step towards overall economic development, in so far as this figure is an indicator of this process. Table 9 gives the population growth rates[10] assumed and table 10 shows GDP per capita attained by each region for each period covered in the analysis. As table 8 shows, the developing countries outperform the developed, in terms of GDP growth, at every stage of the period. Nevertheless, because they also do so in terms of population, the gap in GDP per capita between developed and developing countries will not close over the 50-year period of the scenario, although it goes some way towards doing so. The second part of table 10 shows GDP per capita of the less developed regions as a percentage of that of the developed countries.

In 1980, GDP per capita for the aggregated developing countries was just over 10 per cent of that of the developed countries; in 2025, this figure will still be less than 19 per cent of that of the developed countries. Thus, the high growth rates of GDP shown in this scenario barely compensate for population growth. Indeed, as concerns the individual less developed regions, the relative position of Africa cannot be expected to improve and the figure for Asia in 2025 is barely higher than that for Africa. Only Latin America and the Middle East will make substantial progress; but even by 2025, their GDP per capita figures will be just over one half and one third, respectively, of that of the developed countries. The implications are, therefore, that neither attainment of the Lima target nor continued progress beyond it will suffice to assist the developing countries towards a tolerable level of development, without further and special efforts. For example, even in 2025, it cannot be expected that GDP per capita in either Africa or Asia will be anywhere near that of the developed countries in 1980.

TABLE 8. GROWTH RATES OF GROSS DOMESTIC PRODUCT, DEVELOPING COUNTRIES, BY REGION, AND DEVELOPED COUNTRIES, 1980-2025

(Percentage per annum)

Period	*Africa*	*Latin America*	*Asia*[a]	*Middle East*[b]	*Developing countries*[a]	*Developed countries*[c]
1980-1990	7.7[d]	7.3[d]	7.7[d]	6.8[d]	7.4[d]	3.7[d]
1990-2000	5.0	9.9	8.0	6.9	8.2	3.9[d]
1976-2000	6.4	8.6	7.9	6.8	7.8	3.8[d]
2000-2025	6.1	6.0	6.1	6.2	6.0[d]	4.0[d]

[a] Excluding the centrally planned economies of Asia.

[b] Including Algeria and Libyan Arab Jamahiriya in Northern Africa; Iran (Islamic Republic of) in Southern Asia; and Bahrain, Democratic Yemen, Iraq, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Syrian Arab Republic, United Arab Emirates and Yemen in Western Asia.

[c] Including Cyprus, Israel, South Africa and Turkey, which are grouped with the developing countries in United Nations estimates and projections.

[d] Exogenous figure.

TABLE 9. POPULATION GROWTH RATES, LESS DEVELOPED REGIONS AND AGGREGATED DEVELOPED COUNTRIES, 1980-2025

(Percentage per annum)

Period	*Africa*	*Latin America*	*Asia*	*Middle East*[a]	*Developed countries*[b]
1980-1990	3.07	2.36	2.31	2.93	0.65
1990-2000	3.00	2.11	1.44	2.56	0.54
2000-2025	2.41	1.71	1.15	1.81	0.32

Source: World Population Prospects as Assessed in 1980 (United Nations publication, Sales No. E.81.XIII.8).

[a] For names of countries, see footnote *b* to table 8.

[b] See footnote *c* to table 8.

TABLE 10. GROSS DOMESTIC PRODUCT PER CAPITA, DEVELOPING COUNTRIES, BY REGION, AND DEVELOPED COUNTRIES, 1980-2025

Year	Africa	Latin America	Asia[a]	Middle East[b]	Developing countries[a]	Developed countries[c]
	A. *Gross domestic product per capita (1975 dollars)*					
1980	468.3	1 337.0	230.3	1 591.9	533.3	3 170.8
1990	726.7	2 147.6	385.1	2 301.3	850.2	6 969.6
2000	884.5	4 478.3	720.1	3 468.5	1 538.0	9 682.2
2025	2 159.1	12 483.2	2 398.0	8 922.8	4 437.7	23 830.1
	B. *Gross domestic product per capita as percentage of that of developed countries*					
1980	9.1	25.9	4.5	30.8	10.3	100.0
1990	10.4	30.8	5.5	33.0	12.2	100.0
2000	9.1	46.3	7.4	35.8	15.9	100.0
2025	9.1	52.4	10.1	37.4	18.6	100.0

[a] See footnote *a* to table 8.
[b] For names of countries, see footnote *b* to table 8.
[c] See footnote *c* to table 8.

Manufacturing and structural change

The growth rates of manufacturing value added, the definition of industrial production used in the Lima target, are given in table 11. For Africa, the second decade shows a significant drop in growth of manufacturing, because the region is already in sight of its relatively low Lima target share. The large share demanded for Latin America in 2000, however, calls for a further acceleration of manufacturing growth in the prior decade. For the overall period 1980-2000, the required growth rate of manufacturing value added for developed countries is 9.3 per cent; it then falls to 6.4 per cent for the period up to 2025, in accordance with the relatively lower growth of GDP.

Because the developing countries are expected to continue to outperform the developed countries for the period 2000-2025, their share of world manufacturing value added will increase beyond the targets given for them in 2000. By 2025, therefore, Africa will have a share of 3.6 per cent; Latin America, 16.3 per cent; Asia, 10 per cent; and the Middle East, 4.6 per cent. Thus, the developing countries will have a total of 34.6 per cent of world manufacturing value added in 2025, as against their target of 25 per cent in 2000.

Table 12 shows the composition of value added in terms of the four sectors included in this scenario. The aggregates for the developed and developing countries show that even in the developed countries, a change will occur in this distribution over the time-period, while for the developing countries, the transformation will be very marked indeed. In 1980, manufacturing in the developing countries had a share of total GDP of 19 per cent. One effect of the high manufacturing growth rates will be to increase this share to 25 per cent by the year 2000 and for it to rise further over the next 25 years to 27.7 per cent. Given such a rise in the percentage share, it can be seen that the burden of adjustment will have marked effects on the agriculture and mining sectors, both of which will decline in importance, while the "other" sector (which includes construction and services) will increase its share of total GDP to a very substantial figure, which will, in 2025, be slightly higher than that in the developed countries. The reason for such growth is the close linkages between manufacturing and the "other" sector. The decline in importance of the agricultural sector in the developing countries is due to the overall growth rate for its value added (3.6 per cent), which has been imposed in this scenario for the entire period 1980-2025.

Table 13 gives the detailed figures of the sectoral distribution of value added for the four less developed regions. The pattern of behaviour is broadly similar for

TABLE 11. MANUFACTURING VALUE-ADDED GROWTH RATES, DEVELOPING COUNTRIES, BY REGION, AND DEVELOPED COUNTRIES, 1975-2025

(Percentage per annum)

Period	Africa	Latin America	Asia[a]	Middle East[b]	Developing countries[a]	Developed countries[c]
1975-1980	7.45	5.0	7.95	4.8	5.9	3.2
1980-1990	11.2	7.7	10.4	9.9	9.0	3.7
1990-2000	6.5	10.3	9.3	9.8	9.6	4.4
1980-2000	8.8	9.0	9.8	9.8	9.3	4.1
2000-2025	7.6	6.0	6.6	6.9	6.4	4.5

[a] See footnote *a* to table 8.
[b] For names of countries, see footnote *b* to table 8.
[c] See footnote *c* to table 8.

TABLE 12. PERCENTAGE DISTRIBUTION OF GROSS DOMESTIC PRODUCT, BY SECTORAL VALUE ADDED, DEVELOPING AND DEVELOPED COUNTRIES, 1980-2025

Country group and year	Distribution of gross domestic product			
	Agriculture	Mining	Manufacturing	Other
Developing countries[a]				
1980	17.3	11.5	19.0	52.2
1990	12.1	10.3	22.0	55.6
2000	7.8	8.7	25.0	58.5
2025	4.4	7.0	27.7	60.8
Developed countries[b]				
1980	6.0	2.6	31.2	60.2
1990	5.8	2.4	31.2	60.6
2000	5.0	1.9	32.8	60.3
2025	3.0	0.8	37.0	59.2

[a] See footnote *a* to table 8.
[b] See footnote *c* to table 8.

all of them and thus the average behaviour shown in table 12 is representative. Looking at the manufacturing sector, it can be seen that in 2025, its relative size will be greatest in Asia and smallest in Africa.

TABLE 13. PERCENTAGE DISTRIBUTION OF GROSS DOMESTIC PRODUCT, BY SECTORAL VALUE ADDED, LESS DEVELOPED REGIONS, 1980-2025

Region and year	Distribution of gross domestic product			
	Agriculture	Mining	Manufacturing	Other
Africa				
1980	21.8	16.1	9.7	52.4
1990	14.6	16.3	13.3	55.9
2000	10.6	16.0	15.3	58.2
2025	6.0	12.5	21.3	60.1
Latin America				
1980	10.7	4.4	26.0	58.9
1990	7.8	5.0	26.8	60.5
2000	5.5	5.2	27.8	61.5
2025	3.6	5.5	28.1	62.7
Asia[a]				
1980	29.1	3.8	19.0	48.1
1990	19.6	4.5	24.2	51.7
2000	12.2	4.2	27.3	56.4
2025	5.9	3.3	30.4	60.4
Middle East[b]				
1980	11.1	34.3	11.9	42.6
1990	8.0	26.2	15.8	49.9
2000	5.4	21.0	20.6	53.0
2025	2.8	14.1	27.3	55.8

[a] See footnote *a* to table 8.
[b] For names of countries, see footnote *b* to table 8.

Final demand

The scenario also contains details of the changes to be expected in final demand structures, i.e., the relative weights in GDP of consumption, investment, exports and imports. In fact, the LIDO model generates such figures not only in the aggregate but for each sector of each region. However, only the aggregate proportions are presented here; they are given in table 14 for the developed and developing countries; and in table 15, for the four less developed regions.

TABLE 14. GROSS DOMESTIC PRODUCT: PERCENTAGE DISTRIBUTION OF FINAL DEMAND COMPONENTS, DEVELOPING AND DEVELOPED COUNTRIES, 1980-2025

Country group and year	Distribution of final demand components			
	Consumption	Investment	Exports	Imports
Developing countries[a]				
1980	74.7	26.2	23.8	24.7
1990	74.7	26.2	26.2	26.8
2000	72.9	28.9	26.4	28.2
2025	80.8	20.6	26.5	27.9
Developed countries[b]				
1980	77.8	22.0	19.9	19.7
1990	77.8	22.0	21.0	20.8
2000	77.0	22.2	22.0	22.0
2025	76.2	22.8	27.2	26.2

[a] See footnote *a* to table 8.
[b] See footnote *c* to table 8.

The behaviour of the investment share, i.e., the proportion that investment forms of total GDP, will closely follow the growth rate for the period in question, because the two are related by means of assumed incremental capital output ratios. The values used are: Africa and Asia, 3.2; and Latin America and the Middle East, 3.6. For the developed countries, the assumed ratio is 5.7.

Tables 14 and 15 show the consequences of these ratios. In the year 2000, because of the high growth rates needed during the period 1990-2000, the investment share will rise to 28.9 per cent for the developing countries. Because of the differences in their growth rates over this period, the shares for Africa and Latin America will be 16.1 and 35.6 per cent, respectively. However, over the period up to 2025, the shares will settle down to a range of about 20-22 per cent.

TABLE 15. GROSS DOMESTIC PRODUCT: PERCENTAGE DISTRIBUTION OF FINAL DEMAND COMPONENTS, LESS DEVELOPED REGIONS, 1980-2025

Region and year	Distribution of final demand components			
	Consumption	Investment	Exports	Imports
Africa				
1980	74.7	27.7	24.8	27.2
1990	74.1	27.7	27.4	29.2
2000	88.5	16.1	23.8	28.4
2025	83.9	19.6	26.4	29.9
Latin America				
1980	74.6	27.2	14.5	16.4
1990	73.6	27.2	17.0	17.8
2000	65.7	35.6	19.2	20.5
2025	79.6	21.5	17.7	18.8
Asia[a]				
1980	78.9	25.6	25.9	30.4
1990	75.6	25.6	32.5	33.7
2000	76.8	25.6	34.2	36.5
2025	82.2	19.6	35.3	37.1
Middle East[b]				
1980	68.5	23.2	41.3	33.0
1990	74.7	23.2	37.4	35.3
2000	75.3	24.7	38.2	38.2
2025	79.4	20.6	39.6	39.6

[a] See footnote *a* to table 8.
[b] For names of countries, see footnote *b* to table 8.

With respect to trade, the tables show the effect of the imposed trade surpluses for the developed countries in the years 1990, 2000 and 2025. By 2000, the Middle East is assumed to have a balance in trade (including service trade), with the surplus of the developed countries shared among the other less developed regions. The consequence for the developed countries will be an expansion of both export and import shares in total GDP that is significantly larger than the expansion for the developing countries. The extra growth for the developing countries means that their share of world exports would increase quite substantially: whereas in 1980 it was 19.8 per cent, it would be 33.6 per cent in the year 2000; and it would show a further increase to 40.7 per cent in the year 2025.

B. Labour force demand and supply

Employment scenario

As in the first study, an analysis is given of supply and demand for labour in the light of the economic scenario outlined above. The same methodology and, indeed, the same behavioural relationships with respect to productivity are assumed. Again, due to lack of data, it was not possible to use the disaggregation of each regional economy into the four scenario sectors. Instead, the scenario was divided into agriculture, industry and services, with industry including mining, manufacturing and the construction part of the "other" sector. For the latter disaggregation, the proportions previously used for the projections are once more utilized. However, the developed countries were not divided into market and centrally planned economies in the present study, as they were in the earlier report, because an estimation of differential sectoral growth rates was not considered meaningful without a full disaggregation of the input/output structure.

The annual growth rates determined on the basis of the above-mentioned modifications are given by economic sector and region in tables 16 and 17. The most striking feature of the modified scenario is that the services sector in the developing countries will have the highest expansion rate, owing primarily to the inclusion of mining in industry, because in the original scenario the mining sector is expected to grow only slowly.

TABLE 16. ANNUAL GROWTH RATES OF SECTORAL VALUE ADDED AND GROSS DOMESTIC PRODUCT, DEVELOPING COUNTRIES, BY REGION, AND DEVELOPED COUNTRIES, 1980-2000

(Percentage)

Region	Value added in:			Total gross domestic product
	Agriculture	Industry	Services	
Africa	2.58	8.05	6.12	6.36
Latin America	5.03	8.98	8.87	8.60
Asia[a]	3.24	9.31	8.81	7.85
Middle East[b]	3.01	6.36	8.20	6.82
Total developing countries[a]	3.60	6.36	8.40	7.79
Total developed countries[c]	2.94	3.90	3.81	3.80

[a] See footnote *a* to table 8.
[b] For names of countries, see footnote *b* to table 8.
[c] See footnote *c* to table 8.

TABLE 17. ANNUAL GROWTH RATES OF SECTORAL VALUE ADDED AND GROSS DOMESTIC PRODUCT, DEVELOPING AND DEVELOPED COUNTRIES, 1980-2025

(Percentage)

Country group and period	Value added in:			Total gross domestic product
	Agriculture	Industry	Services	
Developing countries[a]				
1980-2000	3.60	8.20	8.50	7.79
2000-2025	3.60	6.11	6.18	6.00
1980-2025	3.60	7.04	7.21	6.79
Developed countries[b]				
1980-2000	2.94	3.90	3.81	3.80
2000-2025	1.85	4.30	3.92	4.00
1980-2025	2.33	4.12	3.87	3.91

[a] See footnote *a* to table 8.
[b] See footnote *c* to table 8.

Productivity trends

Labour force requirements are determined here by the scenario output and corresponding development of labour productivities (output per capita) in each sector and region. In order that appropriate assumptions could be made with regard to the development of labour productivity over time and its relationship to economic growth, the evolution of labour productivities over the period 1960-1977 and the subperiods thereof was analysed. Tables 18-20 give the levels of labour productivity in 1980 and the growth and the relationship of productivities to economic growth for the period 1960-1977. The data given in tables 19 and 20 are taken directly from the first study,[11] where it was explained that the analysis of growth rates and elasticities was supplemented by econometric analyses of productivity development on the basis of cross-sectional and time-series data, and that the figures presented (except for the services sector where the growth of labour productivity is thought to be an underestimate) are considered a reasonable representation of actual developments.

The results of the foregoing analyses were applied in conjunction with the modified scenario to assess the development of labour force requirements, by economic sector and region, up to the year 2000. Table 21 gives the elasticity values used for the less developed regions.

In the developed countries, growth rates for labour productivity rather than elasticities were specified for agriculture and industry — the material production sectors. The major reason for this assumption was that technical progress can be expected to have an autonomous development in developed countries in the future as well. For agriculture, labour productivity in all developed countries was assumed to increase at an annual rate of 4.5 per cent; and for industry, at 3.5 per cent. On the other hand, productivity growth in the services sector was considered to be primarily output dependent, with an elasticity[12] of 0.6.

In general, the specified growth rates or elasticities are quite close to historical values, but the elasticities of the services sector were raised throughout in order to take into account the above-mentioned biases in this sector. Lastly, with regard to productivity growth in the industrial sector of developed countries, the assumption is that the development of labour productivity will not come to such a standstill as experience in the United States might indicate. Given the rationalization potential indicated by large inter-country productivity differentials in many industries and taking a not too pessimistic view with regard to future investments and innovations, the assumption stated above appears to be justified.

Labour force requirements and supply up to 2000

It is expected that the economic growth implied by achievement of the Lima target will yield, by the year

TABLE 18. LABOUR PRODUCTIVITIES IN VALUE ADDED PER CAPITA, BY ECONOMIC SECTOR, FOR DEVELOPING COUNTRIES, BY REGION, AND DEVELOPED COUNTRIES, 1980

(Values in 1975 prices)

Region	Value added per capita				Gross domestic product per capita
	Agriculture	Industry	Services	Total	
Africa	402.0	3 161.3	2 948.5	1 250.1	468.3
Latin America	1 333.1	6 896.6	5 190.9	4 299.6	1 337.0
Asia[a]	299.7	1 266.5	1 212.1	646.6	230.3
Middle East[b]	1 102.5	11 610.3	5 269.2	4 677.1	1 591.9
Total developing countries[a]	446.2	3 529.3	2 756.3	1 517.2	533.3
Total developed countries[c]	5 198.6	11 148.3	11 822.4	10 742.2	5 170.8

Sources: Estimated by secretariat of United Nations Industrial Development Organization (UNIDO) on basis of UNIDO data base; International Labour Organisation, *Labour Force Estimates and Projections, 1950-2000* (Geneva, 1977), vols. 1-6; International Labour Organisation, *Yearbook of International Labour Statistics*, various issues; World Bank, *World Development Report, 1979* (New York, Oxford University Press for World Bank, 1979).

[a] See footnote *a* to table 8.

[b] For names of countries, see footnote *b* to table 8.

[c] See footnote *c* to table 8.

TABLE 19. ANNUAL GROWTH RATES OF LABOUR PRODUCTIVITY, BY ECONOMIC SECTOR, LESS DEVELOPED REGIONS AND ECONOMIC GROUPS OF DEVELOPED COUNTRIES, 1960-1977

(Percentage)

Region or economic group	Agriculture	Industry	Services
Africa	0.2	3.4	1.1
Latin America	2.5	2.4	1.6
Asia[a]	1.1	4.0	2.4
Middle East[b]	2.7	4.1	4.3
Developed market economies[c]	4.6	3.7	1.6
Developed centrally planned economies	3.7	4.3	4.2

Sources: United Nations Industrial Development Organization, "Industrial carrying capacity", in *World Population Trends and Policies: 1981 Monitoring Report, Vol. I, Population Trends* (United Nations publication, Sales No. E.82.XIII.2), p. 250, table 127. See also sources given for table 18.

[a] See footnote *a* to table 8.

[b] For names of countries, see footnote *b* to table 8.

[c] See footnote *c* to table 8.

TABLE 20. ELASTICITIES[a] OF LABOUR PRODUCTIVITY WITH RESPECT TO VALUE ADDED, LESS DEVELOPED REGIONS AND ECONOMIC GROUPS OF DEVELOPED COUNTRIES, 1960-1977

Region or economic group	Agriculture	Industry	Services
Africa	0.15	0.40	0.23
Latin America	0.71	0.38	0.27
Asia[b]	0.43	0.55	0.43
Middle East[c]	0.81	0.50	0.48
Developed market economies[d]	2.98	0.83	0.37
Developed centrally planned economies	3.64	0.50	0.65

Source: United Nations Industrial Development Organization, "Industrial carrying capacity", in *World Population Trends and Policies: 1981 Monitoring Report, Vol. I, Population Trends* (United Nations publication, Sales No. E.82.XIII.2), p. 250, table 128.

[a] Defined as the relative annual change (percentage) of the labour productivity divided by the relative annual change (percentage) of the value added of the same sector.

[b] See footnote *a* to table 8.

[c] For names of countries, see footnote *b* to table 8.

[d] See footnote *c* to table 8.

TABLE 21. ASSUMED ELASTICITIES OF PRODUCTIVITY GROWTH WITH RESPECT TO VALUE ADDED, DEVELOPING COUNTRIES, BY REGION, 1980-2000

Region	Agriculture	Industry	Services
Africa	0.20	0.45	0.45
Latin America	0.70	0.50	0.50
Asia[a]	0.50	0.55	0.60
Middle East[b]	0.80	0.45	0.50
Total developing countries[a,c]	0.53	0.49	0.57

[a] See footnote *a* to table 8.

[b] For names of countries, see footnote *b* to table 8.

[c] Implicit elasticities resulting as the weighted average of the four regions.

2000, the labour force requirements shown in table 22. The changes in the sectoral distribution of the labour force according to this development pattern are shown in table 23. The major result is that, given the implied high economic growth rates, the available labour force will be absorbed by the economic system by 2000, i.e., the increase in employment opportunities will be sufficient to provide work for the rapidly growing labour forces, especially those of the developing countries.

In 2000, the labour force supply is projected to be: 273.4 million in Africa; 207.3 million in Latin America; 767.5 million in Asia; 75.3 million in the Middle East; 391.3 million in developed market economies; and 217.0 million in developed centrally planned economies. (1,323.5 million in developing countries and 608.3 million in developed countries.) Thus, the labour force requirements given in table 22 actually exceed the supply, by 16.5 million or 1.2 per cent for the developing countries and 27.9 million or 4.5 per cent for the developed countries. In Africa, Asia and the Middle East, supply exceeds demand (−2.8 million, −5.6 million, −1.3 million), but the requirements in Latin America are 24.2 million higher than the projected supply. These discrepancies, however, are very much dependent upon the distribution of the Lima target and how the consequent differential scenario growth rate in the period 1990-2000 is subdivided. The conclusions are

TABLE 22. LABOUR FORCE REQUIREMENTS, BY ECONOMIC SECTOR, DEVELOPING COUNTRIES, BY REGION, AND DEVELOPED COUNTRIES, 1960-2000

(Millions)

Region and year	Labour force requirements			
	Agriculture	*Industry*	*Services*	*Total*
Africa				
1960	83.1	8.0	14.2	105.4
1975	100.9	17.1	25.1	143.1
1980	112.0	23.1	29.9	165.1
2000	168.4	36.1	66.1	270.6
Latin America				
1960	33.5	14.0	22.4	70.0
1975	38.8	25.0	41.8	105.5
1980	39.0	25.5	48.6	113.1
2000	52.3	60.1	113.7	231.5
Asia[a]				
1960	236.3	32.8	53.3	322.4
1975	294.1	53.0	85.4	432.4
1980	297.8	68.8	107.3	473.9
2000	409.7	152.6	211.4	761.9
Middle East[b]				
1960	19.1	4.1	5.0	28.2
1975	21.0	7.4	9.8	38.1
1980	21.2	9.8	13.9	44.9
2000	23.9	19.2	30.7	74.0
Total developing countries[a]				
1960	372.0	58.9	94.9	526.0
1975	454.8	102.5	162.1	719.1
1980	470.0	127.2	199.7	797.0
2000	654.3	268.0	421.9	1340.0
Total developed countries[c]				
1960	124.0	151.3	161.1	436.4
1975	84.2	194.9	236.4	515.5
1980	66.7	214.2	261.9	542.8
2000	49.8	233.2	353.2	636.2

Sources: For 1960 and 1975, derived from International Labour Organisation, *Labour Force Estimates and Projections, 1950-2000* (Geneva, 1977); for 1980, estimated figures; for 2000, scenario figures.
[a] See footnote *a* to table 8.
[b] For names of countries, see footnote *b* to table 8.
[c] See footnote *c* to table 8.

TABLE 23. PERCENTAGE DISTRIBUTION OF LABOUR FORCE REQUIREMENTS, BY ECONOMIC SECTOR, LESS DEVELOPED REGIONS, 1960-2000

Region and year	Labour force distribution		
	Agriculture	*Industry*	*Services*
Africa			
1960	78.8	7.6	13.5
1975	70.5	11.9	17.5
1980	67.8	14.0	18.1
2000	62.2	13.3	24.4
Latin America			
1960	47.9	20.0	32.1
1975	36.8	23.7	39.6
1980	34.5	22.5	43.0
2000	22.6	26.0	49.1
Asia[a]			
1960	73.3	10.2	16.5
1975	68.0	12.3	19.8
1980	62.8	14.5	22.6
2000	53.8	20.0	27.7
Middle East[b]			
1960	67.7	14.5	17.7
1975	55.1	19.4	25.7
1980	47.2	21.8	31.0
2000	32.3	25.9	41.5

Source: Calculated from table 22.
[a] See footnote *a* to table 8.
[b] For names of countries, see footnote *b* to table 8.

thus broadly similar to those given in the first study (although with an increased excess demand for labour) and they still show a reasonably well-balanced picture for the year 2000.

Labour force requirements and supply up to 2025

Once again, due to the increased uncertainties involved, the analysis of development during the period 2000-2025 considers only the aggregated developing countries and developed countries. For the developing countries, the elasticities for agriculture and services were further raised to 0.75 and 0.65, while the productivity growth in industry was assumed to be 3.5 per cent, corresponding to the level for 1975-2000. For the developed countries, the productivity growth rate in agriculture was lowered to 4.0 per cent; and in industry, increased to 4.5 per cent; and the elasticity for the services sector was increased to 0.85. As stated in the first report, these are quite strong assumptions; and it is likely that the advancement of labour productivities will be slower, rather than more rapid. However, these comparatively strict assumptions still lead to a growth of labour force requirements by 2025 that nearly matches the available labour force supply. This latter figure, which was obtained from the new population figures and the old extrapolated participation rate (rising in developing countries and falling in developed countries), is shown in table 24.

The long-term evolution of labour force requirements and their distribution by economic sector are presented in tables 25 and 26, respectively. By the year 2025, the developing countries will require a labour force of 2,029.7 million; and the developed countries, 659.7 million, for a total of 2,689.4 million in comparison with 1,339.8 million in 1980. When these figures are compared with the available labour force supply, the expectation is an excess demand of as much as 165.9 million or 8.9 per cent for the developing countries and 30.5 million or 4.8 per cent for the developed countries. Although such a long-term analysis is a very uncertain exercise, the fact that the previous study indicates an excess demand is interesting and points to a conclusion that unemployment may not be a problem, at least at a global level, if a world economic development scenario like that proposed here becomes a reality.

C. ADEQUACY OF SUPPLY OF NON-FUEL MINERALS

Supply of key minerals

The supply of and demand for seven key minerals are discussed in this section. These minerals, all metals, are

TABLE 24. POPULATION AND LABOUR FORCE SUPPLY, DEVELOPING AND DEVELOPED COUNTRIES, 1980-2025

(Millions)

Country group and year	*Population*	*Labour force*	*Participation rate (percentage)*
Developing countries[a]			
1980	2 305.9	825.5	35.8
2000	3 372.0	1 217.3	36.1
2025	5 106.2	1 863.8	36.5
Developed countries[b]			
1980	1 131.3	519.3	45.9
2000	1 272.2	582.7	45.8
2025	1 376.8	629.2	45.7
Total			
1980	3 437.2	1 344.8	39.1
2000	4 644.2	1 800.0	38.7
2025	6 483.0	2 493.0	38.4

Sources: For population figures, *World Population Prospects as Assessed in 1980* (United Nations publication, Sales No. E.81.XIII.8); for labour force, International Labour Organisation, *Labour Force Estimates and Projections, 1950-2000* (Geneva, 1977), with participation rates calculated therefrom.

[a] See footnote *a* to table 8.

[b] See footnote *c* to table 8.

TABLE 25. DEMAND FOR LABOUR, BY ECONOMIC SECTOR, DEVELOPING AND DEVELOPED COUNTRIES, 1960-2025

(Millions)

Country group and year	*Demand for labour*			
	Agriculture	*Industry*	*Services*	*Total*
Developing countries[a]				
1960	372.0	58.9	94.9	526.0
1975	454.8	102.5	162.1	719.1
1980	470.0	127.2	199.7	797.0
2000	654.3	268.0	421.9	1 340.0
2025	816.2	500.3	713.2	2 029.7
Developed countries[b]				
1960	124.0	151.3	161.1	436.4
1975	84.2	194.9	236.4	515.5
1980	66.7	214.2	261.9	542.8
2000	49.8	233.2	353.2	636.2
2025	29.5	222.2	408.0	659.7
Total				
1960	496.0	210.2	256.0	962.4
1975	539.0	297.4	398.5	1 234.6
1980	536.7	341.4	461.6	1 339.8
2000	704.1	501.2	775.1	1 976.2
2025	845.7	722.5	1 121.2	2 689.4

Sources: For 1960, 1975 and 1980, see table 24; for 2000 and 2025, scenario figures.

[a] See footnote *a* to table 8.

[b] See footnote *c* to table 8.

aluminium, copper, iron, lead, nickel, tin and zinc. Together, they constitute by far the largest part of world non-fuel mineral production. In the future, technological changes may give new importance to a metal other than one of these; currently, however, it is clear that these seven are being extensively mined and processed, and they constitute essential input to the economy as a whole. Therefore, an attempt is made here to answer the question whether these minerals will be

TABLE 26. PERCENTAGE DISTRIBUTION OF LABOUR FORCE, BY ECONOMIC SECTOR, DEVELOPING AND DEVELOPED COUNTRIES, 1960-2025

Country group and year	*Distribution of labour force*		
	Agriculture	*Industry*	*Services*
Developing countries[a]			
1960	70.7	11.2	18.0
1975	63.2	14.3	22.5
1980	59.0	16.0	25.0
2000	48.8	20.0	31.5
2025	40.2	24.6	35.1
Developed countries[b]			
1960	28.4	34.7	36.9
1975	16.3	37.8	45.9
1980	12.3	39.5	48.2
2000	7.8	36.7	55.5
2025	4.5	33.7	61.8
Total			
1960	51.5	21.8	26.6
1975	43.7	24.1	32.3
1980	40.1	25.5	34.5
2000	35.6	25.4	39.2
2025	31.4	26.9	41.7

Source: Calculated from data given in table 25.

[a] See footnote *a* to table 8.

[b] See footnote *c* to table 8.

available in sufficient quantities in the future to sustain the high growth rates necessary for the Lima target and beyond.

Once more, there are two stages of analysis: the estimation of supply; and that of demand. The former stage, however, requires a consideration of the different definitions of supply in the context of mineral extraction. These categories include reserves, which are the amounts of a mineral exploitable under current conditions; and resources, which include reserves, known deposits not currently exploitable and hypothesized unknown deposits.[13]

Changes in technology and economic conditions may lead to shifts between reserves and resources, as new techniques or increased demand make it worth while to exploit previously inaccessible or low-grade deposits. Similarly, previously exploitable deposits of minerals may, due to changed economic conditions, no longer be worth exploiting and would thus be regarded as resources rather than reserves. Both concepts tend to be revised upward over time.

Estimates of world reserves of these seven metals are given in table 27, and an increase can be seen for all if the earliest and most recent available figures are compared. The same is true of resources, as is shown in table 28. Reserves are, of course, smaller than resources, following the definition given above. A comparison of the estimates for 1979 shows that reserves are at most 60 per cent of resources (for aluminium) and as little as 5 per cent (for zinc). Thus, apart from reserves, a substantial supply is at least theoretically available. The estimates contained in these tables include those from more recent sources than were available at the time of the earlier study.[14]

TABLE 27. ESTIMATED WORLD MINERAL RESERVES, 1968-1981

(Millions of tons)

Year	World reserves[a]						
	Aluminium	*Copper*	*Iron*	*Lead*	*Nickel*	*Tin*	*Zinc*
1968	1 060	200	80 000	86	67	4.5	112
1973	3 270	335	88 000	130	42	4.5	120
1974	3 480	408	91 000	150	54	10.0	236
1976	5 600	503	103 000	136	60	10.0	166
1979	4 717.3	494	103 000	127	60	10.0	162
1981	. .	551	93 600	156	82	9.7	241

Sources: For 1968, Leonard L. Fischman and Hans H. Landsberg, "Adequacy of nonfuel minerals and forest resources", in *Population, Resources and the Environment*, Ronald G. Ridker, ed., Research Reports of the Commission on Population Growth and the American Future (Washington, D.C., Government Printing Office, 1972), vol. 3, pp. 77-101. For 1973, I. Rajaraman, "Non-renewable resources: a review of long-term projections", *Futures*, vol. 8, No. 3 (June 1976). For 1974, K. J. Walker, Materials consumption implications of a fully industrialized world, *Resources Policy*, vol. 5, No. 4 (December 1979). For 1976, *The Global 2000 Report to the President: Entering the Twenty-First Century*, report by the Council on Environmental Quality and the United States Department of State (Washington, D.C., Government Printing Office, 1980). For 1979, United States Department of the Interior, Bureau of Mines, *Mineral Facts and Problems* (Washington, D.C., Government Printing Office, 1980). For 1981, regional distribution of mining production and reserves of mineral commodities in the world, Federal Institute for Geosciences and Natural Resources, Hannover, Federal Republic of Germany, January 1982.

[a] Excluding centrally planned economies of Asia.

TABLE 28. ESTIMATES OF WORLD MINERAL RESOURCES, 1974, 1977 AND 1979

(Millions of tons)

Mineral	World resources[a]		
	1974	*1977*	*1979*
Aluminium (bauxite)	5 720	8 000	8 028
Copper	1 860	2 220[b]	2 316[b]
Iron	195 000	236 000	217 000
Lead	-	1 370	288
Nickel[c]	112	157	228
Tin	21	37	37
Zinc	1 506	4 160	4 380

Sources: See sources cited for 1974, 1976 and 1979 in table 27.

[a] See footnote *a* to table 27.

[b] Including 690 million tons of copper from deep-sea nodules.

[c] Excluding deep-sea nodules.

Demand for key minerals

Having established estimates of world reserves and resources, the next step is to determine demand for the key minerals on the basis of the economic scenario presented in section A. It will be recalled that the assumptions of this scenario included achievement of the Lima target and somewhat reduced growth rates thereafter.

The previous study employed estimated elasticities of consumption to GDP for each of the minerals and thus obtained estimates of consumption and cumulative consumption over the scenario period. For present purposes, it was possible to derive more precise estimates by investigating the functional relationship between consumption and the growth of the manufacturing sector. As this sector can be assumed to be the only consumer of the minerals, it is believed that this procedure may yield more accurate estimates than a relationship between consumption and GDP as a whole.

The results of the econometric analysis are shown in table 29, which gives the functional relationship estimated for the seven minerals with respect to manufacturing value added, on the basis of data for the period 1969-1980. The estimated relationships reflect the decreasing role of mineral-intensive industries in the manufacturing sector as a whole in the developed countries. In general, the functions are very simple but they appear reasonable from several points of view and may give an indication of consumption of those key minerals in the context of the Lima target and beyond.

The historical values of consumption of the seven minerals for 1975 and the scenario estimates derived using the estimated functions for 1980, 1990, 2000 and 2025 are given in table 30. (For iron-ore, the 1980 figures are actual data rather than estimates.) The share of the developed regions in world consumption is shown to increase in line with the achievement of the Lima target. Given the differential in growth rates, these shares will increase further by 2025; and consumption of tin and zinc, for instance, in the developing countries would be more than half of the world total. Such figures, of course, assume the validity both of the economic scenario and of the proposed relationship between growth and mineral consumption. However, they at least indicate the broad dimensions, with current technology, of future demand for key minerals and point also to the changing structure of economic relationships between the North and South implied by the Lima target.

World balances

The cumulative consumption of key minerals on the basis of the relationships described above, i.e., the consumption summed up for the period 1980-2000, is given in table 31. This table permits a comparison of consumption with the estimates of reserves in 1980, which are an interpolation between the 1979 and 1981 estimates presented in table 27. Column (3) shows the extent to which these figures can be regarded as being depleted by the cumulative consumption: for instance, world consumption will have used 14 per cent of

TABLE 29. RESULTS OF REGRESSION PERFORMED FOR EACH MINERAL, AFRICA, LATIN AMERICA AND ASIA, AND AGGREGATED DEVELOPED COUNTRIES

Region	Regression results						
	Aluminium	*Copper*	*Iron*	*Lead*	*Nickel*	*Tin*	*Zinc*
Africa							
Coefficient	4.41	1.42	59.60	2.24	. .	0.12	2.25
Standard deviation	(±0.3)	(±0.07)	(±3.1)	(±0.11)	. .	(±0.06)	(±0.1)
R^2	0.949	0.973	0.974	0.991	. .	0.740	0.982
Latin America							
Coefficient	4.62	3.31	140.83	1.47	0.08	0.96	2.48
Standard deviation	(±0.175)	(±0.11)	(±4.09)	(±0.07)	(±0.008)	(±0.03)	(±0.06)
R^2	0.986	0.989	0.992	0.992	0.918	0.989	0.995
Asia [a]							
Coefficient	8.87	2.75	196.04	2.34	9.11	0.80	5.14
Standard deviation	(±0.21)	(±0.090)	(±3.73)	(±0.03)	(±0.009)	(±0.109)	(±0.14)
R^2	0.994	0.989	0.997	0.999	0.934	0.750	0.993
Developed countries [b]							
Coefficient	10.04	4.95	11 278.60	110.30	0.39	0.09	127.60
Standard deviation	(±0.14)	(±0.11)	(±193.8)	(±1.4)	(±0.009)	(±0.14)	(±2.6)
R^2	0.358	0.995	0.997	0.999	0.995	0.193	0.996

Source: Calculated by the secretariat of the United Nations Industrial Development Organization.
NOTE: Analysis based on data for 1969-1980.
[a] See footnote *a* to table 8.
[b] See footnote *c* to table 8.

estimated reserves of aluminium by the year 2000. Column (4) in table 31 shows the year in which exhaustion (100 per cent use) would take place, given the growth rates for manufacturing during the scenario period 2000-2025.

It should be stressed that these are world balances. Demand was calculated on a regional basis, but reserves are given on a world basis. Thus, even though current reserves appear sufficient to meet the demand generated by achievement of the Lima target, there may be important implications in terms of interregional co-operation, and consequent new patterns of international trade, in order to satisfy this demand.

As concerns the period 2000-2025, column (4) of table 32 presents what at first seems to be a less encouraging picture, because only aluminium and iron-ore appear to have reserves sufficient to meet demand up to 2025. However, it should be noted that these figures are reserve estimates for 1980, and technological and economic change can be expected to transform at least a part of current resources into reserves. For instance, one estimate of copper resources in sea-bed nodules alone is about 690 million tons (see table 28). Again, consideration of the uses of these minerals indicates several reasons that technological change would also reduce the growth of demand from that suggested here.[15] Lead, for instance, is used largely for storage batteries and as a petrol additive. Intensive research is continuing in the first field and environmental pressures can be expected to continue to reduce the second type of usage.

Table 32 gives a picture of demand versus supply to the year 2025, using resources rather than reserves as a measure of supply and using the latter growth rates of consumption to calculate cumulative consumption up to 2025. It can be seen that only lead resources will be exhausted by then. This conclusion is not as ominous as it might appear, when one considers the foregoing remarks with respect to this metal and also its considerable recycling possibilities.

However, it is clear that the need to rely upon resources rather than reserves for the period 2000-2025 has serious implications for investment, technological progress, conservation and recycling. International co-operation will clearly be essential in all these areas in order to achieve an efficient, equitable and rational exploitation of resources. The alternative could be a serious disruption of world-wide economic growth.

D. ENERGY SUPPLY AND REQUIREMENTS

Sources of energy

The second law of thermodynamics states that energy can neither be created nor be destroyed. Thus, a certain looseness of expression is found in international debates on energy issues when such phrases as "an energy shortage" or "an energy crisis" are used. In fact, all natural processes involve the conversion of energy from one form to another, whether thermal, kinetic or other. Nevertheless, the "energy crisis" does exist — but it is a crisis with respect to the sources of energy. The possible exhaustion of traditional sources means that a perhaps difficult and costly transformation of current uses of energy may be necessary in order to exploit new sources; and for many of those sources, the technology is not yet sufficiently developed.

This discussion concentrates on traditional energy sources, i.e., those actually used by the manufacturing and other sectors, in particular, coal, crude petroleum and natural gas. An attempt is made to measure the

TABLE 30. WORLD MINERAL CONSUMPTION, DEVELOPING COUNTRIES, BY REGION, AND DEVELOPED COUNTRIES, 1975-2025

(Millions of tons)

Region and year	World consumption of:						
	Aluminium	*Copper*	*Iron*	*Lead*	*Nickel*	*Tin*	*Zinc*
Africa							
1975	0.07	0.02	0.74	0.04	. .	0.002	0.03
1980[a]	0.09	0.03	1.26[b]	0.04	. .	0.002	0.04
1990[a]	0.25	0.08	3.43	0.13	. .	0.007	0.13
2000[a]	0.48	0.15	6.44	0.24	. .	0.013	0.24
2025[a]	2.95	0.95	39.87	1.50	. .	0.08	1.50
Latin America							
1975	0.47	0.31	13.26	0.12	0.009	0.008	0.23
1980	0.58	0.42	18.13	0.19	0.011	0.012	0.31
1990	1.22	0.88	37.25	0.39	0.022	0.025	0.65
2000	3.25	2.33	99.0	1.03	0.059	0.068	1.74
2025	14.03	10.05	427.67	4.46	0.255	0.292	7.52
Asia[c]							
1975	0.46	0.13	10.11	0.12	0.005	0.009	0.23
1980	0.70	0.22	15.45	0.18	0.010	0.014	0.41
1990	1.95	0.61	43.14	0.51	0.025	0.039	1.13
2000	4.80	1.49	106.07	1.26	0.061	0.096	2.78
2025	24.26	7.53	536.41	6.40	0.307	0.489	14.07
Developing countries[c]							
1975	1.0	0.46	24.11	0.28	0.014	0.019	0.49
1980	1.37	0.07	34.84	0.41	0.021	0.028	0.76
1990	3.42	1.57	83.82	1.03	0.047	0.071	1.91
2000	8.53	3.97	211.51	2.53	0.12	0.177	4.76
2025	41.24	18.53	1 003.95	12.36	0.562	0.861	23.09
Developed countries[d]							
1975	13.58	6.7	443.37	4.07	0.54	0.18	4.35
1980	18.41	8.77	435.68[b]	4.71	0.72	0.22	5.45
1990	26.44	12.71	578.67	5.66	1.03	0.26	6.55
2000	40.76	19.61	718.51	7.02	1.59	0.32	8.13
2025	122.55	58.9	1 245.88	12.18	4.77	0.56	14.10
Total							
1975	14.58	7.16	467.48	4.35	0.55	0.19	4.84
1980	19.78	9.44	470.52	5.12	0.74	0.25	6.21
1990	29.86	14.28	662.49	6.69	1.08	0.33	8.46
2000	49.29	23.58	930.02	9.55	1.71	0.50	12.89
2025	163.79	77.43	2 249.83	24.54	5.33	1.42	37.19

Sources: World Mineral Statistics, 1970-1974; ibid., 1972-1976; ibid., 1974-1978 (London, Institute of Geological Sciences).

[a] Estimate.

[b] Observed value.

[c] See footnote *a* to table 8.

[d] See footnote *c* to table 8.

TABLE 31. WORLD CONSUMPTION AND RESERVES OF KEY MINERALS, 1980-2000

(Millions of tons)

Mineral	*Cumulative consumption, 1980-2000 (1)*	*Current reserves, 1980 (2)*	*Consumption as percentage of current reserves (3)*	*Year of reserve exhaustion (4)*
Aluminium	661.3	4 750	13.9	2035
Copper	316.0	525	60.2	2009
Iron	13 718.4	97 500	14.1	2042
Lead	144.4	150	96.3	2002
Nickel	23.6	75	31.5	2020
Tin	7.3	10	73.0	2006
Zinc	186.3	200	93.2	2002

Sources: Based on table 27, with estimates based on regression results of table 29 and the scenario.

NOTE: Excluding the centrally planned economies of Asia.

rate at which these resources are being depleted and their likely corresponding exhaustion if the current scenario is followed and there is no substitution of other sources.

The study of energy sources is thus not entirely analagous with that of key minerals (see section C), because key minerals are used in the manufacturing process and embodied in the final product. Indeed, they determine the nature of the final product. The industrial use of energy, on the other hand, is not conceptually linked with the source of that energy. A manufacturing plant might use electricity to drive its machines: it is irrelevant (apart from the cost aspects) whether that electricity is generated by nuclear, hydroelectric or coal-fired power-stations. Transformations of technolo-

TABLE 32. WORLD CONSUMPTION AND RESOURCES OF KEY MINERALS, 2000-2025

(Millions of tons)

Mineral	*Consumption by 2000 (1)*	*Assumed growth, 2000-2025 (2)*	*Consumption by 2025 (3)*	*Cumulative consumption, 2000-2025 (4)*	*Current resources, 1980 (5)*	*Consumption as percentage of current resources (6)*	*Year of resource exhaustion (7)*
Aluminium	49.29	4.92	163.79	2 421.4	8 028	30.4	2046
Copper	23.58	4.87	77.43	1 159.4	2 316	50.0	2037
Iron	930.02	3.59	2 249.83	38 013.6	217 000	17.5	2063
Lead	9.55	3.85	24.54	414.2	288	143.8	2020
Nickel	1.71	4.65	5.33	81.4	228	35.7	2044
Tin	0.50	4.26	1.42	22.5	37	60.8	2035
Zinc	12.89	4.33	37.19	585.6	4 380	13.4	2065

Sources: Based on table 28, with estimates using regression results of table 29 and the scenario.
NOTE: Excluding the centrally planned economies of Asia.

gy are, of course, necessary for other types of plants and other types of use: the substitution of other energy sources for petroleum in private transport is one example. It is true that existing motor cars can be modified fairly easily to run on alcohol or on liquified natural gas; but if these sources as well as petroleum were to be unavailable, major technological change might be required.

Development of demand for selected energy sources

In its treatment of energy, the earlier study[16] on industrial carrying capacity relied upon a number of independent projections of energy consumption to assess the likely future demand for both commercial and other energy sources. The present study attempts to treat the question of energy more uniformly, in that the relationship between growth and three selected energy sources is estimated, just as it was for labour and for key minerals; and the resulting relationships are then applied to the scenario growth rates given in section A. Future consumption is derived and compared with estimates of reserves and resources in this field: thus, once again, the balance between supply and demand is assessed.

Time-series data on consumption of coal, crude petroleum and natural gas for the period 1970-1980[17] were used in the estimation of a simple functional relationship for each of the three energy sources and for each of the regions:

$$\text{Ln consumption} = A + B \text{ Ln } GDP$$

The estimation procedure yielded, in general, satisfactory fittings of this relationship. The estimated coefficients are given in table 33.

Interregional variations between the estimated coefficients can certainly be seen from this table. It should be remembered, however, that the independent variable is GDP, which itself is composed of a number of sectors with different energy intensities; and structural differences between the regions as to their sectoral composition value added are significant (see section A). As a rule, one would expect such a variation in the estimated coefficients to reflect relative efficiencies, in particular, steps that may have been taken during the period 1970-1980 to use energy more efficiently; variations in these steps also are reflected in the coefficients.

TABLE 33. COEFFICIENTS ESTIMATED TO FORECAST FUTURE ENERGY CONSUMPTION, LESS DEVELOPED REGIONS AND AGGREGATED DEVELOPED COUNTRIES

Region and energy source	*Coefficient*		
	A	*B*	R^2
Africa			
Coal	325.5	0.498	0.984
Crude petroleum	36.47	1.35	0.944
Natural gas	3.539	1.35	0.886
Latin America			
Coal	7.568	1.25	0.996
Crude petroleum	3 231.62	0.75	0.995
Natural gas	39.5	1.15	0.994
Asia[a]			
Coal	611.69	0.894	0.999
Crude petroleum	296.99	1.098	0.998
Natural gas	12.03	1.234	0.975
Middle East[b]			
Coal	7.86	1.368	0.990
Crude petroleum	1 035.24	0.912	0.986
Natural gas	7.42	1.059	0.990
Developed countries[c]			
Coal	4 220.3	0.711	0.999
Crude petroleum	1 822.97	0.829	0.999
Natural gas	685.62	0.850	0.999

[a] See footnote *a* to table 8.
[b] For names of countries, see footnote *b* to table 8.
[c] See footnote *c* to table 8.

Nevertheless, the use of these functional relationships for projections must be done with some reservation, principally because structural change, subsumed in these average relationships estimated for the period 1970-1980, can be expected to continue in the future. The relative weights of the different sectors in GDP as a whole will thus alter and bring about changes in the average relationship between the type of energy consumption and GDP. In particular, the emphasis in the present scenario on manufacturing growth, and the increase in its share of GDP in the less developed regions especially, may alter the relationship between energy consumption and GDP as a whole. However, equations may provide some initial estimates and at least indicate roughly where shortages can be expected to occur.

TABLE 34. ESTIMATED CONSUMPTION OF SELECTED ENERGY TYPES, DEVELOPING COUNTRIES, BY REGION, AND DEVELOPED COUNTRIES, 1970-2025

(Millions of tons of oil equivalent)

Region and energy type	*Estimated consumption*					
	1970	*1975*	*1980*	*1990*	*2000*	*2025*
Africa						
Coal	4.3	4.6	3.7	6.7	8.6	18.0
Crude petroleum	19.9	35.1	50.1	132.3	257.2	1 916.4
Natural gas	0.4	3.3	6.9	12.8	25.0	186.0
Latin America						
Coal	9.1	12.2	17.4	41.8	136.1	832.6
Crude petroleum	261.4	289.1	310.4	568.7	1 154.3	3 422.0
Natural gas	26.6	34.5	53.9	109.6	324.4	1 716.8
Asia[a]						
Coal	63.8	81.8	105.6	200.9	393.9	1 490.6
Crude petroleum	81.8	108.0	157.0	366.5	838.0	4 296.9
Natural gas	4.4	9.7	16.5	36.0	91.2	573.1
Middle East[b]						
Coal	6.5	8.8	12.9	29.0	71.8	483.0
Crude petroleum	110.8	107.5	117.4	248.0	454.2	1 619.6
Natural gas	13.0	19.2	25.8	43.0	86.7	379.5
Developing countries[a]						
Coal	83.7	107.4	139.6	278.4	610.4	2 824.2
Crude petroleum	473.9	513.2	634.9	1 315.5	2 703.7	11 254.9
Natural gas	44.4	66.7	103.1	201.4	527.3	2 855.4
Developed countries[c]						
Coal	1 710.7	1 779.2	2 011.1	2 621.6	3 441.5	6 913.0
Crude petroleum	1 771.9	2 070.5	2 249.3	3 282.7	4 508.0	10 163.2
Natural gas	788.1	933.6	1 093.2	1 491.9	2 065.2	4 752.6
Total						
Coal	1 794.4	1 886.6	2 150.7	2 900.0	4 051.9	9 737.2
Crude petroleum	2 245.8	2 583.7	2 884.2	4 598.2	7 211.7	21 418.1
Natural gas	832.5	1 000.3	1 196.3	2 266.6	2 592.5	7 608.0

Sources: Yearbook of World Energy Statistics, 1981 (United Nations publication, Sales No. E/F.82.XVII.16); regression results of table 33 and the scenario.

[a] See footnote *a* to table 8.

[b] For names of countries, see footnote *b* to table 8.

[c] See footnote *c* to table 8.

Actual data on consumption of three types of energy in the less developed regions and the developed countries are given in table 34, for 1970, 1975 and 1980. For the period 1990-2000 and for 2025, the functions defined in table 33 were applied to the scenario growth rates of GDP for each region and the estimated consumption derived. No account is taken at this stage of regional reserves and resources: thus, consumption is assumed to grow in accordance with the observed relationship irrespective of whether that region can itself meet the demand.

Selected energy reserves and resources

Estimated reserves of the three types of traditional energy sources considered are given in table 35. The table is an estimate in that world totals were regionally distributed according to the distribution from another source. The figures show that although the developing countries as a whole have rather more coal and rather less natural gas than the developed countries, they have an overwhelming preponderance of world crude-petroleum reserves. The estimated resources given in table 36 include some disaggregation of both oil and coal. Uranium, which has not yet been covered in this analysis, also is added. The distinction between reserves and resources is, broadly speaking, that which was assumed for key minerals (see section C). Accordingly, the definition of reserves implies not only the technological feasibility of exploiting a mineral deposit but economic criteria, such as profitability, under current economic conditions. Therefore, the reserves of the different energy sources display the same dynamics as reserves of non-fuel minerals, increasing steadily over time as a result of new exploration, technological advances, changing economic conditions and — not least — the policies of mining firms.

Balances for selected energy sources

The relationship between demand and supply for coal, crude petroleum and natural gas for the period 1980-2000 is summarized in table 37. Column (1) gives the cumulative world consumption over the period; and column (2), the current estimate of world reserves. At these levels, the year of exhaustion can be estimated.

TABLE 35. ENERGY RESERVES, DEVELOPING COUNTRIES, BY REGION, AND DEVELOPED COUNTRIES

(Millions of tons of oil equivalent)

Region	Coal	Petroleum: Crude petroleum reserves	Petroleum: Recoverable oil, proved reserves in place	Natural gas
Africa	7 370.6	7 179.2	. .	5 433.4
Asia	38 432.0	2 113.7	. .	3 711.9
Latin America	11 161.3	7 101.2	. .	3 711.9
Middle East	842.4	44 941.4	. .	19 181.4
Developing countries	55 806.3	61 335.5	. .	30 746.8
Developed countries	482 882.4	16 699.5	. .	35 518.9
TOTAL	538 688.7[a]	78 035.0	81 138.0	66 265.7

Sources: Yearbook of World Energy Statistics, 1980 (United Nations publication, Sales No. E/F.81.XVII.10); and for regional distribution, Energy Economics Research Ltd., *Statistical Review 1980* (Wokingham, Berkshire, England).

[a] Of this total, 267,714.3 million tons are hard coal and 270,974.4 million tons are brown coal.

TABLE 36. ESTIMATED WORLD ENERGY RESOURCES, BY ENERGY TYPE

(Billions of tons of oil equivalent)

Energy type	Estimated resources	Technically recoverable resources	Currently economically recoverable resources
Conventional oil	700	290	90
Unconventional oil			
Tar-sands	350	520	70
Oil-shale	490		
Natural gas	280	210	70
Coal			
Hard coal	5 600	840	420
Brown coal, lignite	1 400		
Uranium used for:			
Light-water reactors	. .	170	80
Breeder reactors	. .	10 500	4 550
TOTAL	. .	2 030	730
	. .	(12 360)	(5 210)

Source: Secretariat of United Nations Industrial Development Organization, "Industrial carrying capacity and the Lima target", *Industry and Development*, No. 6 (December 1981) (United Nations publication, Sales No. E.81.II.B.4), p. 33, table 14, based on 1979 data obtained from Mobil Oil AG, Federal Republic of Germany.

TABLE 37. DEPLETION OF WORLD ENERGY RESERVES, 1980-2000

(Millions of tons of oil equivalent)

Energy source	Cumulative consumption, 1980-2000[a] (1)	Current reserves (2)	Consumption as percentage of reserves (3)	Year of reserve exhaustion (4)
Coal	60 986.6	538 688.7	11.3	2049
Crude petroleum	96 618.9	159 173.0	60.7	2008
Natural gas	36 808.3	66 265.7	55.5	2010

[a] Excluding the centrally planned economies of Asia.

Crude-petroleum and natural-gas reserves are sufficient to the year 2000 but not for much longer, while coal reserves would not be exhausted (at the growth rates assumed for the period 1980-2000) until 2049. The initial indications, therefore, are that these conventional energy sources would not be exhausted by 2000, even at the high growth rates necessary to reach the Lima target embodied in the scenario.

The time-period 2000-2025 is treated differently in table 38. Here, the assumption is that consumption will depend upon the use of resources, rather than reserves, with all the accompanying technological change necessary for exploitation. The consumption growth rates are determined by the GDP growth rates of the scenario for 2000-2025, and cumulative consumption for this period is given in column (1) of table 38. Thus, it can be seen that if the currently estimated resources could indeed be used, they would be more than sufficient to sustain further growth of the world economy to the year 2025. Coal resources, for instance, would not be exhausted until 2113, while crude petroleum and natural gas resources would last until 2054 and 2041, respectively.

The initial conclusion therefore is that the current relationship between GDP and the consumption of three key energy sources is such that the high growths necessary to reach the Lima target would not lead to reserve exhaustion on a world-wide basis until after the year 2000; and, further, that continued growth to 2025 would be possible if technological advances and other changes would permit the use of known resources. The limited nature of this analysis should, however, be stressed: apart from the uncertainties of using existing consumption relationships for projections long into the future, the calculation of global balances between demand and supply for reserves says nothing about the regional balances; and it is expected that new patterns of international trade, finance and co-operation will be needed to achieve a harmonious exploitation of existing reserves. For resource use in the later period up to 2025, it can be expected that advances, in addition to international co-operation, would be needed if those resources currently known to exist were to be systematically and economically exploited. A special consideration must be that the use by developing countries of so-called "frontier technologies" in this connection may lead to a new form of dependence upon the developed countries.[18]

TABLE 38. DEPLETION OF WORLD ENERGY RESOURCES, 2000-2025

(Billions of tons of oil equivalent)

Energy source	World cumulative consumption, 2000-2025[a] (1)	World current resources (2)	Consumption as percentage of resources (3)	Year of resources exhaustion (4)
Coal	165.0	6 000	3.0	2113
Crude petroleum	333.4	1 540	21.6	2054
Natural gas	119.0	280	42.5	2041

[a] Excluding the centrally planned economies of Asia.

Other energy sources

Coal, petroleum and natural gas were discussed above. Other energy sources have not yet been mentioned but many are in use. Hydroelectric and nuclear-fission power are widely used; and biomass and solar

energy are the subject of intensive research and development. Although results will be slow in coming, research in nuclear fusion as an energy source is intensive. At first sight, therefore, the rather reassuring conclusions presented above can only be reinforced by a consideration of other reserves and resources of these other types of energy. Table 39, which shows the potential of some renewable energy sources, is reproduced from the earlier study, which points out that, in principle, the energy potential of the world is sufficient to sustain levels of energy demand for growth into the next century. The article also notes that currently known technically recoverable uranium resources alone could support world energy demand over several hundred years, assuming, of course, that the energy use system is adjusted with the aid of technological development to use the mostly electrical power thus generated.

TABLE 39. WORLD POTENTIAL OF RENEWABLE ENERGY SOURCES

(Millions of tons of oil equivalent per annum)

Energy source	*Technical potential*	*Realizable potential*
Biomass	4 300	3 650
Hydropower	2 150	1 070
Wind energy	2 150	720
Geothermal (wet)	1 530	720
Solar (soft)[a]	3 580	640
Ocean thermal-energy conversion	720	360
Tidal energy	30	. .
Wave energy		
Ocean current	4	. .
Total (approximate)	14 460	7 160[b]
Solar (hard)[c]	35 800 - 71 600	25 060
TOTAL	50 260 - 86 060	32 220

Sources: International Institute for Applied Systems Analysis, *Energy in a Finite World* (Cambridge, Mass., Ballinger, 1981); World Energy Conference, *World Energy Resources, 1985-2020* (New York, IDC Science and Technology Press, 1978).

NOTE: Excluding the centrally planned economies of Asia.

[a] User-oriented solar (collector) technology in small units. Extrapolation of a study of California to a world study results in a realizable potential of 1,580 million tons of oil equivalent per annum.

[b] The total realizable potential, 7,160 million tons of oil equivalent, includes a large portion of energy in the form of electricity (secondary energy) and therefore corresponds to over 10,000 million tons of oil equivalent in primary energy requirements.

[c] Industrial use of solar energy mainly by solar-concentrator technology.

Thus, it is the more immediate depletion of petroleum reserves that will lead to problems, but it should be recognized that they are problems of conversion to alternative sources. These are problems for the developing countries, in particular, because they are not technologically advanced enough to make the transition easily; and increased technical assistance in the relevant fields is essential. In this context, UNIDO has identified[19] biomass and hydropower as the more immediately appropriate sources. The experience of Latin America in both these areas and of China (not considered in the present study) in the latter area is found to be encouraging and may be valuable to other less developed regions.

SUMMARY

This revised version of the earlier study on industrial carrying capacity, has, like its predecessor, attempted to contribute to the more general study of the earth's carrying capacity by examining:

(*a*) The role of industrialization at the world level in overall development for the future;

(*b*) The extent to which this industrialization contributes to the alleviation of socio-economic problems by increasing income levels and employment;

(*c*) The extent to which natural resources (in the form of key minerals and of energy sources) will be available to sustain such industrialization and overall growth.

New economic data, new estimates of resource availability and a different approach to the measurement of resources consumption were used for the current study. However, the same conclusions are found broadly to stand:

(*a*) Although the developing countries outperform the developed countries in terms of GDP growth, the gap in GDP per capita between developed and developing countries will narrow only slightly; and special efforts will be necessary for the developing countries to achieve adequate levels of development. In 1980, the GDP per capita of developing countries was just over 10 per cent of that of the developed; in the year 2025, this figure will still be less than 19 per cent;

(*b*) Analysis of the development of labour productivity and the world employment potential shows that, in principle, rapidly increasing labour forces could be productively employed. Relatively high growth rates of labour productivity were used, based on its development since 1960; and, in some cases, rates even higher than these. However, the balances at a world regional level, rather than a global level, indicate potential problems, implying either increased migration or, more rationally, a further reallocation of productive capacity in the future;

(*c*) Examination of seven important non-fuel minerals reveals that even very high consumption growth rates will not lead to resource exhaustion during the period covered. Thus, there is sufficient time between now and 2025 to develop both further (alternative) mineral resources and new substitutes;

(*d*) Theoretically, total energy resources are so enormous as to present no obstacle to growth. In practice, however, some conventional primary energy sources will be depleted very rapidly, given current trends in energy consumption and additional demands orginating from the industrialization of the developing countries. Therefore, a need exists for a transition to new patterns of energy demand and supply, especially for the replacement of oil.

On an overall basis, there are enormous implications in terms of technological development and investment decisions; and, more generally, of a new spirit of international co-operation for development, if the theoretically soluble problems of sustained growth for the

industrialization of developing countries are to present no obstacle in practice. Without such a spirit, the regional imbalances in resources will lead to the deceleration—and, indeed, to the stagnation—of world progress.

NOTES

[1] Through the Population Division of the Department of International Economic and Social Affairs.

[2] For the complete discussion of the economic scenario and world employment potential, see "Industrial carrying capacity", in *World Population Trends and Policies: 1981 Monitoring Report*, vol. I, *Population Trends* (United Nations publication, Sales No. E.82.XIII.2), pp. 244-253. For an abridged version covering also key minerals and energy, see United Nations Industrial Development Organization, "Industrial carrying capacity and the Lima model", *Industry and Development*, No. 6 (December 1981) (United Nations publication, Sales No. E.81.II.B.4), pp. 19-35.

[3] See United Nations Industrial Development Organization, "Modelling the attainment of the Lima target: the LIDO model", *Industry and Development*, No. 6 (December 1981) (United Nations publication, Sales No. E.81.II.B.4), pp. 1-17.

[4] The term "region" as used in this chapter does not refer to the 24 geographical regions established by the Population Division of the Department of International Economic and Social Affairs of the United Nations Secretariat.

[5] *World Population Prospects as Assessed in 1980* (United Nations publication, Sales No. E.81.XIII.8).

[6] Excluding the centrally planned economies.

[7] The countries included in these five regions do not in all cases conform to those included in the major geographical areas or other regions established by the Population Division of the Department of International Economic and Social Affairs of the United Nations Secretariat. The countries included here in the Middle East are: Algeria and Libyan Arab Jamahiriya in Northern Africa; Iran (Islamic Republic of) in Southern Asia; and Bahrain, Democratic Yemen, Iraq, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Syrian Arab Republic, United Arab Emirates and Yemen in Western Asia. In this chapter, Cyprus, Israel, South Africa and Turkey, which the Population Division groups with the developing countries, are included in the developed countries.

[8] See General Assembly resolution 35/36, annex.

[9] The International Development Strategy for the Third United Nations Development Decade contains a (rounded) target of 4 per cent.

[10] Medium projections derived from United Nations, *World Prospects as Assessed in 1980*.

[11] These tables therefore show figures for developed market economies and centrally planned economies.

[12] The assumptions on elasticities and growth rates are based on those given in "Industrial carrying capacity", in *1981 Monitoring Report*; that study distinguished between developed market economies and centrally planned economies.

[13] See United Nations Industrial Development Organization, "Industrial carrying capacity and the Lima target"; and G. J. S. Govett and M. N. Govett, "The concept and measurement of mineral reserves and resources", *Resources Policy*, vol. 1, No. 2 (September 1974), pp. 46-55.

[14] United Nations Industrial Development Organization, "Industrial carrying capacity and the Lima target".

[15] See United States of America, Department of the Interior, Bureau of Mines, *Mineral Facts and Problems* (Washington, D.C., Government Printing Office, 1980).

[16] United Nations Industrial Development Organization, "Industrial carrying capacity and the Lima target".

[17] *Yearbook of World Energy Statistics, 1981* (United Nations publication, Sales No. E.82.XVII.16).

[18] "Energy development and industrialization" (UNIDO/OED.135).

[19] *Ibid.*

IX. INTERNATIONAL ECONOMIC RELATIONS AND POPULATION*

Restructuring the world economy in such a way as to bring about a more balanced and equitable distribution of wealth and economic activities is one of the major concerns in international economic co-operation. Acceleration of the development process in developing countries would help to reduce disparities in income within and between countries and would contribute to the eradication of poverty. Both demographic factors and the international environment have a major effect on the development efforts of these countries.

The international economic situation is described first in this chapter. The interrelations between population, development and international economic relations are then explored. Next to be discussed are the trade requirements of increasing populations, as set forth in the International Development Strategy for the Third United Nations Development Decade. The last section concerns the nature of structural adjustments needed in the world economy in order to create an international environment that would be supportive of the development needs of developing countries and conducive to sustained world-wide economic growth.

A. INTERNATIONAL ECONOMIC SITUATION

Distribution of world population, production and trade

In 1980, the developing market economies and the centrally planned economies of Asia, with almost 72 per cent of the world population, accounted for only 20 per cent of world production (see table 40). Although the relative weight in world output of the developed market economies declined during the past two decades, most of the productive activities are still concentrated there. In 1980, their share in the world gross domestic product (GDP) was 65 per cent, which indicates a most uneven distribution of production when one considers that this group contains less than one fifth of the world population. The centrally planned economies of Eastern Europe, with 9 per cent of the world population, accounted for over 15 per cent of world output.

In world manufacturing production and exports, a similar distribution pattern exists: the relative weight of the developed market economies in both was 63 per cent in 1980. Nevertheless, the developing countries have made impressive progress in these two areas. Between 1960 and 1980, their relative share in world manufacturing output rose from 7 to over 10 per cent; and their share in world exports increased from 22 to 28 per cent. In relation to population size, however, the distribution of gains from these economic activities is highly unbalanced; in many cases, it has worsened.

As is shown in table 41, the developing market economies have grown more rapidly than the developed market economies over the past two decades. During the 1960s, a period of relative stability and expansion in the world economy, the average annual growth rate of GDP in the developing market economies was 6 per cent; it was 4.9 per cent in the developed market economies. However, because the rate of population growth was more rapid in the developing market economies, averaging 2.6 per cent per annum, output growth per capita was lower: 3.3 per cent compared with 3.8 per cent for the developed market economies. Hence, the relative income gap between the two groups widened during that period (see table 42). During the 1970s, the economic crisis affected the pace of productive activities in all economic groups, although the slow-down was more pronounced in the developed market economies. During that decade, growth in GDP per capita in the developing

TABLE 40. SHARES OF DEVELOPED AND DEVELOPING COUNTRIES IN WORLD POPULATION, PRODUCTION AND EXPORTS, BY TYPE OF ECONOMY, 1960-1980

(Percentage)

Economic group and year	*Population*	*Gross domestic product*	*Value added in manufacturing*	*Exports*
Developed countries				
Market economies[a]				
1960	22.9	72.1	76.0	66.8
1970	21.2	69.4	71.1	71.3
1980	19.4	64.7	63.2	63.1
Centrally planned economies: Eastern Europe				
1960	10.6	12.0	17.1[a]	10.1
1970	9.7	13.5	21.3[a]	9.8
1980	8.8	15.3	26.6[a]	7.9
Developing countries				
Market economies				
1960	42.9	11.9	6.9	21.5
1970	45.6	12.6	7.6	17.9
1980	48.7	14.7	10.2	28.0
Centrally planned economies: Asia				
1960	23.6	4.0	[a]	1.6
1970	23.6	4.5	[a]	0.8
1980	23.1	5.3	[a]	1.0

Sources: United Nations Conference on Trade and Development, *Trade and Development Report, 1981* (E.81.II.D.9); and *Handbook of International Trade and Development Statistics, Supplement 1981* (E/F.82.II.D.11).

NOTE: For gross domestic product and value added in manufacturing, shares are based on values at 1975 prices and exchange rates, whereas export shares are based on current values.

[a] Share of centrally planned economies of Asia is included in share of centrally planned economies of Eastern Europe.

* Prepared by the United Nations Conference on Trade and Development.

TABLE 41. AVERAGE ANNUAL RATES OF GROWTH OF PRODUCTION, POPULATION AND PRODUCT PER CAPITA, DEVELOPED AND DEVELOPING COUNTRIES, BY ECONOMIC GROUP, 1960-1980

(Percentage)

Economic group	Production		Population		Product per capita	
	1960-1970	*1970-1980*	*1960-1970*	*1970-1980*	*1960-1970*	*1970-1980*
Developed market economies	4.9	3.1	1.1	0.8	3.8	2.3
Developed centrally planned economies:						
Eastern Europe	6.7	4.9	1.1	0.9	5.6	4.0
Developing market economies	6.0	5.2	2.6	2.6	3.3	2.6
Petroleum-importing economies	5.3	5.2	2.5	2.6	2.7	2.6
Low-income petroleum-importing economies[a]	3.8	3.4	2.4	2.5	1.3	0.9
Least developed economies	2.8	3.5	2.6	2.7	0.3	0.8

Source: United Nations, "Overall socio-economic perspective of the world economy to the year 2000 (preliminary draft): report of the Secretary-General" (A/37/211 and Corr.1-4).

NOTE: Gross domestic product in market economies and gross material product in socialist countries measured in 1975 prices and exchange rates.

[a] Countries with gross domestic product per capita under $300 in 1975.

TABLE 42. GROSS DOMESTIC PRODUCT PER CAPITA, DEVELOPED AND DEVELOPING MARKET ECONOMIES, 1960, 1970 AND 1980

Economic group	Level in 1975 dollars			Relative income gap[a]		
	1960	*1970*	*1980*	*1960*	*1970*	*1980*
Developed market economies	3 435	5 000	6 300	1.0	1.0	1.0
Developing market economies	298	412	535	11.5	12.1	11.8
Petroleum-importing economies	274	356	462	12.5	14.0	13.6
Low-income petroleum-importing economies	126	142	155	27.3	35.2	40.6
Least developed economies	137	142	153	25.1	35.2	41.2

Source: See table 41.

[a] Ratio of gross domestic product per capita of the developed market economies to that of the specified economic group.

market economies exceeded that of the developed market economies. While this result narrowed the overall relative income gap, the gap in 1980 of 11.8 was still higher than that of 1960.[1]

The wide disparities that exist between the developing countries, both in economic performance and in levels of income per capita, are not reflected in the overall averages cited. The rapidly growing exporters of manufactures and the major petroleum exporters have succeeded in narrowing the relative income gap with the developed market economies. In these two groups, growth performance has exceeded even the targets set by the International Development Strategy for the First and Second United Nations Development Decades. However, these few countries represent less than 28 per cent of the population of the developing countries.

In the low-income petroleum-importing countries, which contain more than half of the population of the developing countries, increases in production barely kept pace with population growth. During the past two decades, income per capita increased, on average, only 1.1 per cent per annum. Thus, income distribution is also very uneven among the developing countries, and the relative income gap between the low-income and higher-income countries in this group is large. That between the low-income developing countries and the developed market economies, however, is enormous.

In 1980, according to a World Bank estimate, about 750 million people in the developing countries — many of them in the low-income countries — lived in absolute poverty, afflicted by malnutrition, illiteracy and disease.[2] Higher income levels are essential to the reduction of poverty. Growth must be accelerated in the developing countries, particularly in the poorer countries, in order to improve the chances of all people for a better life, which is the ultimate goal of development.

B. INTERRELATION OF POPULATION AND DEVELOPMENT

Income levels

Although sparsely populated areas still exist where rapid population growth might result in the more efficient use of natural resources, in most developing countries, conditions are such that a slower rate of population growth could ease the problems associated with improving levels of living and reducing poverty. High rates of population growth impose serious pressures upon already inadequate social services and can increase the difficulties of generating an economic surplus usable for capital accumulation and economic infrastructure. In such circumstances, it is even more difficult to determine the proper balance to be maintained between social and economic development programmes. It is worth emphasizing in this context that the merits of human development programmes extend beyond purely social considerations: they also enhance the productive capacities of the population, which could be transformed into economic gains if opportunities existed.

An inverse relationship between the rate of population growth and the level of income per capita is supported

by empirical evidence.[3] It would appear, although the precise mechanisms are not clear, that causation runs in both directions. Although GDP per capita might be an imperfect measure of welfare, it does provide an indication of what could be spent by each person on basic necessities and human improvement. It also determines the potential tax base and hence the ability of the Government to finance education, health, nutrition and family planning programmes. Expenditures on human development not only can affect population growth through fertility reduction but can promote long-term economic growth through their effect on productivity.

Labour force and urbanization

The supply of human productive resources is determined by population, which thus plays a vital role in development. Furthermore, technological and scientific advances derive from human skills and ideas. However, as pointed out above, excessive population growth imposes constraints on economic resources. Moreover, social tensions might arise where only limited opportunities exist for people to realize their potential.

Table 43 shows the distribution and rates of growth of the economically active and urban populations of the world. The labour force in developing market economies, which accounted for 45 per cent of the world total in 1980, grew at an average annual rate of 2.1 per cent over the period 1960-1980. The labour force is largely determined by demographic trends, and an unprecedented expansion of over 2.4 per cent per annum is expected up to the end of the century. Given the existing high levels of unemployment in the developing countries, the task of providing enough productive employment to absorb their growing labour force is indeed formidable.

The urban population of the developing market economies, which grew at a very rapid rate of 4.4 per cent per annum during the past two decades, is now greater than that of developed market economies. In 1980, the former group accounted for 40 per cent of world urban population, as against 33 per cent for the developed market economies. The speed of urbanization, however, has not been accompanied by a parallel increase in employment. As a result, unemployment and underutilization of skills are prevalent and the absence of suitable employment opportunities has influenced highly skilled professionals to emigrate.

During the coming decade, the growth of the potential labour force in developing countries will be concentrated in the non-agricultural sector. The population engaged in agriculture is expected to grow at about 1.1 per cent, compared with 2.6 per cent for the total population. Since the population in agriculture is some 57 per cent of the total, growth in the non-agricultural sector could be as high as 4.6 per cent. With historical productivity increases, unemployment rates can be expected to grow rapidly unless there is a significant acceleration in economic growth.

Furthermore, it is important to take note that a relatively high proportion of those leaving agriculture are of working age; hence, the potential labour force in the non-agricultural sector would grow still faster than its population, perhaps at an annual rate of 4.8 per cent. Assuming that the long-term rate of productivity growth in the non-agricultural sector of developing countries will attain a level of 2 per cent, close to the historical rate of 1.9 per cent, gross value added in the sector would need to expand by 6.9 per cent per annum merely to prevent any further increase in the already high unemployment rates. Given the historical relationship between the agricultural and non-agricultural sectors, a growth in GDP of at least 6.3 per cent per annum is implied.[4]

TABLE 43. WORLD DISTRIBUTION AND GROWTH RATES OF ECONOMICALLY ACTIVE POPULATION AND URBAN POPULATION, DEVELOPED AND DEVELOPING COUNTRIES, BY TYPE OF ECONOMY, 1960-1980
(*Percentage*)

Economic group	*World distribution*			*Average annual rates of growth*	
	1960	*1970*	*1980*	*1960-1970*	*1970-1980*
A. *Economically active population*					
Developed countries					
Market economies	21.5	20.4	18.8	1.0	0.8
Centrally planned economies: Eastern Europe	12.5	11.8	11.2	1.0	1.1
Developing countries					
Market economies	41.0	42.7	45.0	2.0	2.2
Centrally planned economies: Asia	25.0	25.1	25.0	1.5	1.6
WORLD	*100.0*	*100.0*	*100.0*	*1.5*	*1.6*
B. *Urban population*					
Developed countries					
Market economies	41.5	37.4	33.0	1.9	1.6
Centrally planned economies: Eastern Europe	14.9	14.2	13.3	2.5	2.2
Developing countries					
Market economies	30.2	34.7	40.1	4.4	4.3
Centrally planned economies: Asia	13.4	13.7	13.6	3.3	2.7
WORLD	*100.0*	*100.0*	*100.0*	*3.0*	*2.8*

Source: *Compendium of Social Statistics, 1977* (United Nations publication, Sales No. E/F.80.XVII.6).

To absorb a greater proportion of their labour force, the developing countries would need a substantial acceleration in development. To a large extent, policy measures could ease the employment situation. A better balance could be sought between rural and urban development, and rural development could counteract the exodus to urban centres by generating employment activities. Moreover, increased agricultural production and income could raise the demand for non-agricultural products and services and thereby create additional employment. In the long run, population policies, such as family planning programmes, could help to reduce the potential labour force and the growth of urban populations.

It is expected that the declining trend in the labour force in the developed market economies will continue. Currently, because of prolonged recessionary conditions and increasing participation of women in the workforce, the growth of the labour force is greater than that of employment. In the longer run, however, a return to normal growth could lead to a serious labour shortage. These opposing trends in the projected labour forces of developed and developing market economies offer a mutually beneficial solution which could ease a potentially disturbing world labour situation. As a part of that solution, it may be warranted to revamp international industrial structures to permit utilization of labour-intensive processes in developing countries. In certain cases, a somewhat increased mobility of labour could also be an element.

C. Development and international economic relations

The major role of population as a determinant of production was discussed above. Because production and international economic relations are closely linked, any change in the rate of population growth would have implications for trading patterns and the flow of capital. Population also directly affects the level of consumption and thus import demand for consumer goods and for the raw materials and capital equipment required to produce goods for final consumption. Moreover, evidence exists to support the view that the savings rate could be influenced by demographic trends. Although there may be other, more important factors to account for the declining savings rate in the developed market economies, the role of the changing age structure of the population should not be discounted. This poor savings performance affects the availability of capital flows to the developing countries. Other direct connections between population and international economic relations may be mentioned, such as the effect of the growth and changing skills of the labour force on the growth and composition of exports, but further research is needed for a more detailed analysis. This section therefore is limited to a discussion of the linkage between development and international economic relations and, in order to lay the groundwork for some of the issues set forth in the concluding section, of recent trends in these areas.

International trade

The rapid expansion of trade resulting from international efforts to reduce trade restrictions following the Second World War had highly positive effects on domestic production, industrialization and employment. During the 1960s, annual growth of world exports was 8.2 per cent, and all major economic groups had annual increases of over 8 per cent (see table 44).[5] The general decline in world economic activity during the 1970s led to a deceleration of world export growth to 5.9 per cent per annum. In the developed market economies, excess capacity and unemployment gave rise to the imposition of protectionist measures, which discriminated against the exports of developing countries, in particular, exports of agricultural products and manufactured goods. Despite this impediment, however, the petroleum-importing countries managed to raise their export growth from 5.8 per cent during the 1950s to 6.7 per cent for the 1970s. During the 1970s, the growth of import demand in the developing market economies, 8.5 per cent per annum, was substantially higher than the world average, which contributed in no small measure to reducing the severity of the recession in the developed market economies.

A comparison of the data given in tables 41 and 44 shows the strong association that generally holds between the growth rates of exports, imports and output. The importance of the role played by international trade in development varies from country to country, depending upon the openness of the economy. For the most rapidly growing developing countries, trade has provided the stimulus to growth, particularly in the manufacturing sector. For most of the developing countries, export earnings are the main source of financing for imports of the raw materials and capital goods essential to their development.

Primary products still account for a large portion of total exports of developing countries: they represented 81 per cent in 1980. This situation, however, is largely due to sharp rises in oil prices, which have brought the weight of fuel exports to 62 per cent. On the other hand,

TABLE 44. AVERAGE ANNUAL RATES OF GROWTH OF EXPORTS AND IMPORTS, DEVELOPED AND DEVELOPING COUNTRIES, BY ECONOMIC GROUP, 1960-1980

	Exports		*Imports*	
Economic group	*1960-1970*	*1970-1980*	*1960-1970*	*1970-1980*
World[a]	*8.2*	*5.9*	*8.2*	*6.0*
Developed market economies	8.3	6.4	8.7	5.3
Developed centrally planned economies:				
Eastern Europe	8.4	5.6	7.9	5.9
Developing market economies	8.0	4.4	6.1	8.5
Petroleum-exporting economies	10.1	2.3	6.9	12.8
Petroleum-importing economies	5.8	6.7	5.9	6.6
Low-income economies	3.1	3.8	2.8	4.7
Least developed economies	4.6	4.6	5.6	4.9

Source: See table 41.

NOTE: Rates based on exports and imports of goods and non-factor services measured in 1975 prices and exchange rates.

[a] Excluding developing centrally planned economies of Asia. The discrepancy between world export and import growth is due primarily to problems of reporting of trade statistics.

although the share of non-oil primary exports of petroleum-importing countries has declined significantly from the 1965 level of 71 per cent, it still accounted for almost 39 per cent in 1980. Furthermore, because most developing countries are still largely dependent upon exports of primary commodities, they are subject to current-account difficulties caused by sharp and unpredictable fluctuations in commodity prices. This situation is not conducive to smooth planning and development. Moreover, although the need for product diversification is generally recognized, a number of countries still rely upon one or very few primary products for their export earnings.

Although exports of manufactures from the developing countries still represent only a minor share of world exports of these goods — 9 per cent in 1980 — such exports have been growing steadily. In the petroleum-importing developing countries, the relative weight of manufactures in their total exports nearly doubled between 1965 and 1980: it rose from 21 to over 39 per cent. This expansion, a sign of rapid industrialization, was due largely to the rapidly growing exporters of manufactures. Although the bulk of such exports consists of labour-intensive products in which they have a comparative advantage, such as clothing, footwear and electronics, these countries have begun to penetrate the markets of more advanced capital-intensive industries, such as shipbuilding, machinery and basic chemicals.

As concerns the commodity composition of imports, manufactures accounted for over 64 per cent of total imports of developing countries in 1980, a slight decline from their 68 per cent share in 1965. A measure of the degree of external dependence upon the supply of capital goods and the technology embodied in these goods is the weight of imports of machinery and transport equipment in total imports, which was 32 per cent in 1980.

The developing countries still depend heavily upon trade with the developed market economies, which provided the major markets for their exports in 1980, absorbing 70 per cent of the total, a share that has been fairly stable since 1965. The developed market economies are also the major source of imports for the developing countries; and although the share has declined noticeably from the 1965 figure of 71 per cent, it still represented 63 per cent of total imports in 1980.

The significant increase in trade between developing countries was one of the positive developments arising from the unfavourable international climate during the 1970s. The recession in the developed countries, which was followed by a very slow recovery, weakened their import demand. At the same time, some developing countries were able to maintain their growth momentum and achieve relatively high rates of economic growth, thus providing good markets for one another. Moreover, the major petroleum-exporting countries, with their accumulated financial surplus, provided a rapidly growing market. These developments, accompanied by a more determined effort by the developing countries to diversify markets, explain the buoyancy of trade among those countries. Trade between developing countries accounted for over 25 per cent of total exports in 1980, an appreciable increase over the 1970 figure of 20 per cent. The rise of the trade between developing countries as a component of total imports was more pronounced: during the period 1970-1980, it increased from 19 to over 30 per cent.

The experience of the most rapidly growing developing countries reflects the strong links between development, industrialization and international trade. Their liberal trading policies and outward orientation have contributed significantly to their success. International trade could promote more efficient use of world economic resources, leading to increased productivity and growth. However, shifts in the international division of labour in line with evolving comparative advantage can occur only in a stable, liberal international trade environment. Recent experience has raised some doubt whether other developing countries will be able to follow the same strategy.

Capital flows

Although external factors, particularly during the 1960s, stimulated growth in developing countries, their performance was mainly due to their own efforts. A good indicator of development efforts is the ratio of gross domestic capital formation to GDP, which rose steadily from an average of 10-12 per cent during the 1950s to 18 per cent for the 1960s and to almost 24 per cent for the 1970s. The developing countries have also been able to mobilize a fairly large amount of domestic resources to finance their investment. The ratio of gross domestic savings to GDP increased from 25 per cent during the 1960s to 27 per cent for the 1970s. Although these averages are largely influenced by the high savings rate in the petroleum-exporting countries, they are, nevertheless, indicative of the pace of savings efforts in the other developing countries. For the petroleum-importing countries, the average gross domestic savings rate increased from less than 17 per cent for the 1960s to over 20 per cent during the 1970s. Even though domestic savings financed over 85 per cent of the investment requirements of this group during the 1970s, they had to be supplemented by capital inflows. The least developed countries, which have a limited capacity to mobilize domestic savings, have had to rely increasingly upon foreign savings, which financed 39 per cent of investment needs during the 1950s and almost 52 per cent during the 1970s.[6]

During the past decade, a striking change occurred in the composition of net long-term financial flows of the petroleum-importing developing countries. The share of official development assistance steadily declined: between 1970 and 1980, it fell from 44 to less than 37 per cent. Except for a few notable instances, the performance of the member countries of the Development Assistance Committee (DAC) has been disappointing. The share of official development assistance from DAC member countries declined markedly from 40 per cent of net long-term flows in 1970 to 28 per cent in 1980.

As a percentage of the gross national product (GNP) of DAC member countries, official development assistance averaged less than half of the 0.7 per cent target set by the International Development Strategy for the Second United Nations Development Decade. The doubling of the share of such assistance from members of the Organization of Petroleum Exporting Countries (OPEC) within the decade to over 8 per cent of net long-term flows in 1980 cushioned the impact of the decline in the share of DAC member countries. For OPEC member countries, the ratio of official development assistance ranged from 1.4 to 2.6 during the period 1973-1980. The importance of this assistance to the least developed countries cannot be overemphasized: in 1980, it constituted over 80 per cent of their long-term financing. Because of higher import costs, such assistance needs to be increased substantially, if only to maintain their current low standard of performance. Capital transfers on concessional terms and, in particular, grants are perhaps the most direct means of effecting the international redistribution of income. Although such aid could be critical for broad programmes concerning human development, it would, of course, be unrealistic to expect that it will significantly narrow the income gap between the developed and developing countries.

Private bank lending has expanded tremendously, as reflected in the doubling of its share in long-term financial flows, from 19 per cent in 1970 to 39 per cent in 1980. However, access to capital markets is limited to the technologically more advanced developing countries.

The weight of overseas direct investment, a significant portion of which is reinvested earnings, declined considerably during the period 1970-1980, from 21 to 10 per cent. Although such investment constitutes only a small portion of net flows, it has contributed in promoting industrialization and increasing productivity of the fast-growing exporters of manufactures, particularly those in South-eastern Asia.

Transnational corporations could play a beneficial role in the development efforts of the developing countries. In addition to supplying capital, they could provide technological and managerial know-how and could create employment opportunities. Although at first the transnational corporations were engaged mainly in exploiting natural resources, the supply of cheap labour and the growing markets have encouraged them increasingly to direct their activities towards manufacturing and services. Furthermore, in recent years, there has been an increase in the subcontracting of labour-intensive processes to nationally owned enterprises in developing countries.

However, the dominant power of the transnational corporations is a source of concern for developing countries in so far as it imposes constraints on market forces, often preventing the entry of competitors. The involvement of these corporations in trade is considerable, particularly in markets of interest to the developing countries. Moreover, the international marketing and distribution of primary commodities is dominated by them. Therefore, it is important that developing host countries adopt policies concerning their relations with transnational corporations, particularly with regard to employment of local workers and materials, use of appropriate technology and the possibility of joint ventures. These countries should ensure integration of the activities of transnational corporations with their national social and economic development efforts.

During the past decade, the large inflow of remittances from nationals of developing countries who were working abroad was a positive development. Because of their labour shortage, the petroleum-exporting countries have encouraged the immigration of temporary workers from other developing countries. As a result, workers' remittances have contributed significantly to reducing the balance-of-payments deficits of a number of low- and middle-income countries of Asia.

D. International Development Strategy scenario for trade requirements of growing populations[7]

Growth of gross domestic product and population to 2000

The International Development Strategy scenario postulates changes in resource use patterns, structural transformations and international trade relations that would progressively lead to the attainment of accelerated growth for all groups of developing countries within the context of the New International Economic Order and in a manner consistent with the Lima Industrial Development Objective.

Although the growth targets set by the International Development Strategy are significantly higher than those achieved recently or those implied by longer-term trends, they are neither without historical precedent nor without contemporary example. For the rest of this century, the scenario postulates an average annual growth of GDP of 7 per cent for all developing countries, with growth in slow-growing countries accelerating more rapidly (see table 45). Except for the low-income group, the projected acceleration was in accordance with standards of productivity growth already attained by the more rapidly growing economies of the group. For the low-income countries, it was assumed that growth of GDP would accelerate steadily so as to double their incomes per capita by the year 2000, which would imply a rise in their labour productivity far above their historical performance and would require alteration of patterns of resource use and improvement of investment productivity. Over the next two decades, developed market economies were projected to grow at the annual rate of 4 per cent and developed centrally planned economies at 5.2 per cent. Unfortunately, however, the performance of the developed economies over the first three years of the decade makes it clear that the assumptions underlying the International Development Strategy should be reassessed.

Population pressures will remain severe, particularly during the 1980s, even though the population growth rate for the developing countries as a whole had already

TABLE 45. AVERAGE ANNUAL RATES OF GROWTH OF POPULATION AND SELECTED ECONOMIC VARIABLES, DEVELOPING COUNTRIES, BY ECONOMIC GROUP: HISTORICAL FOR 1970-1980 AND PROJECTED UNDER THE INTERNATIONAL DEVELOPMENT STRATEGY FOR 1980-1990 AND 1990-2000

(Percentage)

Economic group and period	*Gross domestic product*	*Population*	*Gross domestic product*		*Exports*	*Imports*
			Per capita	*Per active person*		
Developing market economies						
1970-1980	5.2	2.6	2.6	3.0	4.4	8.5
1980-1990	7.0	2.6	4.3	4.5	6.7	8.0
1990-2000	7.0	2.3	4.7	4.4	8.0	7.9
Petroleum-importing economies						
1970-1980	5.2	2.6	2.6	3.0	6.7	6.6
1980-1990	7.0	2.5	4.4	4.6	7.8	8.3
1990-2000	7.0	2.2	4.7	4.4	8.7	8.0
Low-income economies						
1970-1980	3.4	2.5	0.9	1.4	3.8	4.7
1980-1990	7.0	2.5	4.4	4.6	7.5	8.2
1990-2000	7.1	2.2	4.8	4.6	7.9	8.2
Least developed economies						
1970-1980	3.5	2.7	0.8	1.2	4.6	4.9
1980-1990	6.4	2.9	3.3	3.7	7.7	8.7
1990-2000	7.2	2.7	4.4	4.4	8.3	8.8

Source: See table 41.

reached its peak in the early 1970s. For the least developed countries, the pace of population growth is expected to accelerate over the 1980s. Only towards the end of the century will declines in population growth be apparent in all groups of developing countries. In the developed countries, the decline in population growth is expected to continue.[8]

Given the projected population growth rates for developing countries, 2.6 per cent during the 1980s and 2.3 per cent for the 1990s, the growth target for GDP per capita would be 4.4 per cent for the 1980s and 4.7 per cent for the 1990s. It is worth noting that the achievement of the ambitious growth targets set by the International Development Strategy would make only a modest beginning towards narrowing the relative income gap between the developed and developing countries by the end of the century (see table 46). For the low-income countries, the gap in 2000 would still be greater than that in 1960. This limited progress, however, is very important in that it could provide the momentum for a sustained drive towards the elimination of the worst aspects of poverty in all areas of the world.

Investment and savings

Acceleration of the growth of developing countries would require a more rapid accumulation of capital or an increase in the ratio of investment to GDP from 26.7 per cent in 1980 to 28.8 per cent in 1990 and to 27.6 per cent in 2000. Because of the generally rising historical trend of this ratio, the target rate of capital formation would appear to be within the reach of all groups of developing countries, except the low-income group. For that group, the investment ratio was set to rise to an average of almost 28 per cent over the next two decades, from a level of 20 per cent in 1980.

Although greater investment efforts would be required, higher standards of capital productivity would be equally important. The incremental capital output ratio, which provides a measure of investment efficiency, has demonstrated a notable tendency to rise over time in all groups of developing countries. In low-income countries, moreover, these ratios are generally greater than those in higher-income countries, because a large component of total investment in these countries is infrastructure investment with long gestation periods. For the developing countries as a whole, an incremental capital output ratio of 4, which represents a standard of investment efficiency previously achieved, is postulated by the International Development Strategy up to the year 2000.

A continued upward movement in private consumption shares is projected for the petroleum-exporting countries. For the other groups, the long-run decline in this ratio, which may have been influenced by policies to encourage savings, is assumed to continue. It might be necessary to introduce special measures to ensure that the consumption levels of the poorest segment of the population shall not be reduced. The share of government consumption to GDP is projected to rise, continuing the increase during the late 1970s. The resulting savings show a substantial rise, particularly in the low-income countries, but they would still be inadequate to finance the projected investment requirement and the shortfall would have to be taken up by external resources.

Trade requirements and the resource gap

As is shown in table 46, the resulting external balance in 2000 would be 4.8 per cent of GDP of the developing countries as a whole. It should be mentioned that

TABLE 46. RELATIVE INCOME GAP AND PERCENTAGE SHARES OF SELECTED ECONOMIC VARIABLES TO GROSS DOMESTIC PRODUCT, DEVELOPING COUNTRIES, BY ECONOMIC GROUP: HISTORICAL FOR 1980 AND PROJECTED UNDER THE INTERNATIONAL DEVELOPMENT STRATEGY FOR 1990 AND 2000

Economic group	Relative income gap[a]	Percentage of gross domestic product at 1975 prices and exchange rates					
		Investment	National savings	Internal balance[b]	Exports	Imports	External balance[c]
Developing market economies							
1980	11.8	26.7	25.0	−1.8	24.5	25.0	−1.8
1990	10.6	28.8	26.1	−2.7	23.8	27.4	−4.6
2000	9.5	27.6	26.9	−0.7	25.9	29.7	−4.8
Petroleum-importing economies							
1980	13.6	25.3	20.8	−4.5	18.4	21.8	−4.5
1990	12.2	28.0	23.8	−4.2	19.7	24.8	−6.3
2000	10.9	27.2	25.5	−1.7	23.1	27.2	−5.3
Low-income economies							
1980	40.6	20.0	15.7[d]	−4.3	10.2	14.7	−4.3
1990	36.9	29.2	21.1	−8.1	10.9	16.5	−6.2
2000	32.5	27.7	24.5	−3.2	11.7	18.4	−7.9
Least developed economies							
1980	41.2	16.8	8.2[d]	−8.6	12.7	21.3	−8.6
1990	41.1	26.9	10.8	−16.1	14.6	26.4	−13.2
2000	37.5	26.8	16.7	−10.1	16.2	30.9	−17.2

Source: See table 41.

[a] Ratio of gross domestic product per capita in developed market economies to that of the specified economic group.

[b] National savings less gross domestic investment.

[c] Exports less imports plus net factor income from abroad.

[d] Obtained as a residual.

because of the considerable uncertainty of predicting relative price movements, the terms of trade were assumed to be constant throughout the projection period. Thus, any change in the terms of trade would affect the actual external balance. The projection allows a divergence between the savings/investment gap and the export/import gap. The reconciliation of the two gaps would involve decisions concerning the stimulation of savings if the internal gap were dominant or the reduction of imports and/or the increase of exports if the external gap were to dominate. For the petroleum-importing countries as a whole, the external gap is expected to dominate over the next two decades, although for those in the low-income group, the savings constraint would be dominant in the 1980s. The projected disparities are large, in particular those for the least developed countries, for which the dominant gap is 16 per cent of target for GDP during the 1980s and over 17 per cent for the 1990s. Tremendous domestic efforts would be needed to help fill such gaps, but even these efforts would not be sufficient, and supplementary resource transfers would be needed.

Accelerated growth in the world economy and in the developing countries, in particular, would magnify the structural shifts currently occurring in the pattern of world production and resource allocation. Associated with such shifts are changes in the pattern and volume of world trade. In the developing countries, the structural transformation would involve a progressive increase in the share of industry in economic activity as not only labour-intensive activities but an increasing number of capital- and skill-intensive lines of production were established. On the basis of the International Development Strategy, the value added in industry would account for almost 52 per cent of their GDP by 2000. In manufacturing, their share of world output would be 20 per cent, or almost double that of 1980. These structural changes would result in a corresponding shift in export pattern from primary products to manufactured goods. For the developed market economies, the transformation would take place in the composition of their industry, involving shifts to skill-, research- and capital-intensive processes and away from labour-intensive activities. A new international division of labour based on greater diversification of world material production would evolve, producing the foundation for a return to the rapid expansion of world trade.

E. REFLECTIONS ON STRUCTURAL ADJUSTMENTS NEEDED IN WORLD ECONOMY

The fundamental reasons for demographic patterns being accorded a central position in the analysis of world development needs were outlined above in the discussions of interrelations between population, production and trade. Unfortunately, the long-term situation is clearly being worsened rather than alleviated by current economic trends. The world economy is suffering from the worst recession of the post-war period. Indeed, unemployment in the developed market economies is currently at levels comparable to those of the great depression. Furthermore, the growth of the developing countries as a whole has dropped to the lowest rates ever recorded. Incomes per capita are declining for the majority of the population in the developing countries. Although the financial burdens being carried by the

developing countries are severe and are worsening, they have been attempting to cope by improving domestic performance, including, in particular, savings performance. In contrast, the performance of the developed market economies has been characterized by falling savings and investment rates.

Certain demographic factors that are of long-term significance are further complicating the current situation. First, there are broad differences between population growth rates in different regions of the world and, in particular, between those of the developed and developing countries. Secondly, the growth rate of the labour force in the developed market economies is slowing and may even become negative during the last half of the 1980s. On the other hand, the rate of growth of the labour force in the developing countries will continue to be high for some time. Other factors that explain this phenomenon are that the population in the developed market economies is aging significantly; the labour force participation rate of women is quite high in those countries, compared with the developing countries; and, lastly, the current rural-urban migration flows in the developing countries are likely to continue for some time.

These demographic factors have very direct economic implications. The differences in population growth rates between the two groups of countries imply that in order to reduce or even stabilize the income gap, the rate of growth of gross domestic product must be substantially greater in the developing economies than in the developed. Secondly, the rapid growth of the urban population of developing countries implies that industrialization must be carried out at a rapid pace in order to absorb the urban labour force. Further, a high rate of growth of agricultural productivity must be maintained and massive investments in infrastructure are required.

Thus, the investment needs of developing countries are clearly substantial. Moreover, the short-term rate of return on overall investment will be relatively low because of the long gestation periods involved in infrastructure investment. Therefore, the high investment requirements imply not only that significant transfers of capital from the developed to the developing countries will be needed for a considerable period of time, but that the terms and conditions of the associated finance should reflect the heavy infrastructure component. At the same time, the developing countries must rapidly expand their exports to developed market economies in order to complement the capital inflows with increased mobilization of domestic resources.

These requirements, in turn, indicate that the developed market economies will need substantially to improve their savings performance in order to make available financial resources needed by the developing economies. At the same time, they will have to allow a fairly rapid penetration of their markets by the developing countries. However, given that the population in the developed economies is aging significantly, there are likely to be some difficulties in improving their savings performance. Furthermore, as long as their economies are stagnating, the developed market economies may find it difficult to open their markets significantly to exports from developing countries.

In summary, it would appear that very real difficulties are involved in restructuring the world economic system to serve world development needs as reflected in long-term population patterns and trends. In particular, the longer-term difficulties that are likely to emerge must be taken into account in formulating economic policies at the national and international levels to deal with current problems.

NOTES

[1] Better estimates by the International Comparison Project of differences in income per capita, based on direct price comparisons of very specific goods and services, indicate a smaller gap than that shown in table 42, although they still imply a very large gap between the two groups.

[2] World Bank, *World Development Report*, 1980 and 1981. This figure amounts to approximately 17 per cent of the world population.

[3] The inverse relationship becomes apparent only above a certain minimum level of income per capita. Of course, it is only one element in a very complex and varied picture.

[4] United Nations Conference on Trade and Development, *Trade and Development Report, 1981* (United Nations publication, Sales No. E.81.II.D.9).

[5] For the developing countries, the strong export performance was due primarily to a rapid rise in petroleum exports.

[6] The use of investment ratios that are lagged by one year may produce inconsistencies but would not significantly alter the actual figures.

[7] This section is based mainly on "Overall socio-economic perspective of the world economy to the year 2000 (preliminary draft): report of the Secretary-General" (A/37/211 and Corr.1-4).

[8] The population figures correspond to the normal variant of the projections made by the Population Division of the Department of International Economic and Social Affairs of the United Nations Secretariat. The consumption and import functions of the econometric models used to project the main economic variables under the International Development Strategy are on a per capita basis. Therefore, population directly affects the levels of consumption and imports.

X. RECENT EMPIRICAL STUDIES OF THE SOCIO-ECONOMIC DETERMINANTS OF FERTILITY*

The theory of demographic transition is a fundamental organizing principle in understanding the relationship between development and fertility. In recent years, however, new studies have raised questions whether the simpler versions of the transition theory accurately reflect the actual process of demographic transition in Europe. There are instances where fertility decline was not monotonic; and in some cases, fertility decline began before the decline in mortality.

More important, the relevance of this theory for projecting demographic trends in the newly independent developing countries of the world has been challenged. In those countries, the patterns of economic, social and demographic change are much different from those of Europe during its demographic transition. The developing countries today have a higher fertility than that which prevailed in Europe at the beginning of its transition. At the same time, their levels of economic development are in many cases not as high as it was in many countries of Europe at that time. Moreover, unlike many European Governments at the time of their transition, those of the developing countries are deeply and directly involved in accelerating the process of economic and social development.

Given these differences, it is important to examine the results of empirical studies and the experiences of developing countries in order to understand the actual impact of socio-economic development on fertility. Furthermore, given the resource constraints facing planners in developing countries, research studies should identify the specific economic and social factors for which public intervention will be most effective and efficient in contributing to the attainment of national fertility goals.

At the World Population Conference at Bucharest in 1974, the view was advanced that family planning programmes would be most successful in the context of social and material progress. With the passage of time, it has become clear that the interactions between fertility patterns and socio-economic variables are very complex and often involve the interaction of the social, economic and demographic characteristics. As more has been learned about which development efforts are most likely to play a major role in reducing population growth, the question has become how these efforts conflict or reinforce one another in their impact on fertility.

United Nations interest in the relationship between socio-economic development and fertility is of long standing. An important milestone in this continuing concern was the Expert Group Meeting on Demographic Transition and Socio-economic Development, held in Turkey in 1977.[1] Although the documentation for that meeting contained an extensive review of empirical studies on the subject, many additional studies have been completed since that time. This chapter reviews the findings of a number of such studies.

A. Methodological issues

The most common source of data for these studies was surveys of households and women of reproductive ages at the regional, national or smaller geographical levels. Some of the surveys were designed to be representative of the country as a whole, such as national fertility surveys and the World Fertility Survey; others were comprehensive studies of particular regions, cities and villages. The next most common data sources were censuses and vital statistics.

By far the most common measure of fertility used in the recent studies is the average number of children ever born (CEB), measured either at the individual or aggregate level. There are several variants of this measure such as the children ever born to some particular age group, those who are still alive or living with the mother, those born to currently married women of reproductive ages and those born to women at the end of the reproductive ages (completed family size). A potentially interesting variant is the ratio of CEB to expected CEB, given a model schedule of natural fertility.[2]

Other fertility measures for larger aggregates included crude birth rates, number of live births registered, age-specific fertility rates, marital age- and duration-specific fertility rates and their summations, total and total marital fertility rates. At the individual level, estimates of the ideal, desired and expected number of children were used, as were parity progression ratios.

Cross-tabulation was the most common method of analysis. Ordinary least-squares regression was the second most common method. Other techniques used were multiple classification analysis and path analysis. Classical analysis of variance, structural equation models other than path analysis and log linear analysis of contingency tables were rarely used.

Some studies concentrate on significant population groups within a country, whereas others are classical cross-national comparative studies in which the coun-

* Prepared by the Population Division of the Department of International Economic and Social Affairs of the United Nations Secretariat.

tries themselves are the units of analysis. Some studies deal with a single important indicator of socio-economic development, whereas others deal with many indicators. For example, a number of studies deal exclusively with education in relation to fertility, while others consider education along with a host of other variables to determine their relative importance in fertility determination. For some countries, where agriculture predominates over all other economic activities, studies focus on the relationship between fertility and land ownership and land tenure. Some studies emphasize the role of income inequality, while others focus on the labour force participation of women.

Given the wide variety of studies, varying in scope, methodology and perspective, this review of empirical studies considers studies relating fertility to: (*a*) education; (*b*) land ownership; (*c*) arrays of indicators of socio-economic development; (*d*) income inequality; (*e*) women's labour force participation; and (*f*) rural or urban residence.

B. Studies dealing with relationship between education and fertility

Generally speaking, most current studies on the subject find a negative relationship between different indicators of educational level and fertility. This result is to be expected because increased educational attainment can contribute to lower fertility in several important ways, including: (*a*) improved access to information, including family planning; (*b*) a more egalitarian relationship between husband and wife in determining the number and spacing of children; (*c*) changes in parental aspirations for their children in regard to higher education and occupation; and (*d*) increased average age at marriage.

In some cases, however, the relationship has been found to be either positive or, more commonly, not significant. Sometimes, this has been the result of incorrectly assuming that the relationship was linear. In other cases, it has been due to other factors, such as breast-feeding and improved maternal and child health.

The strength of the relationship is itself dependent upon the level of educational attainment. Furthermore, the education-fertility relationship varies between formal and informal education, between younger and older women, between rural and urban populations and between the wife's and the husband's level of education.

Except for studies conducted in Africa, the relationship between education and fertility is generally found to be negative. However, the nature and strength of the relationship may be different among significant population groups.

Level of education

It is generally expected that the higher the level of education, the greater will be its negative impact on fertility. Moreover, at low education levels, the education-fertility relationship, particularly the relationship with surviving children, may be positive, because at this level, the major impact of education may be an improvement in health and nutritional condition of women resulting in lower foetal mortality and infant deaths. It may be only after attainment of a higher level of education that families are able to overcome traditional, social and cultural preferences for higher fertility and accept modern fertility values.

Using data from the National Fertility Sample Survey of Jordan, Kandis[3] found a strong negative association between the wife's education and fertility. In quantitative terms it was found that there was a reduction in family size of approximately one child for each additional four years of schooling. The impact of education was found to be greatest at the lowest educational levels. With the onset of literacy, average cumulative fertility declined by 1.5 child. For purposes of comparison, World Fertility Survey data were also examined and revealed a reduction in fertility of 2.7 children with the onset of literacy. The relation to reduction in family size persisted at higher levels of education but the rate was somewhat reduced: family size was lowered by an average of one child for each seven years of additional schooling.

In a study of India, Sharma and Misra[4] found that higher rates of literacy and levels of education, especially of females, were associated with reduced total marital fertility rates. However, the number of births per 1,000 married women was actually higher among literate than among illiterate women, both for urban and for rural areas. This seemingly anomalous situation arises as a result of differences in the age distribution of currently married women, increasing literacy among newer cohorts of married women.

Balasubramanian[5] found, in a study of India, that for the urban population, fertility varied inversely with educational level, except for the first two levels. A few years of schooling apparently did not reduce fertility below levels exhibited by women with no schooling; and, indeed, women with a few years of schooling appeared to have higher fertility.

In a study of Lesotho,[6] where levels of economic development remain low, the Bureau of Statistics concludes that the level of fertility is still largely determined by cultural factors, and socio-economic factors have not had any strong impact thus far. Education was found to be inversely related to fertility only at the secondary or higher levels of education; and since few women had reached these levels, aggregate fertility was not significantly influenced by the education variable.

In Kenya, Faruqee and his colleagues[7] found a strong negative relationship between the wife's education and fertility, once a specific educational level had been attained. Increases in education up to that point, however, did not have a significant effect on fertility. Orobuloye,[8] in an investigation of rural-urban fertility differentials in Nigeria, also found that differences in fertility appeared to be due to educational differences, mainly at the higher level.

Vallin[9] found a strong significant inverse association between fertility and education in Algeria. Using data

from a fertility survey conducted in 1970, he found that for women aged 30-34, illiterates had a mean number of 5.7 children, those who attended primary or Koranic schools had an average of 4.7 children and those who attended secondary schools or higher had borne an average of 3.5 children. While recognizing the impact of education on the timing of marriage, Vallin reasoned that as fertility was similar at lower ages for illiterates and primary-school attendees, some importance should be attached to the divergence observed at higher ages. He hypothesized that the observed fertility differences represented use of family planning services adopted by women at earlier ages who had received some education.

Using data on average children ever born collected in a less developed agricultural region in rural Lebanon, Zurayk[10] found that the largest decline in children ever born occurred beyond the level of primary education. An implication of this finding is that relatively high levels of education may be required to reduce fertility appreciably in rural settings.

The studies reviewed are consistent with expectations in that they indicate that at higher levels of education, the inverse relationship between education and fertility is the strongest. Moreover, at low levels of women's education, the education-fertility relationship becomes generally weak and sometimes positive.

The sometimes positive association between fertility and education at lower levels of education may be accounted for by the associated improvements in health, nutrition, changes in breast-feeding practice and environmental factors. Only after a sufficient level of education is obtained is the relationship between fertility and education negative. If low levels of education lead to increases in fertility and if these increases are undesirable, then it is important to discover the threshold level of education, either to ensure that the critical educational level shall be surpassed or to determine how best to neutralize the positive fertility effects of increasing, only slightly, relatively low levels of education.

Type of education

Within the context of a negative education-fertility relationship, it may be important to distinguish between formal education, where learning takes place away from home in a structured environment; and informal education, where learning often takes place within the household. Formal education has many important aspects, which, apart from the acquisition of intellectual skills, act as modernizing influences, may lead to status differentials, and, in turn, suggest a transformation in the social environment in such a way as to promote reduced fertility.

Mason and Palan[11] examined the women's education-fertility relationship in Peninsular Malaysia, taking into account both formal and informal education. They conclude that, generally speaking, non-formal education is unrelated to fertility, while years of schooling have a marked negative impact on fertility.

Choudhury[12] also found an inverse relationship between the wife's formal education and fertility in Bangladesh. In particular, female education was seen to be associated with longer birth-spacing. However, when informal education was taken into consideration, the relationship between the wife's education and fertility was considerably weakened.

These studies tend to confirm the importance of the formal educational environment in fertility decline.

Age

In assessing the impact of education on fertility, it is essential to take into account the factor of age, because educational attainment is generally greater among younger women while age is highly correlated with the number of children ever born. Therefore, to avoid overestimating the effect of education on fertility, an adjustment should be made for the effect of age. On the other hand, since the effect of increased education is generally to delay the age at marriage, studies limited to ever-married women could significantly underestimate the effects of education on fertility.

In a study of Thailand, Pitaktepsombati[13] observed that although an inverse relationship existed between education and fertility, education had very little effect on fertility among women who had been married for less than five years. He also found that an education-fertility relationship did not exist among less educated women. In marked contrast to these findings, Chalamwong and his colleagues,[14] in their study of Thailand, conclude that the relative importance of female education is considerably higher among younger women than older women.

Little and Perera[15] used the marriage-cohort approach to analyse the educational-fertility relationship in Sri Lanka. Three marriage cohorts were considered: (*a*) women completing 20 or more years of marriage; (*b*) those married 10-19 years; and (*c*) those married for less than 10 years. After trying to estimate as accurately as possible the number of children ever born, the authors concluded that there is an inverse relationship between education and fertility, with uneducated women having, on an average, 2.2 more children than women with 10 or more years of education. However, this difference was partially attributable to differences in the distribution of the age at marriage.

In a cross-sectional analysis, Alam and Cleland[16] classify birth history data in three main ways: (*a*) age or marital duration of the women when the birth occurred (age cohort); (*b*) the period or calendar date at which the event occurred (age period); and (*c*) the birth-marriage cohort of the mother (duration period). According to the authors, the major problem in analysing fertility trends from a cross-sectional survey of ever-married women aged under 50 years is the "truncation" of data. Since experience or exposure to marriage is successively more incomplete as one moves from the older to the younger women in a cohort analysis, they suggest calculating marriage-duration-specific rates. Their study shows a significant negative association between the educational attainment of women and the number of children ever born but the association was mostly

attributable to differences in age at marriage between the different educational categories.

A United Nations study[17] finds education to be associated with increased age at marriage and increased rates of contraceptive use, the latter being 12 per cent among those with no education and 51 per cent among those with more than secondary education. Fertility differentials according to education persist across marriage-duration cohorts, although the relationship was weakest for those married 10 years or less. This difference can be understood by considering that childbearing is common early in marriage but is terminated earlier by better educated women, who apparently use some relatively efficient means to limit births but who were previously using less effective means or were less desirous of spacing births.

On the basis of the Costa Rican National Fertility Survey in 1976 and the survey conducted by the Nutritional Institute of Central America and Panama (INCAP) in Guatemala, 1974/75, Pebley[18] analysed the spacing between births. Age at first birth was found to be strongly related to the timing of subsequent births, regardless of the level of education or other indicators of socio-economic status. Furthermore, education, as measured by the number of years of schooling, was directly related to the age at first birth. Almost all these relationships were stronger in the case of Costa Rica than in that of Guatemala, which is characterized by lower overall educational and income levels and a more traditional culture.

The evidences cited indicate that education does affect fertility through an increase in age at marriage. Within marriage, however, the negative effect of education on fertility is more pronounced at a later age, when childbearing is terminated earlier by educated women. The education-fertility relationship is thus mediated by age at marriage and the age at which more efficient birth-control methods are used.

Education and occupational status of husband

In countries where most wives have received little formal education, the husband's education may be an important channel through which education affects fertility. Moreover, even when the wife's education is considered, it may be useful to determine the independent negative effect of the husband's education on fertility. In such circumstances, it is generally assumed that the influence of the wife's education on fertility will be much stronger than that of her husband.

In studying the relationship between the wife's education and fertility in India, Ram and Datta[19] found that the literacy rate among the wives in the study population was close to zero. Therefore, they examined the relationship between the husband's education and fertility and found it to be inverse.

According to the study by Kandis,[20] based on data from the National Fertility Survey of Jordan, the preponderance of evidence indicates that education of either parent is associated with a substantial reduction in family size; and this relation holds at all levels of educational attainment, although the reductions in fertility related to the level of maternal education are more substantial. Given the lack of congruence between the educational levels of husbands and wives, the negative relationship between the wife's education and family size was found to be largely independent of the educational level of the husband. Fertility also varied inversely with the level of education of husbands, although the effect was not so large as it was for wives. For husbands, slightly more than four years of schooling was seen to be associated with an average reduction in family size of one child. With the onset of literacy, fertility was reduced by approximately 0.5 child (1.7 in the World Fertility Survey sample); and, as in the case for women, seven additional years of higher formal education resulted in a decrease of one child.

A World Fertility Survey report[21] on Thailand shows a strong inverse relationship between years of schooling of both the husband and the wife and the number of children ever born. The association between the husband's education and fertility was found to be similar in shape and strength to that between the wife's education and fertility. On the other hand, Kiranandana[22] found that for both rural and urban areas, the relationship between the wife's education and fertility was negative and highly significant. However, the relationship between the husband's education and fertility was ambiguous.

Given the fact that the educational attainment of women in Western Asia is generally low, some studies have investigated the impact of the husband's education, either in conjunction with the education of the wife or in lieu of data concerning the wife. In Southern Asia, Ajami[23] found, in a study of rural villages in the Islamic Republic of Iran, that the wives of literate husbands desired an average of 5.5 children and had given birth to an average 4.5 children, whereas the wives of illiterate men desired, on average, 6.0 children and had given birth to an average of 4.8 children. Another Iranian study, conducted in rural areas by Aghajanian,[24] also found a negative relationship between the husband's education and fertility. The author argues that the husband's education affects fertility primarily when he changes his occupation from farmer to non-farmer.

Issa,[25] using data for Egypt, considered the relative importance of the husband's occupation and the wife's education and arrived at conclusions similar to those of Kandis in Jordan. Fertility differences were found to be sharper in relation to women's education than to men's occupation.

The studies reviewed confirm the existence of a negative relationship between the husband's education and the wife's fertility, and also indicate that education of the wife is generally more strongly related to fertility than is education of the husband.

Locality

Because urban areas provide women with more opportunities for employment far away from home and

provide easier access to family planning information and services, it is to be expected that the fertility response to higher levels of education would be greater in urban than rural areas.

Premi[26] found that the relationship between fertility and education in India appeared to be conditioned by urban or rural location. He observed an inverse relationship between fertility and the educational level of women in urban areas. In rural areas, however, fertility was found to be slightly higher among women possessing some primary education than among illiterate women, although it was sharply lower among women with high school or higher education. Using data from another survey, Premi observed a different fertility pattern in the rural areas: slightly higher fertility among illiterate than among literate women; but virtually no difference in fertility among those who were literate, regardless of the education level. In urban areas, fertility was lower for highly educated women but there was no difference between the fertility rates of illiterate women and those with minimal education.

To analyse World Fertility Survey data, Hermalin and Mason[27] adopted an approach that combined macro- and micro-level perspectives. They used as the dependent variable the average fertility of women of various education and marital-duration groups. They then fitted a non-linear model to the data of 10 countries. Their formulation implied that the higher the level of education, the greater was its effect on fertility. For all countries studied except Nepal, the coefficients of education were found to be negative, although the strength of the relationship varied from country to country. Examining variations in the effect of education at the macro-level to determine what micro-level characteristics affected the relationship between education and fertility, they found that the more "modern" the country, the stronger was the negative effect of education on fertility. In this context, they observed that the education-fertility relationship was consistently weaker for the rural population than for the urban population.

Both studies cited tend to confirm the view that education has a greater negative effect on fertility in the context of an urban setting.

Family planning

Whether family planning has an effect on fertility decline independent of improvement in the level of education is an important and controversial issue. In situations where there is an unmet need for family planning information and services, family planning may have an independent effect. However, it is generally assumed that family planning is effective in reducing fertility only if a demand for those services has been generated by an improvement in the general well-being of the population.

On the basis of his study of Colombia and Mexico, Stycos[28] postulates that the decline in marital fertility was independent of trends in levels of education. In his opinion, fertility decline could be fully explained by the widespread use of family planning. However, Potter and his colleagues,[29] using survey data on Colombia, reached a very different conclusion. In 1973, differences of more than 2.5 in the total fertility rate were observed in both urban and rural areas of Colombia when those who had completed primary school were compared with those who had not. Similar differences were also observed when age-specific data were examined. The authors concluded that the increased supply of contraceptives was important only because the demand for them was created through the process of modernization and by improved educational attainment, in particular. Another analysis of lowered fertility in Colombia, prepared by Chi and Harris,[30] reached similar conclusions.

Jain's[31] study based on World Fertility Survey data for 11 countries is a significant landmark in the analysis of fertility determinants. Disaggregating the total fertility rate into its proximate determinants,[32] he found that instances of an apparently positive relationship between female education and fertility may be due in part to the separate and opposed relationship of education with breast-feeding and the use of contraception. Increasing education reduces the time spent in breast-feeding, thus decreasing the period of post-partum lactational infecundity. At the same time, increasing education increases both the probability of using contraception and the effectiveness of contraception. The net result of these two opposing effects in terms of total fertility rates depend upon the social, cultural and economic context of the study population. Jain's analysis shows that differences in the relationship between education and the total fertility rate across countries are a function of differences in the fertility-related behaviour of uneducated women and that the fertility behaviour of educated women is relatively stable across societies.

The studies generally seem to indicate that there is a strong interaction between levels of education and use of family planning. They appear to be complementary rather than independent factors.

Other factors

In a study of the socio-economic determinants of fertility decline in Jamaica, Denton[33] offers some additional insights into the education-fertility relationship. Combining data from the 1960 census for the 46 regions of Jamaica with other social and economic data for that period, he found that although increased education of women was associated with lower fertility, this relationship varied according to marital status. More specifically, the inverse association held in the case of married women or women in common-law arrangements. However, no relationship was evidenced for women who were not currently living with or never had lived with a partner.

Using data from the National Fertility Survey of Jordan in 1972, Rizk[34] found education to be the strongest factor affecting fertility levels, as evidenced by an inverse relationship between the level of educational attainment of women and the average number of live births. In interpreting these results, it is important to

note that only 1 per cent of the women sampled attended university, while 60.1 per cent were illiterate.

Rodríguez and Cleland[35] undertook a comparative study based on 22 countries for which World Fertility Survey data were available. Their conclusions on the education-fertility relationship were based on a study using six independent variables to measure socio-economic status. Two principles guided the selection of socio-economic factors for their study. First, data had to be available in approximately comparable form for all the countries; and secondly, redundancy in the form of highly intercorrelated variables should be minimized. Marital fertility was used as the dependent variable. Attention was restricted to the five-year period prior to the survey. The dependent variable, marital fertility, was constructed so as to be an approximation of completed fertility based on recent fertility, thus resembling the total fertility rate in its characteristics.

The first step in the analysis was to assess the effect of each socio-economic factor on fertility controlling for the other factors. These factors were introduced into the model in a fixed order based on considerations of causal ordering: (*a*) place of residence; (*b*) husband's education, occupation and work status; and (*c*) wife's education and work status. The third step was to assess the effect of each factor after adjusting for all others. Their findings are given below:

(*a*) In general, the educational attainment of women had a significant negative effect on fertility in all study populations except in the case of the Indian population of Malaysia. The strength and pattern of the association, however, varied across countries and exhibited a clear regional pattern. The largest differentials were found in Latin America; the magnitude of association was less pronounced in the Caribbean region, Asia and Oceania. It was observed that a large part of the effect of education could be attributed to place of residence and socio-economic status as measured by the attributes of the husband. Nevertheless, a statistically significant independent effect of women's education on fertility existed for 15 countries;

(*b*) Although the rural/urban differential in fertility was widespread, even after controlling for residence, the husband's educational level was a strong predictor of fertility in Jordan and in all the countries of Latin America that were included. Although statistically significant effects persisted, in the majority of the Asian countries, the relationship was much less clear-cut. Of particular interest was the fact that in this region, the fertility of women with no education was frequently lower than that of women with a little education.

This review suggests that the relationship between education and fertility is generally negative and significant. Although education is recognized as a powerful agent of modernization, the effects of various components of the educational experience are not often well understood.

C. Studies focusing on land ownership

Effects of farm size

It is to be expected that farm size will bear a positive relationship to fertility. Among the reasons for this are: (*a*) the demand for labour necessitates having a higher number of children on the farm — and the larger the amount of land, the greater is the demand for labour; (*b*) women in families owning little or no land suffer from health and nutritional deficiencies, which result in higher foetal mortality and thus lower fertility.

In a study of six Iranian villages, Ajami[36] divided the population into three socio-economic classes: farm operators; peasant farmers; and labourers. Farm operators owned relatively large land holdings and used more modern techniques of farming. Peasant farmers owned small subsistence farms, and the remainder were landless farm and non-farm labourers. A positive association was found between land holding and fertility. Controlling for the age of the mother, the mean number of children ever born was found to be 5.0 for large farm operators and 3.3 for landless couples.

In his study based on 25 villages in the Islamic Republic of Iran, Aghajanian[37] observed that, other things being equal, the larger the size of the farm, the higher was the fertility. In their examination of the relationship between fertility and land availability among rice farmers in the central plain region of Thailand, Chalamwong and his colleagues[38] also observed that the quantity of land available to the individual family was positively related to fertility.

In studying the relationship between socio-economic factors and fertility decline in Bangladesh, Stoeckel and Choudhury[39] used education, land ownership, and rice and jute production in the family as the measures of socio-economic factors. In contrast to previous research based on sample surveys and censuses, this study obtained birth statistics from a unique daily registration system covering over 1 million people. The system included baseline and follow-up censuses, which allowed a matching of births to a cohort of mothers for a given period, so that age-specific and total fertility rates could be calculated for the various social and economic groups, in the context of the husband's land holdings. Except for women in age group 15-19, women whose husbands had "no land" were found to be less fertile than women whose husbands owned "some land". Although the differences in fertility ratios between women whose husbands owned one acre and those who owned from 2.0 to 2.9 acres were small, there was a direct relationship between fertility and the size of the holdings.

These studies tend to support the proposition that the demand for children varies directly with farm size. This finding may have significant implications when the fertility consequences of land reform schemes are being considered.

Related factors

In a similar context, although not directly related to land holdings *per se*, Timur[40] observed a higher mean number of children in the primitive agricultural villages of eastern Turkey than in the more developed western villages. She attributes this to the role of the family as a productive unit, which benefits from increased numbers.

This pattern was also found in Rizk's[41] analysis of the Jordanian National Fertility Sample Survey. Overall fertility was highest among landowners and land tenants; fertility was lower among agricultural workers.

D. Studies using an array of socio-economic indicators

Several studies have used a number of indicators of socio-economic development in order to assess their relative impact on fertility.

Single-country studies

Shin and his colleagues[42] used educational attainment of the wife, the husband's occupational status, the couples' residential background and their economic status (the wife's evaluation of the couple's current level of living) as variables to measure socio-economic status. These variables were used in a path model to show that age at first marriage is highly correlated with the socio-economic status characteristics and that the latter variables do not have an independent effect on fertility except through their influence on age at marriage.

Citing the case of Indonesia, Hull and Hull[43] suggest that there are compelling reasons for expecting a positive relationship between socio-economic status and fertility, especially in peasant societies with substantial socio-economic stratification. In a community study in Java, the authors employed a socio-economic classification based on a composite index of household economic status. The components of the index were occupation, education, ownership of modern items, conditions of the house and levels of rice and meat consumption. They observed a positive relationship between three broad status levels (lower, middle and upper) and fertility. In their opinion, the observed positive relationship could be explained to some extent by marital disruption and infecundity. Recent changes in the institution of marriage may have led to more stable unions among the lower status groups and expanding health care may have reduced infecundity. However, it was observed that the positive relationship between fertility and status persisted for each of the following groups: (*a*) all ever-married women; (*b*) all currently married women with no marital disruption; and (*c*) all currently married fertile women with no marital disruption. Although periods of breast-feeding and post-partum abstinence were found to be declining among all groups, the decline had been most dramatic in the lower status group. As a result, it could be expected that in the long run, fertility would rise most rapidly in that group.

These findings clearly imply that with improved medical systems, fertility might rise for the poorer segments of society. Changing patterns of marriage, marital disruptions and post-partum behavioural changes also will emerge. In the long run, however, fertility may fall due to postponed marriage and increased use of family planning. The relationship between social class and fertility is a function of the stage of socio-cultural development. The study is also important methodologically because it relates socio-economic variables to the proximate determinants of fertility.

Ajami[44] used a multivariate technique to assess the relation of socio-economic status to fertility. He found that differences between the fertility (children ever born and number of living children) of women of high and low status were statistically significant, as were differences between women of medium and low status. Women in the intermediate-status group differed only slightly in their fertility from the high-status group.

Multi-country studies

Gregory and Campbell[45] studied 18 countries of Latin America at two points in time, 1950 and 1960, using the crude birth rate as the dependent variable; and income per capita, infant mortality rate, percentage urban, female labour force participation rate and energy consumption per capita as independent variables. The percentage of the population that is urban was used as a proxy for attitudinal changes. The interaction between the percentage urban and other independent variables was also examined. The aim was to estimate a demand equation for births, controlling for percentage urban. Perhaps the most important contribution of the study was its examination of the "modernization turning-points", the values of the percentage urban at which the elasticities of fertility with respect to other variables changed sign. For example, they demonstrate that when the proportion urban reaches 69 per cent, the relationship between fertility and income per capita changes from direct to inverse.

In order to determine the relative role of development and family planning programmes in fertility decline, Mauldin and Berelson[46] used four classes of independent variables, which related to education, health, the economy and urbanization. The dependent variable was the change in the crude birth rate, which in turn was decomposed into changes due to age structure, marriage patterns and marital fertility. The authors found that in explaining the variance, the impact of family planning effort exceeded that of the various economic indicators.

Anker[47] analysed fertility differences in the developing countries in the late 1960s and investigated the extent to which they can be explained by differences in socio-economic conditions and government family planning programmes. His analysis proceeded in two stages. First, a relatively "pure" fertility measure (an approximation of the gross reproduction rate) was developed by removing the age-distribution component of the crude birth rate. He demonstrated the importance of developing this measure because using the crude birth rate as the measure of fertility leads to biased coefficients in the measure of mortality. Secondly, fertility was

analysed within the framework of a simultaneous equation model with the gross reproduction rate, the secondary-school enrolment rate and the female labour force participation rate as endogenous variables. In this way, the bias, which is inherent in the analysis of fertility using ordinary least squares, was eliminated.

In general, fertility was found to be relatively insensitive to socio-economic conditions during the early stages of development. Rising life expectancy at birth and falling female labour force participation rates tended to increase fertility, thus partially offsetting the negative effect on fertility of increases in adult literacy rates and school enrolment rates and decreases in the importance of agricultural employment. After "middle" levels of development, however, fertility was found to become fairly sensitive to socio-economic conditions.

After having examined data for 113 countries for the period 1968-1975, Tsui and Bogue[48] identified eight socio-economic indicators that represented factors in development presumed to be among the most important in affecting fertility motivation: gross national product per capita: percentage urban; infant mortality rate; life expectancy; percentage of the employed female population working in agriculture; percentage literate; school enrolment; and the Mauldin and Berelson measure of family planning efforts.

Using the change in total fertility rate from 1968 to 1975 as the variable to be explained, Tsui and Bogue came to the conclusion that family planning was by far the primary causal factor in the decline of fertility during that period. Demeny,[49] however, rejected these conclusions, arguing that to a significant degree the family planning programme effort is also a function of the level of socio-economic development. Furthermore, in his rejoinder, he notes that government decisions concerning family planning programmes are not independent of socio-economic conditions. On the contrary, he points out that in several countries where family planning programmes have been very successful, the programmes followed rather than preceded the rapid increase in contraceptive use.

E. Studies relating to distribution of income

Following the insights of Kuznets and Myrdal,[50] increasing attention has been focused on the implications of inequality for fertility. The distinction between average well-being and the well-being of the "average man" is more and more recognized as an important criterion for evaluating the success of development plans, and the importance of equality and distributive justice has thus been brought into sharper focus. In brief, it has been suggested that because fertility is a non-linear function of income at the household level, the distribution, as well as the average level, of income is a significant determinant of fertility.

Single-country studies

Repetto,[51] in his investigation of the response of household fertility in Puerto Rico to changes in household income per capita at different levels, found that the response of household fertility to changes in household income was income-dependent and fell substantially with an increase in the level of income per capita. His analysis of the data for the Republic of Korea also found the relationship between fertility and income to be inverse and non-linear.

There has been considerable controversy with regard to the role played by distributional factors in the fertility decline observed in Kerala State, India. It has been suggested that "the social-justice theory of demographic transition" was confirmed by the Kerala data.[52] Others have pointed out, however, that the income of agricultural labourers had not increased in Kerala even though the average wage rate had been rising, suggesting that the inequalities had increased instead of decreased.[53] To throw more light on this controversy, Nag[54] compared the experiences of Kerala and West Bengal: he found that the more rapid decline of fertility in Kerala was associated with greater equality in education and health facilities rather than with greater equality in income and assets.

Multi-country studies

Using an index of inequality, which measures the difference between rural and urban income per capita, Bhattacharyya[55] observed that the rural mean number of live births was higher in Turkey, which had a large urban/rural differential in incomes per capita, than in Taiwan, province of China, where the differential was much smaller.

In an earlier study, Bhattacharyya[56] had compared 52 countries to identify the independent effect of inequality on fertility. Jones[57] reanalysed the data, using a sensitivity analysis to exclude certain observations from the final analysis. He then made logarithmic transformations of the variables and concluded that the partial effect of income inequality was due to upper outlying observations in the untransformed data. Flegg[58] applied a different methodology to Bhattacharyya's data and arrived at a similar conclusion, that inequality had an independent positive impact on fertility.

In his econometric analysis of the income distribution-fertility relationship across 68 countries, using observations covering the period 1960-1965, Repetto[59] employed both ordinary and two-stage least-squares regression analysis. He found that a consistently close relationship existed between a more equitable income distribution and lower fertility. The evidence from the aggregate data is strongly supportive of the hypothesized association between income concentration and high fertility. For any level of average income, a greater inequality in its distribution is associated with a higher fertility rate.

Flegg[60] also criticized Repetto's analysis, not only because he used Gini coefficients as measures of inequality but because he included five atypical Eastern European countries, which may have distorted the results. Arguing that their very low fertility is due to variables that are not included in the regression equation, Flegg notes that Repetto's results are highly sensitive to disaggregation.

Birdsall[61] agrees with Repetto's conclusion that an improvement in the level of absolute income of the poorest section of a population has a negative effect on the aggregate fertility. However, she argues that no evidence was presented to indicate that aggregate fertility is affected by the relative share of income going to the poor as distinct from their absolute level of income.

Winegarden,[62] using a sample of 36 developing countries, found no evidence that inequality had a direct relationship with fertility. He concluded, however, that inequality affected mortality, which in turn affected fertility. Taking this indirect relationship into account, he found that in countries where life expectancy was 49 years or more, greater inequality was associated with increased fertility. In countries where life expectancy was lower, greater inequality was associated with decreased fertility, primarily because of the complex negative feedback from mortality.

F. Studies relating to women's labour force participation

The involvement of women in employment away from home tends to promote smaller families through increased age at marriage, conflict of roles between working and reproduction, and more favourable attitudes towards the use of contraceptives. The relationship is complex and does not readily lend itself to identification through aggregate data or even individual-level data considered at a point in time. In addition, the fact that female labour force participation is strongly related to education imposes more stringent requirements upon data collection if independent effects are to be ascertained. The paucity of recent studies concerning this issue may be due to this problem.

General results

Smith[63] examined the relation between fertility and female employment in Mexico City as part of a single decision-making process. Using 1971 survey data, he found a negative relationship between labour force participation and fertility. He also found that education did not affect the relationships of the work variables to the several measures of fertility.

Several researchers have attempted to investigate the role of women's economic status in affecting levels of fertility in the Arab countries, but their efforts have been complicated by the fact that those countries are characterized by very low levels of female labour force participation. Muslim norms encourage many women to remain secluded, making more difficult their integration into the labour force. Of course, many women do work at home or assist their husbands in their work, but that is rarely recorded in national statistics.

In order to deal with this problem in a study of Egyptian women, Loza-Soliman[64] adopted a broad definition of the productive role of women: they were considered employed if they themselves were employed or if they helped their husbands. Using this definition, a very low negative correlation was found between women's employment and fertility. Furthermore, the relationship was approximately the same in cities and villages.

In his study of fertility in Algeria, Vallin[65] found that fertility differences by employment status reached a maximum at ages 35-44, when women may be turning to employment to help support children already born. It was found that employed women aged 35-39 years had 3.9 children, whereas women who were not employed had 6.4 children.

In Turkey, gainful employment of women is also rare. Timur[66] found that in urban areas, currently employed women had an average of 2.9 births, while those who have never been employed had about 3.5. In metropolitan areas, the differences were not discernible. Employment was bipolar, however, with women either in highly educated professional positions or unskilled labouring jobs. The influence of these extreme categories may have unduly influenced the overall fertility measures of employed women.

The Rodríguez and Cleland study[67] also found a substantial negative effect of female labour force participation on marital fertility. This effect remained after adjusting for all other variables in the model. A problem with all studies of this relationship based on cross-sectional data is that it is unclear to what extent lower fertility might be the cause of female employment rather than its effect. Even in the absence of deliberate fertility control, fertility varies widely between women; and it may be that those women who have large families, and particularly those with young children in the household, find it impractical to work away from home.

Problem of role conflicts

It is generally assumed that as more women obtain modern-sector employment, fertility will decrease as a result of the conflicting demands of labour force participation and household work. As a significant proportion of women enter extrafamilial occupations, increased participation in the labour force should result in: (*a*) delayed marriages; (*b*) deliberate control of reproduction through contraception; (*c*) long birth intervals and eventual smaller family size at the completion of fertility.

Weller,[68] using studies at the individual level, found that in Puerto Rico, labour force participation by women and fertility were inversely related even when age, marital status, education and urban residence were controlled. In Jamaica, working women were found to have lower cumulative fertility, even when age was controlled for; in this case, the difference increased with age. It was also found that the absence of sources of child care, formal or informal, was associated with lower fertility. He concluded that the inverse relationship was more likely in the case of paid employment, in an urban area, in jobs that required working away from home in white-collar occupations.

A study of Sierra Leone undertaken by Ketkan[69] provides additional insight into the role of the wife's income on fertility behaviour. He assumed that the

value of human time was the most important component of the cost of children and that fertility varied inversely with the cost of child-rearing. Because the bearing and rearing of children constitute a time-intensive activity for the mother, her calculation of time would be of crucial importance in the determination of household fertility. Three alternative models were used to measure the value of women's time. In the first model, the value of the mother's time was measured by her educational attainment. In the second, it was measured by her current monthly income. In the third, the value of her time was treated as an endogenous variable determined by the household's "anticipated" childhood mortality and the characteristics of the extended family. The statistical results indicate that the number of children born to a family is inversely related to the housewife's current income and positively related to the incidence of anticipated child mortality and the size of the extended family.

In a study of women at Ibadan, Nigeria, Arowolo[70] found that, contrary to expectations, there were no clear-cut patterns of fertility differentials between working and non-working mothers. The urban women included in the sample were largely uneducated although they did participate in wage labour.

Mason and Palan[71] conducted a thorough analysis of role incompatibility using a sample of Malaysian women. They also achieved results at odds with the assumption of incompatibility. Both an additive model and an interactive model were used to test the presence of role incompatibility. In the first model, they considered the separate and combined effects of work and incompatibility; in the second, they treated fertility as a direct function of current or most recent occupation, class of work and location of work. Using data drawn from the Malaysian Fertility and Family Survey, separate analyses were conducted for the three dominant ethnic groups in Peninsular Malaysia, as well as for rural and urban residence.

It was observed that only in the case of urban Chinese and Indian women was there an inverse relationship between employment and fertility. The relationship did not appear in other groups. Indeed, for rural Chinese and Indian women, the relationship between employment and fertility was positive. Although these results may have indicated spatio-temporal conflicts, further analysis suggested that normatively based role incompatibility was more likely to produce an inverse relationship between employment and fertility in Malaysia.

The empirical evidence does not provide uniform support to the hypothesis of role inconsistency. In some cases, the findings of a positive relationship between fertility and labour force participation may be due to social and cultural conditions that give rise to adequate mechanisms for accommodating the traditional beliefs in large families to the demands of urban employment. With housemaids or relatives to do most of the domestic work and take care of the children, working mothers, though living in an urban environment, are able to combine the two roles.

The absence of a relationship between modern-sector employment and fertility may be representative of an early stage of social transformation in the urban environment. The persistence of the extended family helps to make the combined role of worker and childbearer possible without adding the stress of being a full-time mother. Without access to low-cost household help, however, it appears unlikely that the two roles could be performed consistently over time.

Husband's occupation

The value of children to a household as productive agents may be largely determined by the occupation of the husband. In general, it would be expected that fertility would decline with increases in the hierarchy of occupations. In a study of Jordanian women married more than 25 years, Rizk[72] found that the highest fertility was among the wives of agricultural workers, followed by wives of unskilled workers. Overall fertility was highest among wives of landowners and land tenants and lowest among wives of skilled technicians. These results indicate that fertility is reflective of the economic need for children.

This finding is consistent with the results of a survey conducted in Tunisia by Ayed and Jemai,[73] who found that the wives of high-level administrators and professionals had the lowest fertility rates and that the wives of artisans and merchants had highest fertility. It is possible that self-employed artisans felt pressures similar to those perceived by independent farmers to increase the familial labour supply through high fertility.

G. Rural or urban residence and fertility

Rural/urban differentials

Addo[74] observed that the general pattern of economic development in Ghana affected urban/rural fertility differentials. In the northern part of that country, fertility levels were depressed by poor health and environmental conditions, which gave rise to frequent miscarriages, abortions and other forms of pregnancy wastage. Even so, urban areas, on average, exhibited lower birth rates than the rural areas by between 9 and 15 per cent. Those regions of Ghana with the highest rates of urbanization tended to have lower birth rates and higher differentials between the urban and rural areas. Fertility differentials between urban and rural areas in the least urbanized regions, however, were found to be negligible.

Preliminary results from the Jordan Fertility Survey[75] indicated that women in urban areas marry later than those in rural areas. For women aged 20-24 years, 58 per cent of those in urban areas were classified as ever-married, as compared with 78 per cent in rural areas. Even after accounting for differences in mean duration of exposure, significant differences in cumulative fertility were found according to place of residence, with rural women averaging more children. The total fertility rate for urban women was 6.45. For women in towns, it was 7.02, and for women in rural areas, 9.07.

In contrast to the findings of the fertility survey results in Jordan, Vallin[76] found that in Algeria there was little difference in the completed fertility of urban and rural women who married young and shared similar risks of exposure to pregnancy. He did find, however, that for most age groups considered, women who were born in large cities or who settled in them before marriage had lower fertility than other residents. This difference was not apparent among female residents of small towns.

Zurayk[77] used a sample of rural villages and a study conducted on the outskirts of Beirut to explore the relation of urbanization and religion on fertility. Controlling for religion and age, the author found a higher average number of children ever born in the rural areas than in the urban sample. The urban/rural fertility differences were more pronounced for the Muslim respondents than for the Christians. In fact, the religious differential exceeded the urban differential.

On the basis of their study of 113 developing countries, Tsui and Bogue[78] observed that the percentage urban was negatively related to fertility in Africa and Latin America, but not in Asia.

Effects over time

It has been hypothesized that there are at least three stages through which the urban/rural relationship passes.[79] The first stage is characterized by a flow of migrants to the city that is largely male and has a greater proportion of non-reproductive women, leading to urban fertility rates that are lower than rural rates. The second stage involves a trend towards family migration, resulting in fertility that is as high or higher than rural levels due to: (*a*) a change in the demographic structure of urban areas; (*b*) a decrease in the duration of lactation and post-partum abstention; and (*c*) improvements in public health. At the third stage, the effect on attitudes, norms and the behaviour of urban residents is such as to lower fertility. These effects are: (*a*) alternative roles for women; (*b*) improvements in infant survivorship; and (*c*) changes in attitudes concerning the structure and size of the family.

In a study of Egypt, Khalifa[80] found an inverted U-shaped relation between urbanization and fertility. Lower urban fertility was observed in the early 1940s. This stage was followed by a period of excess of urban over rural fertility, which peaked during the period from 1950 to 1955 and then declined. Presumably, even as the cities swelled with rural migrants, the migrants retained for some time the pro-natalist attitudes of their places of origin and were little affected by the urban milieu. Lastly, this period was followed by a phase of lower and more rapidly declining urban fertility rates. The recent phase has been attributed variously to the effects of population policy and family planning, socio-economic changes and the consequences of the 1967 war; however, at the time of Khalifa's study, the impact of these factors had not yet been disentangled from the impact of the urban environment.

A similar pattern was detected by Timur[81] in a study of Turkey, where a comparison of the mean number of live-born children revealed that the earliest and most rapid declines took place in the large cities, followed by small towns. The latest and slowest declines took place in rural areas. It was also found that the depressing effect of female education on fertility varied in urban places of different size.

It appears from the results of the research reported here that rural/urban differentials play a significant, yet by no means clearly identified, role in determining fertility differentials. Further research would be useful in order to better isolate the effects of place of residence from other related and confounding influences, such as education, occupation and accessibility of resources.

SUMMARY

Even though the relationship between socio-economic development and fertility is complex, involving the interaction of social, economic and demographic factors, it is possible to arrive at a number of general conclusions. Most studies indicate that the relationship between higher levels of education and fertility is negative. At lower levels of education, however, the relationship can become weak or sometimes positive. Lastly, the negative education-fertility relationship is mediated by higher age at marriage and within marriage by more efficient use of contraceptive methods.

Empirical studies also tend to agree that the demand for children, and hence fertility, varies directly with farm size. This is generally attributed to the role of the family as a productive unit, which benefits from increased numbers.

In the long term, general improvements in socio-economic conditions, such as income, education, availability of family planning and health services and occupational opportunities, bring about a decline in fertility. However, at early stages of development, fertility is relatively insensitive to socio-economic progress.

Income inequality appears to have an independent positive effect on fertility. However, equality of access to education and health facilities, even without corresponding improvement in the distribution of income, may reduce fertility.

The evidence does not provide uniform support to the hypothesis that women's labour force participation and fertility are negatively related. The finding of a sometimes positive relationship between women's labour force participation and fertility may be due to social and cultural conditions that give rise to adequate mechanisms for accommodating the traditional beliefs in large families to the demands of urban employment.

Lastly, although the urban fertility rate is lower than the rural rate, it is not clear whether residence has a direct effect on fertility independent of education, occupation and accessibility of resources.

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XI. PROSPECTS OF RESOLVING QUESTIONS RAISED BY THE AGING OF POPULATIONS*

The aged have always existed in every population. Only in the past few decades, however, has the phenomenon of aging on a massive scale, with its concomitant social, economic, political and scientific questions, drawn the attention of national societies and the world community. Prior to that period, although some persons lived to advanced ages, their numbers and proportions in the total society were not highly significant. During the twentieth century, however, success has been achieved in many regions of the world in lessening perinatal and infant mortality, improving basic sanitation and controlling infectious diseases. As a result, more and more people are surviving to old age.

Furthermore, from a demographic point of view, the increase in the absolute and relative size of the aging population will continue over the next four decades in all regions and most countries of the world. In a number of developing countries, this trend has begun to emerge; and it will accelerate further at the turn of the century in all the less developed regions. Although the increase in the proportion of the aged is temporarily slowing in some of the developed countries, the populations of those countries are expected to resume aging, or to continue to age considerably, during the period 2000-2025.

In 1950, according to United Nations estimates, the world population aged 60 years or over was approximately 200 million. By 1975, that figure had increased to 350 million. United Nations projections to the year 2000 indicate that the number will increase to 590 million and by 2025, to over 1,100 million; that is, an increase of 224 per cent since 1975. During this same period, the world population as a whole is expected to increase from 4.1 billion to 8.2 billion, or by 102 per cent. Thus, 45 years from now, the aging will constitute 14.6 per cent of the world population.

It is significant to note that, for the more developed regions, the increase in the population as a whole is expected to be 16 per cent from 1975 to 2000 and 8 per cent from 2000 to 2025, while those aged 60 years or over will increase by 30 and 37 per cent during the same periods. In the less developed regions, the relative increase of the older population (60 or over) is even more pronounced; while increases of 63 and 41 per cent are projected for the total population over the same periods, the increases of those 60 years or over are projected to be 100 and 114 per cent, respectively. Furthermore, in 1975, slightly over half (52 per cent) of all persons aged 60 or over lived in the developing countries. Owing to the differential rates of increase, by the year 2000 over 60 per cent of the world population of older persons are expected to live in developing countries; and this proportion is expected to reach nearly three quarters (72 per cent) by 2025.

As the numbers and proportion of the aging increase, the age structure of the population changes. Declining fertility, for example, entails a decreasing proportion of children in the total population, which, by the same token, increases the proportion of older persons. Thus, the proportion of the population under 15 years is expected to decline from the 1975 average of about 41 per cent to an average of approximately 33 per cent in 2000 and to 26 per cent in 2025. In the same regions, the population aged 60 years or over is expected to increase from 6 per cent in 1975 to 7 per cent in 2000 and to 12 per cent in 2025, thus reaching the level that the more developed regions reached in the 1950s. In the more developed regions, the population under age 15 is expected to decline from 25 per cent in 1975 to 21 per cent in 2000 and to 20 per cent in 2025. However, the proportion of the group aged 60 or over is expected to increase from the 1975 level of 15 per cent to 18 per cent in 2000 and to 23 per cent in 2025. It should be noted that these figures are averages for vast regions and considerable variations exist between and within countries.

The median age of the population, which will show rapid increases for the period 1975-2025, also reflects these structural changes. In the less developed regions, the median age will rise from the 1975 level of 19.3 years to 29.5 years in 2025, thus reaching the 1975 level of the more developed regions (30.4 years). In the latter regions, the median age is expected to increase to 38.2 years.

The sex ratio, that is, the number of men per 100 women, will continue to be unfavourable at the older ages in the more developed regions, declining from 78 for age group 60-69 to 53 for the group over 80 years of age in the year 2025. In the less developed regions, it will decline from 94 for age group 60-69 to 73 for those over 80 in 2025. This imbalance is further aggravated by problems relating to widowhood, divorce and separation.

The trend in urban/rural distribution is another major consideration. In the more developed regions, two thirds of the aged were in urban areas in 1975; this proportion is expected to reach three quarters by the year 2000. In the less developed regions, three quarters of the aged

* Prepared by the Centre for Social Development and Humanitarian Affairs of the Department of International Economic and Social Affairs of the United Nations Secretariat.

were to be found in rural areas. Nevertheless, the increase in the proportion of the aged in the urban areas of these countries could be considerable and reach 42 per cent by 2000.

In the more developed regions, according to model life tables, the increasing levels of life expectancy at birth could imply an increase at age 60 of approximately one year between 1975 and 2025. In the less developed regions, this projected increase in life expectancy would be of roughly 2.5 years. Thus, by 2025, men aged 60 could expect an average of over 17 years of further life in the more developed regions and over 16 years in the less developed regions. Women could expect approximate increments of 21 and 18 years, respectively.

A. Impact of an aging population on development

According to current demographic projections, aging of the population will continue throughout this century in both the more developed and the less developed regions. Many social and economic institutions will be significantly altered by this growth in the population aged 60 years or over and the decline in the relative number of children. Although the aging of population need not cause severe economic hardships, reduced fertility and the associated changes in the age structure are not likely to be a major stimulus to development. However, prudent public policies that reduce early-retirement incentives and facilitate the work efforts of females can lessen the potentially adverse effects.

Dependency ratios: effects and importance

Dependency ratios, which are one measure of a population's age structure, have been used as an indicator of the potential well-being of a country. Because the elderly are defined as persons aged 60 years or over, these ratios are derived by dividing the number of young people (aged 10-14 years) and the aging (60 years or over) by the population of working age (i.e., those aged 15-59 years). The principal argument is that a lower dependency ratio implies relatively more workers and that fewer resources need to be diverted to the dependent populations. Within this framework, the aging of the population in a society would be associated with increased economic potential, because the proportion of persons aged 15-59 years increases as the concomitant decline in fertility causes the population growth rate to fall.

However, the apparently favourable effect implied by the simple concept of a dependency ratio must be further examined because other variables affect the size of the labour force. First, labour force participation rates vary greatly according to sex and age and are influenced by the level of fertility and the stage of development. For example, the fertility declines that lead to an increase in the proportion of the population aged 15-59 years also tend to be associated with increases in the participation rate of females. Although this rise in the proportion of females in the labour force, which is not conveyed by the dependency ratio, would tend to enhance the favourable effects of population-aging, it might also reduce the fertility rate still further.

The development process also affects the ages at which the population is economically active. As economic development proceeds, younger workers delay entry into the labour force in order to obtain increased schooling and technical skills; and early retirement becomes increasingly prevalent. Hence, the age limits of dependency are a function of development and economic growth.

The decisions made by married women, youths and the elderly with respect to labour supply are clearly influenced by government decisions. Thus, the economic-dependency burden can be reduced by policies that encourage these groups to become or remain part of the labour force. For example, by avoiding policies that encourage early retirement, developing countries may be able to prevent sharp declines in labour force participation by the elderly. Specifically, they could avoid lowering the age of eligibility for their maturing social security systems. Moreover, the developing countries that already have a relatively low age eligibility for old-age benefits may need to consider raising the limit as the level of life expectancy improves.

In addition, the work environment could be redesigned to make it more attractive to older workers. A reduction of physical stress and the provision of jobs with more flexible hours would tend to encourage these persons to remain in the labour force. By maintaining relatively high rates of market work by persons aged 60 or over, countries can substantially reduce the burden of income transfer for the elderly, which generally increases as the population ages.

A second issue to be considered in assessing the usefulness of dependency ratios and the seemingly favourable effects of population-aging is the relative cost of maintaining young and old dependants. In most developed countries, the income and health care of the elderly is increasingly being provided through social security systems. The family remains the primary source of transfers to children, although schooling is usually provided by the State. The extent of public intergenerational transfers varies from one country to another; and in some societies, the family continues to be the principal provider for both young and old dependants.

Although the total dependency ratio is lowered by decelerating population growth, the old-age dependency ratio is increased. Thus, the relative cost of young and old dependants will determine the effect of an aging population on total dependency costs.

In profiles of medium-level consumption, it has been estimated that the consumption requirements of persons aged 65 or over in the developing countries exceed those of the group aged 0-9 years and are less than the needs of the group aged 10-19 years. It is clear that the costs of supporting the elderly are a direct function of public policy; the higher the quality of care and the greater the level of income support for this group, the more significant will be the cost effect of an aging population.

A final issue in the dependency ratio concept arises from the fact that significant changes associated with slowing population growth also occur in the composition of each dependent group. As the rate of population growth slows, increasing percentages of the elderly are found in the higher age groups, for example, those over 75 years; and in a first phase, the proportion represented by youth cohorts close to the age of entry into the labour force in the total number of the young tends to increase. These compositional changes may well increase the cost of supporting the elderly, because it is likely that a higher proportion of that group will require additional public services, while an increasing number of youths will be ready to enter the labour market. Moreover, further declines in mortality rates at higher ages and the advancement of increasingly expensive medical care are likely to increase the cost of supporting the very old.

In short, an analysis of the dependency ratio indicates that, in general, slowing population growth and the concomitant aging of the population raise the proportion of the economically active population and lower the dependency ratio. This beneficial effect may, however, be offset by higher costs for older dependants and the rise in the proportion of the very old. Therefore, as populations age, it becomes increasingly important to consider the long-term costs of modifying retirement plans.

Migration and labour market mobility

The implications of population-aging for the age structure of certain geographical areas within countries are a matter for concern. Migration occurs when people relocate in search of higher wages and better living conditions. Because migration rates fall with age, recent migration patterns have resulted in rural areas, in both less developed and more developed regions, that have a greater proportion of the elderly than do urban areas. Thus, the rural-urban migration of young workers, in conjunction with declining fertility, clearly accelerates the aging of rural populations.

Aging of the population and decelerating population growth will tend to retard economic adjustment across all industries. An increasing population provides a larger number of new entrants into the labour force to supply the manpower needs of expanding industries. In a stationary population, it is necessary to draw upon the pool of existing workers to meet new labour requirements. Frequently, an important first step in facilitating the transition is to set up training programmes for middle-aged workers.

Moreover, promotional prospects for workers are also retarded, because the rate of progress through the job hierarchy slows down as fertility declines. It has been postulated that population growth exerts the dominant influence on the rate of labour force advancement; declining participation by the elderly tends, however, to offset this effect.

Investment, consumption and savings

There have been many debates about the implications of population growth and aging for investment, consumption and savings. One argument holds that, as fertility declines, more women will enter the labour force and aggregate output will rise, thus increasing consumption per capita. It is also postulated that with fewer entrants into the labour force, new investment formerly needed to maintain the ratio of capital to labour can be used to raise the amount of capital per worker and that this increase in the ratio would augment labour productivity and increase income and consumption per capita. This analysis, which relies upon the dependency ratio concept, has shortcomings.

Conflicting theoretical and empirical analysis suggest that countries should not expect significant increases or decreases, particularly in the short term, in consumption per capita associated with declining fertility rates. It would be possible to detect significant differences in consumption per capita only if alternative states were to be observed after a lapse of many years. In societies whose populations are large enough to strain their physical and land resources, the cessation of population growth may signifcantly enhance the well-being of future generations.

Shifts in demands for consumer goods and public services also may result from the transition from a growing to an aging population. For example, there will be a relative decrease in the demand for children-oriented goods and services and an increase in the demand for those consumed by older persons. Across broad expenditure groups, however, the evidence indicates that consumption patterns will not be significantly altered by decelerating population growth.

The effect of population aging on household savings is another question related to the change in consumption per capita. It is frequently suggested that the decline in the number of children per family will enhance the savings potential; other forces, however, tend to counteract this favourable effect of slowing population growth. First, expenditure on children can be considered a form of savings or investment in human capital that will provide a future return either to the family or to the society. Secondly, expenditure on children may be at the expense of other consumer goods rather than savings. Thirdly, the presence of children may alter the work patterns of their parents.

In any event, however, the potentially adverse effects of an aging population on the savings rate of a country can be moderated by raising the retirement age to 68 or 70, in order to maintain a higher ratio of workers to non-workers. Nevertheless, it does not seem prudent, in the light of these reservations and the conflicting empirical and theoretical studies, to anticipate that future demographic changes will lead to a significant increase in the savings rate, which is a function of current and expected economic conditions and the expected real, after-tax, interest rate.

Labour productivity

Aging of the population can affect the labour productivity of an economy because the age composition of the labour force is altered. To evaluate this effect, it is necessary to know the productivity or ability profile of the entire working life. In general, people enter the labour force with relatively little training and gradually acquire job skills and knowledge throughout their working lives. At older ages, some of these skills may begin to deteriorate, but the importance of the decline depends upon the physical and mental demands of the job.

An understanding of this life-cycle pattern of human capital acquisitions, combined with an analysis of the changes in the age structure of the labour force, provides the criteria for assessing the effects of population aging on labour productivity. In the developed countries, job requirements have become less and less physically demanding. The reduction in these requirements and the greater experience of older workers explain the research findings that those workers are frequently as productive as younger workers. On balance, the increasing numbers of older workers should not adversely affect labour productivity in the developed countries. In the developing countries, where the workload is often physically more burdensome, this conclusion may not be apposite.

The average level of productivity should be raised by a decline in the relative number of younger, less experienced workers, who are more likely to be unemployed as they enter the labour force and search for satisfactory employment. Aging of the population will reduce the proportion of inexperienced workers in the labour force and should also favourably affect the unemployment rate. It should thus have a favourable effect on labour productivity, especially if the economic response allows an increase in the ratio of capital to labour.

Care for the elderly

The care needed by an increasing number of older dependants is the most demanding economic problem associated with an aging population. In the developed countries, social security programmes have been set up to provide income transfers directly to older persons, along with supporting health care programmes. Previous aging of the populations in these countries has made it necessary to allocate larger shares of government budgets to such programmes; thus, an increasing proportion of workers' current earnings is being taxed to support transfer programmes for the elderly. The expected continuation of the aging process will require even greater financial support in the future. The only way to lessen the cost of these programmes is to lower benefits or reduce the number of beneficiaries.

In the developing countries, the onus of supporting older persons usually falls on the family. The addition of more older dependants to a family in a poor country can significantly alter the level of subsistence of other family members. As the population ages, therefore, it may be necessary for the Governments of these countries to assume a greater share of support for the elderly. Such support could be in the form of increased social services, such as medical care, subsidized housing, food supplements and cash transfers.

B. Role of development in aging of population

Whereas great concern has been voiced about the expected trebling of the world population during the period 1950-2025, almost no notice has been taken of the expected increase of the elderly by over five times during that period. The most spectacular increase projected is that of the group over 80 years of age, which is expected to grow by a factor of 7.3, from 15 million to 111 million.

The forces making for these considerable changes are briefly explained here. The high fertility rate during the post-war period resulted in an increase in the proportion of children and youth in the world population (the median age declined from 23.3 in 1950 to 21.9 in 1975), although the absolute number of the elderly also increased. The median age rose thereafter and it is expected to reach 26.1 years in 2000 and 30.8 years in 2025. Mortality at younger ages has declined considerably and the greater number of children surviving has thus reinforced the effect of high fertility in making the population younger at a first stage. It is precisely the conjunction of these two trends that currently hides the subsequent aging in developing countries and will in time amplify it in them. After 2000, this same large number of children born and responsible for the younger population age structure will themselves begin to join the ranks of the elderly; and by 2025, the elderly will be composed mostly of the survivors of those currently aged 15-35 years. Establishing programmes for the future elderly, therefore, corresponds to a continuing concern for the youth of today. Thus, although the proportion of persons over 60 in the total world population is expected barely to increase between 1950 and 2000, it will jump by roughly 40 per cent between 2000 and 2025. After that date also, a continued increase in the proportion of elderly can be expected.

"Aging", with identification of the elderly as a separate group having their own specific needs, has emerged as an issue only in recent times, as a corollary to economic and technological advances in some regions of the world, with their vast social repercussions on productive life and personal life-styles. Due to concomitant advances in public health and other life-saving improvements at both extremes of the population structure, the numbers of this group have also increased, both in absolute and in proportional terms.

This situation exists also because aging is simultaneously a sign of and a result of socio-economic development, in both the quantitative and the qualitative senses. A major example of the fundamental imbalance between the sectoral approaches to national and international development during the past decades has been the well-established fact that advances in medicine and public health have by far outpaced similar progress in

the fields of production, income distribution, education, housing, institutional modernization and social development in general terms. In this sense, the developing countries are about to age much too "early", because the other sectors needed to ensure a balanced and integrated development process can scarcely follow the same pace and guarantee a decent level of living for the dramatically increasing cohorts of elderly people foreseen for the next few generations. Nor can they be expected to adopt a system of obligatory retirement — even if the related costs could be provided — for an aging population that will not only expand in numbers but will remain in better physical condition than previous generations.

Declining fertility and mortality rates portend significant declines in the proportions of the young and equally significant increases in the proportions of the elderly over the next few decades. The differential rate of increase of the various age groups is shown in table 47. The only group for which an acceleration of growth is foreseen is that aged 60 or more years. The decline is so dramatic for the pre-school age group that the relative weight of these aged 60 or over and the pre-school group will be symmetrically inverted between 1950 and 2025. Such structural changes need to be taken into account in long-term planning.

It has been argued that the elderly and the young compete as dependants for the benefits of development or for shares in socio-economic programmes. In strictly demographic terms (i.e., without considering activity rates or economic aspects), part A of table 47 shows that this argument may be faulty. Between 1950 and 2025, the group aged 60 or over is expected to increase its proportion in the total population by 5.2 points (from 8.5 to 13.7 per cent). During the same period, the population of working age, usually defined as age group 15-59, is expected to increase by nearly the same number of points, i.e., about 4.5. Therefore, the increase in the elderly will be nearly matched by that of the active age group. Meanwhile, the young dependants (age group 0-14) are expected to decline by approximately 9.7 points. This decline could permit a number of resources to be shared fairly between the two dependent groups in a manner satisfactory to both. As table 47 shows, the period 1975-2000 is the most favourable for making the necessary plans, since the active group is expected to increase relatively the most (by 63.5 per cent). This is confirmed by the fact that if the calculations are based on the population structure of 1975 (instead of 1950), in which the active group represents about 54.9 per cent of the total and that aged 60 or over represents just over 8.5 per cent, the increase in the active group between 1975 and 2025 of almost 6.4 points more than compensates for the increase of the elderly group of about 5.2 points. However, this advantage may turn out to be only temporary, because the elderly group is projected to increase more rapidly than the active age group after 2025.

TABLE 47. DIFFERENTIAL GROWTH OF VARIOUS AGE GROUPS, WORLD, MORE DEVELOPED REGIONS AND LESS DEVELOPED REGIONS, 1950-2025

(Percentage)

Age group	*Proportion of age group in total population, 1950*	*Interperiod growth*			*Proportion of age group in total population, 2025*
		1950-1975	*1975-2000*	*2000-2025*	
		A. *World*			
0-4	13.4	59.3	21.8	4.9	8.4
5-14	21.3	75.8	28.7	11.7	16.6
15-59	56.8	55.9	63.5	37.5	61.3
60+	8.5	61.7	70.7	90.0	13.7
TOTAL	100.0	61.0	50.5	33.9	100.0
		B. *More developed regions*			
0-4	10.2	1.7	2.1	4.6	6.7
5-14	17.6	26.3	−3.2	2.0	13.2
15-59	60.8	29.5	18.3	1.5	57.2
60+	11.4	75.5	38.8	36.9	22.9
TOTAL	100.0	31.3	16.5	8.2	100.0
		C. *Less developed regions*			
0-4	15.0	78.5	25.5	5.0	8.8
5-14	23.2	94.2	36.5	13.3	17.3
15-59	54.7	70.3	82.3	47.2	62.1
60+	7.0	50.7	100.1	124.0	11.0
TOTAL	100.0	75.7	63.0	40.6	100.0

Source: Based on estimates and projections of population by sex and age prepared by the Population Division of the Department of International Economic and Social Affairs of the United Nations Secretariat.

The results for the less developed regions are similar to, or even better than, those for the world. For the more developed regions, however, the already aged structure does not yield similar results. The increase in the proportion of elderly is not demographically compensated for by the active age group, which also decreases. In a way, the results are most relevant for the developing countries, because they show that the changes in age structure are favourable to the implementation of both social and economic programmes. The costs of programmes created for the aging should also be seen against this background.

C. POLICY IMPLICATIONS AND RECOMMENDATIONS

Numerous and far-reaching policy implications emerge from the analysis of aging of populations. These implications are exhaustively delineated in the International Plan of Action on Aging,[1] which was adopted by the World Assembly on Aging during its deliberations at Vienna in 1982. Those recommendations are summarized below.

It is essential to have data concerning the older segment of the population, obtained from censuses, surveys or vital statistics systems, in order to formulate, apply and evaluate policies and programmes for the elderly and to ensure their integration into the development process. In the same vein, household samples and other surveys and other sources of demographic and related socio-economic statistics can provide important data for this purpose.

Governments and organizations that are able to do so should therefore develop an information base that would

be more specific than the one currently used for the group aged 60 or over and that would be helpful in planning the development of and solving problems concerning the aging of populations. The data collected could include, among other categories, social, age, functional and economic classifications. The establishment or improvement of existing information exchange facilities, such as data banks in the field of aging, as well as the provision of technical assistance, when requested, would be essential aspects of this process.

In order that the appropriate policy changes may be made gradually and smoothly, changing population age structures should be monitored closely at the national level. For example, the idea that an aging population should, in general, be equated with a later retirement age is implicit in the analysis of the effect of aging populations on dependency ratios.

Countries in which the cost of social security programmes is escalating should also consider a gradual raising of the retirement age as the health standards of older persons improve. Even though a reduction of expenditures on children may contribute to the future financing of such programmes, as social security taxes increase, they may encounter increasing taxpayer resistance, leading to greater age-divisiveness and unnecessary social chaos.

As concerns migration of the young to urban areas, domestic policies should be reviewed if population aging in rural areas is a significant cause for concern. Governments can have a direct influence on migration decisions. For instance, to the extent that food subsidies artificially raise the real urban wage and depress farm earnings, increasing numbers of young people will seek to make a living in urban areas. Also, the quality of education and other public services can be improved to encourage younger people to remain in rural areas.

The key to the foresight needed to make the appropriate changes in a timely manner is the availability of correct and up-to-date information and data on changing population structures. Policy-makers must have access to information tabulated by sex, age group (five-year intervals at least up to 80 years of age), employment, income levels, living arrangements, health status and degree of self-care, among others. Such data could be collected through the census, micro or pilot census or representative surveys, which should be considered important prerequisites of all long-term national planning and policy formulation and management.

Most countries are expected to age over the next few decades but not at the same speed or with the same intensity. Although each country follows its own path, several patterns emerge with distinct policy and programme implications. It is necessary to recognize that there is increasing heterogeneity among countries and that beyond general policies and programmes, specific measures need to be tailored to meet the greater diversity of situations. In view of the interrelations between development and aging and the insufficient degree of knowledge in this area, it is recommended that a country should identify its particular path to aging, analyse the implications and elaborate the appropriate responses in formulating policies and programmes. Furthermore, in view of the time-lag involved in achieving results in this area, a long-term approach should be adopted; and, in order to adjust to changes as they occur, sufficient priority should be given to establishing a strong monitoring and evaluation system at the central planning level, if possible.

NOTE

[1] *Report of the World Assembly on Aging, Vienna, 26 July to 6 August 1982* (United Nations publication, Sales No. E.82.I.16), pp. 46-83.

XII. PROSPECTS OF PROVIDING EDUCATION FOR GROWING POPULATIONS*

During the past two decades, there was an unparalleled growth in pupil numbers in most countries. This increase was particularly striking in the developing countries,[1] many of which had inherited modestly developed educational systems, often ill-adapted to their development needs. During those decades also, most of these countries committed themselves to universal primary education and serious efforts were made to reach this target as well as other educational objectives, such as the eradication of illiteracy and the production of qualified manpower. Although the ambitious goals established in the early 1960s were not entirely met, considerable progress was made towards achieving them. For example, between 1960 and 1980, enrolment increased 139 per cent in primary education, 324 per cent in secondary education and 542 per cent in higher education.

In the developed countries, the enrolment trends of the 1960s were considerably modified during the 1970s at all levels of education. For primary and secondary education, this change was due to a sharp decline in the birth rate, which resulted in a drop in the population of primary-school age beginning in 1970. Thus, primary-school enrolment declined throughout the 1970s and secondary-school enrolment ceased to grow by 1980. The growth of enrolment in higher education was modest by the beginning of the 1980s, in part because of demographic factors.

Despite the educational achievements of the developing countries, a major part of their school-age children lived in countries where universal primary education had not been achieved. In 1980, 43 developing countries had primary-school enrolment ratios below 90 per cent. This situation was aggravated by persistently high drop-out levels. It is estimated that, on average, of the 82 developing countries for which data were available, only 77 per cent of the pupils who began school around 1978/79 would reach the fourth grade of primary education. These low academic retention rates raise questions about the extent to which some countries were able to reduce illiteracy. High drop-out levels are clearly incompatible with the attainment of such educational goals as universal primary education, eradication of illiteracy and equality of educational opportunity.

Enrolment growth increases the number of teachers required, with obvious cost implications. In the developed countries, the number of teachers required will increase marginally over the next 20 years. On the other hand, if the pupil/teacher ratios of 1980 are to be maintained, significant numbers of new teachers must be recruited in the developing countries to accommodate the projected enrolment increase.

Demographic factors will continue to play a major role in determining the ability of countries to meet the educational requirements of their populations, particularly in the developing countries, where the educational needs of an increasing number of young people are not being met. In the developed countries, demographic factors will also be important in the development of education, because they must face the difficult problem of adjusting their educational facilities to declining or fluctuating school populations.

A. School population trends, 1960-1980

Enrolment trends in developed and developing countries

Enrolment at the primary level increased in the developed countries between 1960 and 1970 and decreased from 1970 onward, leaving the number enrolled in 1980 almost the same as the 1960 figure (see table 48). This pattern mirrors the population growth trends observed in those countries during that period. In the developing countries, on the other hand, primary-school enrolment increased by 139 per cent between 1960 and 1980: from 122 million to 292 million.

At the secondary level of education, enrolment in the developed countries increased by 25 million between 1960 and 1970 but grew by only 10 million during the following decade. The lesser increase was due in part to the decline in the population of secondary-school age. In the developing countries, almost 30 million additional students were enrolled between 1960 and 1970, and almost 45 million additional students were enrolled in the following decade.

In relative terms, the most rapid increases in enrolment took place at the third educational level. The growth rate was greatest for the developing countries; however, total enrolment was greater in the developed countries.

Two types of enrolment ratios are given in table 49 for the major geographical regions[2] and other country groupings. The adjusted gross enrolment ratios by level of education are derived by dividing the total enrolment for that level of education, regardless of age, by the population that, according to national regulations, should be enrolled at that level of education. At the regional level, the term "adjusted" indicates that the population groups used in deriving these ratios for a particular region were obtained by taking into account the organizational structure of education in each country in that region. The ratios by age group relate

* Prepared by the United Nations Educational, Scientific and Cultural Organization.

TABLE 48. ENROLMENT IN DEVELOPED AND DEVELOPING COUNTRIES, BY LEVEL OF EDUCATION AND AGE GROUP, 1960, 1970 AND 1980

(Millions)

Country group and year	Level of education			Age group		
	First	Second	Third	6-11	12-17	18-23
Developed countries[a]						
1960	124	46.4	9.6	100	65.5	13.2
1970	138	70.5	21.1	108	91.6	28.3
1980	125	80.6	29.7	101	95.2	38.3
Developing countries[b]						
1960	122	22.8	2.6	100	36.5	5.6
1970	204	52.1	7.0	168	73.8	12.9
1980	292	96.6	16.7	244	121.7	29.3

[a] Australia, Canada, Israel, Japan, New Zealand, South Africa, Union of Soviet Socialist Republics, United States of America and all countries of Europe.

[b] All countries not included in the developed countries, excluding China, Democratic People's Republic of Korea and Namibia.

TABLE 49. ENROLMENT RATIOS FOR BOTH SEXES, BY LEVEL OF EDUCATION AND AGE GROUP, REGIONAL AND OTHER GROUPS OF COUNTRIES, 1960, 1970 AND 1980

(Percentage)

Country group and year	Adjusted gross enrolment ratio at:			Enrolment ratio for age group:		
	First level	Second level	Third level	6-11 years	12-17 years	18-23 years
Developed countries[a]						
1960	106	55	12.8	91	70	14.8
1970	106	70	23.4	92	80	26.6
1980	107	78	30.0	93	83	32.2
Developing countries[b]						
1960	60	13	2.0	47	21	3.7
1970	74	22	4.3	58	31	6.9
1980	86	31	7.4	68	39	11.2
Africa[c]						
1960	44	5	0.7	34	16	1.9
1970	57	11	1.6	43	26	4.2
1980	78	21	3.2	63	37	7.9
Latin America and Caribbean[d]						
1960	73	14	3.0	58	37	5.8
1970	92	25	6.3	72	51	11.3
1980	104	44	14.3	81	64	22.2
South Asia[e]						
1960	62	15	2.2	48	19	3.8
1970	74	24	4.6	58	28	6.6
1980	83	31	6.7	66	32	9.1
Least developed countries[f]						
1960	29	4	0.2	21	9	0.7
1970	39	9	0.9	29	16	1.9
1980	57	15	1.7	43	24	3.3

[a] See footnote *a* to table 48.

[b] See footnote *b* to table 48.

[c] Not including Namibia.

[d] The Americas, excluding Bermuda, Canada, St. Pierre and Miquelon, and United States of America.

[e] Asia, excluding China, Democratic People's Republic of Korea, Hong Kong, Japan, Macau, Mongolia and Republic of Korea.

[f] Afghanistan, Bangladesh, Benin, Bhutan, Botswana, Burkina Faso (formerly called Upper Volta), Burundi, Cape Verde, Central African Empire, Chad, Comoros, Democratic Yemen, Ethiopia, Gambia, Guinea, Guinea-Bissau, Haiti, Lao People's Democratic Republic, Lesotho, Malawi, Maldives, Mali, Nepal, Niger, Rwanda, Samoa, Somalia, Sudan, Uganda, United Republic of Tanzania and Yemen.

enrolment in an age group to the population of that group, with both figures referring to the same year.

During the 20-year period reviewed, there were increases in each of the developmental or regional groups for which enrolment ratios are given. The adjusted gross enrolment ratio for primary-level education in the developed countries remained stable between 1950 and 1980. In the developing countries, there was an increase of 14 percentage points during the first decade and 12 percentage points for the second. For Africa, a relatively greater increase was observed for the 1970s. In the least developed countries, the first-level adjusted gross enrolment ratio practically doubled during the past two decades. Latin America and the Caribbean and South Asia made less striking but important progress in their efforts to achieve universal primary education.

At the secondary level, significant increases in enrolment ratios were observed in each group. In the developed countries, the gross adjusted enrolment ratio rose from 55 per cent in 1960 to 78 per cent in 1980. The corresponding figures were 13 and 31 per cent for the developing countries. The enrolment ratio quadrupled in Africa and the least developed countries, trebled in Latin America and the Caribbean, and doubled in South Asia.

For third-level education, the gross adjusted enrolment ratio grew more rapidly than those for the other two levels. Between 1960 and 1980, this ratio increased eightfold in the least developed countries, quintupled in Africa and Latin America and the Caribbean, and trebled in South Asia. The ratio quadrupled in the developing countries and was multiplied two and a half times in the developed countries.

Comparison of enrolment of boys and girls

In the developed countries, the representation of girls in primary and secondary education was about equal to that of boys in 1960, 1970 and 1980 (see table 50); the relative representation of girls in higher education increased considerably during the period covered. However, in spite of considerable improvement during the previous 20-year period, the enrolment of girls in the developing countries was markedly lower in 1980 than that for boys, particularly in secondary and higher education. Quite large differences also existed between the three less developed regions. In Latin America and the Caribbean, the representation of girls in primary and secondary education was practically equal to that of boys in 1960; and the participation of girls in higher education increased rapidly, from 30 per cent in 1960 to 44 per cent in 1980. In Africa and South Asia, however, the enrolment of girls was still markedly lower than that of boys in 1980, particularly in secondary and higher education, in spite of quite significant increases since 1960.

Number of out-of-school children

In the developed countries, the number of out-of-school children declined to 7.4 million for age group 6-11 and to 19 million for age group 12-17 (see table 51). The overwhelming majority of the 7.4 million children in the younger age range were in countries where the normal entrance age for primary education is seven years and six-year-olds are not eligible to enter school. In general, however, these children would have been attending pre-primary school.

The extent of the effort that still must be made by the developing countries to enrol school-age children can be illustrated by the number who were not enrolled during the past two decades. During the period reviewed, the number of out-of-school children in the developing countries as a whole remained stable for age group 6-11; but it increased by some 40 per cent, to 191 million, for age group 12-17. On a regional basis, the number of children aged 6-11 years who were not attending school remained stable in Africa, increased in South Asia and decreased in Latin America and the Caribbean. For age group 12-17, the number remained stable in Latin America and the Caribbean; it increased by 28 per cent in Africa and by 50 per cent in South Asia.

Despite relatively low enrolment growth, enrolment in the developed countries either kept pace with or exceeded population growth so that decreases in the number of out-of-school children were observed. In the developing countries, on the other hand, apart from Latin America and the Caribbean, the number of out-of-school children increased despite the considerable increases in enrolment during the past two decades.

B. Projected trends in enrolment ratios by 2000

Disparities between developed and developing countries

The projected adjusted gross enrolment ratios by level of education and the enrolment ratios by age group, given in table 52 for major groups of countries over the period 1980-2000, suggest what might happen if the trends observed since 1960 were to continue. The stability in the primary-school enrolment ratio will be

TABLE 50. GIRLS AS A PERCENTAGE OF TOTAL ENROLMENT, BY LEVEL OF EDUCATION, TOTAL DEVELOPED COUNTRIES AND DEVELOPING COUNTRIES BY REGION, 1960, 1970 AND 1980

Country group and region[a]	*First level*			*Second level*			*Third level*		
	1960	*1970*	*1980*	*1960*	*1970*	*1980*	*1960*	*1970*	*1980*
Developed countries	49	49	49	49	49	50	35	41	46
Developing countries	39	42	44	28	34	39	24	29	34
Africa	36	40	44	29	32	38	17	23	27
Latin America and Caribbean	48	49	49	47	48	50	30	35	44
South Asia	36	40	41	25	31	36	24	27	31

[a] For composition of groups, see footnotes *a* and *b* to table 48 and footnotes *c-e* to table 49.

TABLE 51. OUT-OF-SCHOOL YOUTH, BOTH SEXES, TOTAL DEVELOPED COUNTRIES AND DEVELOPING COUNTRIES BY REGION, 1960 AND 1980

(Millions)

Country group[a]	Age group 6-11		Age group 12-17	
	1960	1980	1960	1980
Developed countries	9.9	7.4	28.0	19.0
Developing countries	113.0	114.0	136.0	191.0
Africa	28.0	29.0	30.0	39.0
Latin America and Caribbean	14.0	10.0	17.0	18.0
South Asia	70.0	76.0	89.0	133.0

[a] For composition of groups, see footnotes *a* and *b* to table 48 and footnotes *c-e* to table 49.

maintained in the developed countries, implying the continued provision of universal primary education. In the developing countries, increases in enrolment ratios are projected. However, the provision of universal primary education is projected to occur only in Latin America and the Caribbean. While important progress will be made in Africa, South Asia and more so in the least developed countries, a significant proportion of the children of primary-school age still will not be attending school.

The projected ratios for the second level indicate ever-increasing enrolment in all regions. By the end of this century, the developed countries are expected to enrol the equivalent of 87 per cent of the children of secondary-school age, while in the developing countries just under 50 per cent should be enrolled. Among the less developed regions, it is expected that the following proportions of the school-age population will be enrolled: two thirds in Latin America and the Caribbean; 47 per cent in South Asia; 43 per cent in Africa; and about one third in the least developed countries.

The projected trend in third-level education also is increasing enrolment in all regions. Despite the projected increases, however, a considerable gap would remain between the developed and developing countries, except in Latin America and the Caribbean.

With respect to enrolment ratios by age group, in the developed countries, 90 per cent or more of the children in age groups 6-11 and 12-17 will be enrolled, together with almost 40 per cent of those aged 18-23 years. Among the developing countries, only those in Latin America and the Caribbean are expected to approach the enrolment ratios for the developed countries, although slow and steady increases are projected for the other countries.

Disparities between enrolment of boys and girls

The growth in enrolment of boys and girls between 1960 and 1980 was analysed in section A. If the same trends prevail during the period 1980-2000, the gap

TABLE 52. PROJECTIONS OF ENROLMENT RATIOS FOR BOTH SEXES, BY LEVEL OF EDUCATION AND AGE GROUP, REGIONAL AND OTHER GROUPS OF COUNTRIES, 1980, 1990 AND 2000

(Percentage)

Country group[a] and year	Adjusted gross enrolment ratio at:			Enrolment ratio for age group:		
	First level	Second level	Third level	6-11 years	12-17 years	18-23 years
Developed countries						
1980	107	78	30.0	93	83	32.2
1990	106	85	34.2	93	91	36.4
2000	105	87	37.6	93	90	39.8
Developing countries						
1980	86	31	7.4	68	39	11.2
1990	92	42	9.9	75	46	14.6
2000	96	49	11.8	79	51	17.3
Africa						
1980	78	21	3.2	63	37	7.9
1990	88	35	5.1	74	48	12.0
2000	93	43	6.4	80	54	15.1
Latin America and Caribbean						
1980	104	44	14.3	81	64	22.2
1990	107	59	21.0	86	73	29.5
2000	109	67	25.9	89	77	35.2
South Asia						
1980	83	31	6.7	66	32	9.1
1990	89	40	8.5	72	38	11.3
2000	93	47	10.1	77	42	13.4
Least developed countries						
1980	57	15	1.7	43	24	3.3
1990	71	23	3.1	55	32	5.7
2000	82	32	4.4	63	40	8.1

[a] For composition of groups, see footnotes *a* and *b* to table 48 and footnotes *c-f* to table 49.

TABLE 53. GIRLS AS A PERCENTAGE OF ENROLMENT, BY LEVEL OF EDUCATION, TOTAL DEVELOPED COUNTRIES AND DEVELOPING COUNTRIES BY REGION, 1980, 1990 AND 2000

Country group[a]	First level			Second level			Third level		
	1980	1990	2000	1980	1990	2000	1980	1990	2000
Developed countries	49	49	49	50	50	50	46	47	48
Developing countries	44	45	46	39	42	44	34	37	39
Africa	44	46	47	38	43	44	27	30	32
Latin America and Caribbean	49	49	49	50	50	50	44	45	45
South Asia	41	43	45	36	39	41	31	34	37

[a] For composition of groups, see footnotes *a* and *b* to table 48 and footnotes *c-e* to table 49.

between the developed and developing countries would narrow at all educational levels (see table 53).

By the year 2000, parity in enrolment between the sexes is projected to occur at all levels of education in the developed countries and in the less developed region of Latin America and the Caribbean. In the latter group of countries, however, female enrolment in third-level education is expected to be stationary at 45 per cent of the total between 1990 and 2000.

In Africa and South Asia, enrolment parity between the sexes is not projected for any educational level by 2000. It is expected, however, that individual countries in these two regions will have eliminated such disparities. Progress is anticipated, with a consequent narrowing of the gap between the sexes, although inequalities would remain.

Projected number of children not attending school

For the developing countries as a whole, the number of out-of-school children aged 6-11 years is projected to decline during the period 1980-2000 (see table 54). The minimal increase in the case of the developed countries is explained first by a decreasing population; and secondly, by the fact that in a certain number of these countries primary education begins at seven years of age. In the developing countries, on the other hand, although the number of out-of-school children should decrease over that period, by the year 2000, more than 100 million children in age group 6-11 still will not attend school.

In the developed countries, the number of children aged 12-17 years who are not enrolled in school is projected to decrease to 12 million by the year 2000. In contrast, major increases are projected in the number of out-of-school children in this age group in all the less developed regions except Latin America and the Caribbean, where a small decrease is projected.

TABLE 54. OUT-OF-SCHOOL YOUTH, BOTH SEXES, TOTAL DEVELOPED COUNTRIES AND DEVELOPING COUNTRIES BY REGION, 1980 AND 2000

(Millions)

Country group[a]	Age group 6-11		Age group 12-17	
	1980	2000	1980	2000
Developed countries	7.4	7.9	19.0	12.0
Developing countries	114.0	103.0	191.0	222.0
Africa	29.0	29.0	39.0	55.0
Latin America and Caribbean	10.0	9.0	18.0	16.0
South Asia	76.0	66.0	133.0	152.0

[a] For composition of groups, see footnotes *a* and *b* to table 48 and footnotes *c-e* to table 49.

TABLE 55. TEACHER REQUIREMENTS, DEVELOPED AND DEVELOPING COUNTRIES, 1960-2000

(Millions)

Country group[a] and level of education	Number of teachers required				
	1960[b]	1970[b]	1980[b]	1990[c]	2000[c]
Developed countries					
First	4.8	5.6	5.7	6.0	6.1
Second	2.3	6.0	6.1	6.1	6.5
Third	0.7	1.5	2.3	2.4	2.7
Developing countries					
First	3.4	5.6	8.5	10.9	13.3
Second	1.2	2.8	4.9	7.9	11.0
Third	0.2	0.5	1.3	2.1	3.0

[a] For composition of groups, see footnotes *a* and *b* to table 48.
[b] Actual figures.
[c] Projected figures based on 1980 pupil/teacher ratios of 22 (developed countries) and 34 (developing countries) for first-level education, 13 (developed countries) and 19 (developing countries) for second-level education and 13 for third-level education for both developed and developing countries.

C. PROJECTED TEACHER REQUIREMENTS

The increases in enrolment ratios projected for the period 1980-2000 imply that the number of teachers must be increased if the pupil/teacher ratios observed in 1980 are to be maintained. The teacher requirements in the developed and developing countries for the period 1960-2000 are given in table 55, by level of education.

In the developed countries, relatively marginal increases will be required to maintain the 1980 pupil/teacher ratio at each level of education. In the developing countries, however, there must be substantial increases in the number of teachers at all educational levels over the period 1980-2000 if current pupil/teacher ratios are to be maintained. For primary-level education, a 56 per cent increase in the teaching force is expected during that period. For both secondary and third-level education, the number of teachers in 2000 is projected to be more than twice the figure for 1980. By the year 2000, there will be more teachers in the developing countries than in the developed countries, at each of the three levels of education.

D. PROGRESS TOWARDS UNIVERSAL PRIMARY EDUCATION

According to the projections presented in this chapter, a continuation of the enrolment trends of the past two

decades in the developing countries would result, by the year 2000, in an adjusted gross enrolment ratio corresponding to about 96 per cent of their population of primary-school age. For Africa and South Asia, the figure would be 93 per cent. These overall averages, however, mask very different levels of development of primary education both within and between different developing countries.

First, a number of school places are used by repeaters and the level of repetition varies quite considerably among countries. Secondly, the enrolment ratios given in table 52 refer to both sexes together and thus hide quite important (although declining) differences in enrolment between boys and girls. In primary education, these differences are almost exclusively limited to countries in Africa and South Asia. The projections for the year 2000 imply a primary-school enrolment ratio in Africa of 88 per cent for girls, compared with 98 per cent for boys; and a ratio in South Asia of 85 per cent for girls, compared with 100 per cent for boys. Thus, at this level of aggregation, one of the main obstacles to the attainment of universal primary education by 2000 in these two regions appears to be the comparatively low enrolment rate of girls.

During the past two decades, the main concern of most developing countries was to increase access to education by providing more schools. However, at the beginning of the 1980s, when most countries have achieved enrolment ratios exceeding 80 per cent, the main concern is to improve the internal efficiency of the system and to enrol population groups that traditionally have enrolment ratios below the national average. One aspect of this problem is the disparity in enrolment ratios between boys and girls. Another aspect is the need to provide more educational opportunities for those population groups which, because of their area of residence, ethnic and socio-economic background, traditionally have benefited less from education than other groups.

Lastly, the average enrolment ratios shown in table 52 mask the fact that if past trends were to continue, the failure to achieve universal primary education in the year 2000 would mainly be due to a comparatively slow enrolment growth in some countries in Africa and South Asia, most of which belong to the least developed countries. Thus, 23 developing countries, 18 in Africa and 5 in South Asia, would have enrolment ratios below 90 per cent in the year 2000, compared with 43 countries in 1980. Furthermore, 16 of these 23 countries would be in the group of least developed countries.

E. Reduction of illiteracy among children

It would appear from the figures given in table 52 that the number of children enrolled in primary schools in developing countries by the year 2000 would be equivalent to 96 per cent of the population of primary-school age. The corresponding figure for 1980 is estimated to be 86 per cent. However, as enrolment ratios are affected by repetition and "drop-outs", they give a very approximate picture of the potential proportion of a primary-school population that is eligible to complete this level of education.

The performance of an educational system should be measured in terms of both the quantity and the quality of output. Although output is difficult to define in measurable terms, one might argue that the main objective of primary education is to make the pupils literate. To attain this goal, children not only must enter the first grade of primary education but must remain enrolled for a sufficient number of years.

The point at which a child leaving school becomes a drop-out and hence a problem depends upon the structure and the objectives of the educational system of each country. In the developed countries, any child who leaves school during the 8-10 years of compulsory schooling is clearly considered to be a drop-out and a problem. Even to leave school after having completed only this compulsory period is regarded as undesirable in many countries, particularly during the current period of high levels of youth unemployment and also because a large proportion of these early school-leavers often belong to socially disadvantaged groups. In the developing countries, where the stress is generally still on achieving universal primary education, dropping out from primary education, particularly prior to the attainment of literacy, is a matter of serious concern.

The considerable magnitude of the drop-out levels in many developing countries can be illustrated by the progression of cohorts through primary education. Estimates were made for all countries having the required statistical data; this information is summarized in table 56, which shows survival to the final grade of primary education, should the promotion, repetition and drop-out rates observed around 1978/79 remain stable in the future. Columns (1) and (2) of table 56 give, for four major geographical regions, the range and median value of the percentage dropping out prior to the final grade of primary education, while columns (3)-(5) classify countries according to their level of drop-outs. These figures illustrate the relatively high level of drop-outs in the less developed regions, as well as the considerable disparity both between and within regions.

An indication of the levels of survival and drop-outs by grade is given in table 57, which shows the average progression rates up to the fourth grade for groups of countries. The rates are weighted to take into account differences between countries with respect to the magnitude of enrolment, levels of repetition and drop-outs in primary education. In 1978/79, the countries included represented some 60 per cent of the primary-school enrolment in Africa, about 88 per cent in Latin America and the Caribbean, and 41 per cent in Asia and Oceania. The comparatively low coverage of Africa and of Asia and Oceania is owing to the exclusion of a large number of countries for which the required data were not available. On average, for the 82 developing countries covered, 77 per cent of the pupils beginning school around 1978/79 would reach the fourth grade if the promotion, repetition and drop-out rates observed at that time were to remain constant. Between the first and

TABLE 56. CLASSIFICATION OF COUNTRIES ACCORDING TO LEVEL OF DROP-OUTS PRIOR TO FINAL GRADE OF PRIMARY EDUCATION: COHORTS BEGINNING SCHOOL AROUND 1978/79, BOTH SEXES, BY REGION

Region	Range in drop-out level (percentage) (1)	Median drop-out level (2)	Number of countries where the percentage of the cohort dropping out prior to the final grade is: 50 or above (3)	Between 49 and 25 (4)	24 or below (5)	Total number of countries (6)
Africa	6-72	33	6	19	10	35
Latin America and Caribbean	11-70	33	6	10	4	20
Asia and Oceania	0-75	11	4	4	21	29
Europe	0-23	5	0	0	17	17
TOTAL	0-75	24	16	33	52	101

NOTE: All estimates concerning survival and drop-out presented in this section were derived by means of the reconstructed cohort method. On the basis of data on promotion, repetition and drop-out rates, this method permits estimation of the progression of a cohort through a cycle of education, deriving for each grade and year the number of pupils who repeat a given grade, are promoted to the following grade or drop out. For a detailed description of this method, see United Nations Educational, Scientific and Cultural Organization, International Bureau of Education, *A Statistical Study of Wastage at School*, Studies and Surveys in Comparative Education (Paris and Geneva, 1972).

TABLE 57. WEIGHTED AVERAGE PROGRESSION RATES FOR COHORTS BEGINNING PRIMARY EDUCATION AROUND 1978/79 AND PERCENTAGE OF PRIMARY ENROLMENT OF BOTH SEXES, BY MAJOR REGION

Country group or region	Number of countries	Percentages of 1978/79 cohort reaching grade: 1	2	3	4	Percentage of region's primary enrolment
Average developing countries	82	100	86	82	77	55
Africa	35	100	89	85	80	60
Latin America and Caribbean	20	100	78	71	66	88
Asia and Oceania	29	100	93	90	87	41
Europe	17	100	99	98	98	64

NOTE: Weighted averages were derived by reconstructing cohorts for each region, using regional promotion, repetition and drop-out rates calculated on the basis of data on enrolment and repeaters by grade for the total region.

second grades, the drop-out rates are high. In Latin America and the Caribbean, the rates are very high, particularly between the first two grades.

These low retention rates cast doubt on the extent to which the educational systems in some developing countries have been successful in tackling the problem of eradicating illiteracy, despite the rapid growth of enrolment during the past 20 years. The rates also call into question the significance of high enrolment ratios if a large proportion of the children drop out before even becoming literate. For example, in 1980, although enrolment ratios in Latin America and the Caribbean were considerably higher than those in Africa, the difference between the two regions might be much smaller in terms of the "production" of literate children.

F. EFFECT OF POPULATION GROWTH

Because enrolment ratios depend upon the size of the population concerned, any projection of these ratios must make assumptions concerning the rate of population growth. The projections presented in this chapter are based on the medium-variant population projections of the Population Division of the Department of International Economic and Social Affairs of the United Nations Secretariat.

Table 58 shows the percentage by which the population aged 5-14 years is projected to increase between 1980 and 2000, according to the three population variants. Using the growth of this age group as a proxy for the growth of the population of primary-school age, the following salient features are seen:

TABLE 58. PERCENTAGE INCREASE IN POPULATION AGED 5-14 YEARS, BY POPULATION VARIANT, TOTAL DEVELOPED COUNTRIES AND DEVELOPING COUNTRIES BY REGION, 1980-2000

Country group [a]	Low variant	Medium variant	High variant
Developed countries	−9.3	1.9	10.7
Developing countries	24.7	40.1	50.7
Africa	47.7	84.6	95.4
Latin America and Caribbean	26.5	37.9	48.9
South Asia	17.2	26.4	36.7

[a] For composition of groups, see footnotes *a* and *b* to table 48 and footnotes *d* and *e* to table 49.

(*a*) Projections of the future school-age population cover a considerable range. In the developing countries, the population of primary-school age in 2000 could be between 25 and 51 per cent larger than that of 1980;

(*b*) There is a marked difference in projected population growth between the developed and developing countries. According to the medium variant, the increase in the population of primary-school age between 1980 and 2000 would be more than 20 times higher in the developing than in the developed countries;

(*c*) Considerable difference in projected growth is found between the three less developed regions. For example, the percentage growth implied for the low

variant in Africa is of the same magnitude as that implied by the high variant for Latin America and the Caribbean.

To keep pace with projected population growth, that is, to maintain in 2000 the primary-school enrolment ratios attained in 1980, the developing countries would have to increase their primary-school enrolment by some 25 per cent, according to the low-population variant, or by 51 per cent, according to the high variant. To increase the enrolment ratio would, of course, imply even higher growth. Thus, to attain a projected ratio of 95 per cent by the year 2000, the developing countries would (under the medium variant) have to increase their enrolment by 55 per cent between 1980 and 2000, while the enrolment increase would have to be of the order of 63 per cent to achieve 100 per cent enrolment. For Africa, the corresponding figures are 125 and 137 per cent, respectively.

The high enrolment growth required in the developing countries even to maintain their comparatively lower enrolment ratios is in stark contrast to the situation in the developed countries, which, according to the medium variant, would be able to maintain their universal enrolment by a mere 2 per cent increase in enrolment during this period. If the low variant were to hold true, enrolment could even decrease. Population factors, however, will continue to be important in the future educational development of the developed countries, in particular because of the fluctuations in their school-age population.

G. Female literacy trends

Despite national efforts to combat illiteracy, it is estimated that there were 824 million illiterates in the world in 1980. Moreover, although illiteracy rates are falling world-wide, the absolute number continues to grow and is projected to reach over 900 million by the end of the century. Furthermore, 60 per cent of all illiterates in the world are women and their number is growing more rapidly than that of their male counterparts.

In most developing countries,[3] high illiteracy levels — in particular, female illiteracy — coincide with a high rate of population growth. Therefore, rapid population growth constitutes one of the main obstacles to attaining crucial quantitative educational targets. Educational systems need not only to be expanded to cope with a growing population but to be modified, improved and adapted to the needs of the country's stage of development.

The rates at which population grows in the different regions affect the age structure. In the less developed regions, fertility levels vary widely: they are high and stable in many countries; declining in some others; and increasing in only a few. Mortality levels also vary considerably: life expectancy ranges between 40 and 70 years; and infant mortality between 20 and 200 per 1,000 live births. Accordingly, the age structures of populations in the less developed regions are characterized by the predominance of young people, with up to 45 per cent of the population under 15 years of age (see table 59).

The world population has continued to grow rapidly, despite the global fertility decline of the past 10-15 years. Population growth in Africa and the least developed countries has been even faster. Furthermore, the current young age structure of the population of the less developed regions interacting with rapid fertility decline could still entail a rate of natural increase above 2.0 per cent in most of these regions, excluding Asia, where the growth rate will be reduced to about 1.5 per cent by the year 2000.

The needs for educational facilities and teaching personnel are obviously closely connected with the current and projected numbers of the school-age population. The larger the proportion of school-age children in the population, the greater is the proportion of national income that must be spent to provide education.

TABLE 59. PERCENTAGE DISTRIBUTION OF MAJOR AGE GROUPS, 0-14 AND 15-44 YEARS, WORLD, TOTAL DEVELOPED COUNTRIES AND DEVELOPING COUNTRIES BY REGION OR GROUP, 1970-2000

Country group	Total population	Population aged 0-14				Population aged 15-44			
		1970	1980	1990	2000	1970	1980	1990	2000
World	100	37.5	35.0	32.4	30.7	42.4	44.4	46.6	46.6
Developed countries[a]	100	26.8	23.6	22.6	21.8	43.6	44.8	44.6	42.8
Developing countries[b]	100	41.9	39.1	35.4	33.2	42.0	44.3	47.3	47.6
Africa	100	44.6	44.9	45.2	43.9	41.4	41.3	41.3	42.6
Asia	100	40.4	37.3	32.5	29.9	42.6	45.0	48.5	48.6
Latin America and Caribbean	100	42.6	39.8	37.2	34.7	41.6	43.9	46.1	46.9
Arab countries[c]	100	44.9	43.9	43.1	40.4	40.8	41.9	42.8	44.8
Least developed countries[d]	100	44.7	45.0	44.9	43.2	41.5	41.4	42.1	43.6

Source: Prepared by the Office of Statistics of the United Nations Educational, Scientific and Cultural Organization, on the basis of *Demographic Indicators of Countries: Estimates and Projections as Assessed in 1980* (United Nations publication, Sales No. E.82.XIII.5).

[a] See footnote *a* to table 48.

[b] Including all countries of Africa except South Africa, all countries of Latin America, China, Other East Asia, all countries of South Asia except Israel, Melanesia and Micronesia-Polynesia.

[c] Including Algeria, Djibouti, Egypt, Libyan Arab Jamahiriya, Mauritania, Morocco, Somalia, Sudan and Tunisia in Africa; and Bahrain, Democratic Yemen, Iraq, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Syrian Arab Republic, United Arab Emirates and Yemen in Western Asia.

[d] For list of countries, see footnote *f* to table 49.

Therefore, demographic expansion, together with limited resources, forces Governments to set priorities, such as expanding and improving the traditional educational system, and/or fighting adult illiteracy and/or encouraging and increasing female education. Since the developed countries do not have to face increased proportions of school-age children, they concentrate their efforts on improving the educational system and raising the general level of educational attainment. The developing countries, on the other hand, usually must concentrate on extending basic education to the disadvantaged sections of the population — for instance, women and the rural population.

Female literacy, 1970-2000

The past and projected world literacy situation for the population aged 15 years or over during the period 1970-2000 is shown in table 60. Since 1970, notable progress has been made throughout the world in the struggle against illiteracy. For example, in 10 years, the number of literate adults rose by 33 per cent. Furthermore, the number of literate adults is far higher than that of illiterate adults, and it is expected to remain so, at least up to the year 2000. Unfortunately, this picture has a dark side.

TABLE 60. EVOLUTION OF WORLD LITERACY SITUATION, POPULATION AGED 15 YEARS OR OVER, 1970-2000

(Millions)

	1970	*1980*	*1990*	*2000*
Population	2 310	2 879	3 546	4 242
Number of literates	1 550	2 055	2 664	3 330
Number of illiterates	760	824	882	912
Percentage of illiterates	32.9	28.6	24.9	21.5

TABLE 61. EVOLUTION OF WORLD LITERACY SITUATION, FEMALE POPULATION AGED 15 YEARS OR OVER, 1970-2000

(Millions)

	1970	*1980*	*1990*	*2000*
Female population	1 164.5	1 447.3	1 775.5	2 118.7
Number of literates	721.9	956.5	1 243.2	1 567.1
Number of illiterates	442.6	490.8	532.2	551.6
Percentage of illiterates	38.0	33.9	30.0	26.0

During the past decade, the absolute number of illiterates increased by 64 million, rising from 760 million to 824 million in 1980. If current trends do not change, the total number of illiterates by the year 2000 will have surpassed the 1980 level by 88 million. Thus, the twenty-first century will begin with just under 1 billion illiterate men and women. It is therefore evident that, despite the unprecedented achievements in this field, the problem of illiteracy is likely to become more acute if the national authorities as well as the international agencies concerned do not act with increased determination and on a larger scale.

Female literacy presents an even greater problem: although the percentage of female illiterates has declined, the absolute number has increased (see table 61). Moreover, as concerns the illiteracy situation of females compared with that of males, table 62 shows that females are at a disadvantage in all regions and groups of countries except Latin America and the Caribbean. Further, an improvement in the distribution of illiteracy between the sexes is not indicated in the projected trend for the period 1970-2000.

Female illiteracy, 1970-2000

Age group 15 years or over

The proportion of illiterate women in the developing countries is increasing to such an extent that by the end of the twentieth century only an insignificant percentage of the world's illiterate women will be in the more developed regions (see table 63). It is expected that Asia, the Arab countries and the least developed countries will steadily increase their proportions of the total number of female illiterates, while that of Latin America will decline and the share of Africa will remain constant.

In spite of the rather steep decline expected in female illiteracy rates over the next two decades, the absolute number of illiterate adult women in the world will increase by 61 million — from 491 million in 1980 to 552 million in 2000. Since their number will actually decrease by 5 million in the developed countries and by another 4 million in Latin America and the Caribbean, there will be a net increase of 70 million illiterate adult women in Africa and Asia. The Arab countries and the

TABLE 62. PERCENTAGE OF WOMEN IN TOTAL ILLITERATE POPULATION, BY AGE GROUP, WORLD, TOTAL DEVELOPED COUNTRIES AND DEVELOPING COUNTRIES BY REGION OR GROUP, 1970-2000

	Age group 15 or over				*Age group 15-19*				*Age group 15-44*			
Country group	*1970*	*1980*	*1990*	*2000*	*1970*	*1980*	*1990*	*2000*	*1970*	*1980*	*1990*	*2000*
World	58.2	59.6	60.3	60.5	59.8	59.2	57.4	54.6	59.3	60.6	61.0	60.1
Developed countries[a]	62.0	62.9	. .	. .	49.1	49.0	. .	. .	56.5	54.7	. .	. .
Developing countries[b]	58.1	59.5	60.3	60.5	59.9	59.3	57.4	54.6	59.3	60.6	61.0	60.1
Africa	58.0	59.7	61.4	62.6	60.7	60.6	61.1	59.2	59.1	61.0	62.9	63.5
Asia	58.2	59.6	60.3	60.2	60.3	59.4	57.2	54.1	59.6	60.9	60.9	59.7
Latin America and Caribbean	55.8	55.9	55.6	55.0	50.3	46.4	42.8	35.8	55.0	54.3	53.0	50.4
Arab countries[c]	59.1	61.1	62.9	63.9	62.3	63.3	63.6	61.0	60.6	62.6	64.4	65.1
Least developed countries[d]	55.4	57.0	58.6	59.7	56.7	57.8	59.4	58.3	55.9	57.6	59.5	60.5

[a] See footnote *a* to table 48.
[b] See footnote *b* to table 59.
[c] See footnote *c* to table 59.
[d] See footnote *f* to table 49.

TABLE 63. PERCENTAGE DISTRIBUTION OF ILLITERATE FEMALES AGED 15 YEARS OR OVER, TOTAL DEVELOPED COUNTRIES AND DEVELOPING COUNTRIES BY REGION OR GROUP, 1970-2000

Country group	*1970*	*1980*	*1990*	*2000*
World	100	100	100	100
Developed countries[a]	4.0	2.9	. .	. .
Developing countries[b]	96.0	97.1	97.9	98.4
Africa	18.3	19.0	19.0	19.1
Asia	72.5	73.4	74.7	75.7
Latin America and Caribbean	5.6	5.0	4.4	3.8
Arab countries[c]	6.5	7.1	7.5	8.0
Least developed countries[d]	11.9	12.8	13.7	14.9

[a] See footnote *a* to table 48.
[b] See footnote *b* to table 59.
[c] See footnote *c* to table 59.
[d] See footnote *f* to table 49.

TABLE 64. PERCENTAGE DISTRIBUTION OF ILLITERATE FEMALES AGED 15-44 YEARS, TOTAL DEVELOPED COUNTRIES AND DEVELOPING COUNTRIES BY REGION OR GROUP, 1970-2000

Country group	*1970*	*1980*	*1990*	*2000*
World	100	100	100	100
Developed countries[a]	1.4	1.0	0.7	. .
Developing countries[b]	98.5	99.0	99.3	. .
Africa	19.2	19.9	19.4	19.2
Asia	74.3	75.1	76.6	78.0
Latin America and Caribbean	5.1	4.2	3.3	2.3
Arab countries[c]	6.9	7.5	7.8	8.4
Least developed countries[d]	13.1	14.2	15.6	17.4

[a] See footnote *a* to table 48.
[b] See footnote *b* to table 59.
[c] See footnote *c* to table 59.
[d] See footnote *f* to table 49.

least developed countries will also add 9 million and 19 million, respectively, to these ranks. The reason for these increases lies mainly in the demographic factor: the growth of population.

In 1980, the world-wide female illiteracy rate was higher than the male illiteracy rate; and the disparity is likely to persist well into the next century if current trends continue. Nevertheless, the difference in rates is expected to decrease gradually, for example, from 10.6 percentage points to 9.0 percentage points over 20 years, in both the major less developed regions and other groups of countries. However, it should be noted that even by the year 2000 the disparity will exceed 10 percentage points in all the less developed regions except Latin America and the Caribbean.

In 1980, the number of illiterate adult women in the world exceeded that of their male counterparts by 158 million. The corresponding figure in 2000 is expected to be 192 million, an increase of 34 million, even though the disparity between female and male illiteracy rates is expected to decrease over that period. Thus, not only is the numerical advantage in favour of illiterate adult men likely to continue to the end of the century but the gap between the two sexes will widen.

Age group 15-44 years

In 1970, the developing countries contained 98.5 per cent of the world's illiterate women aged 15-44 years (see table 64). By 1980, the proportion of illiterate women in that age group to be found in the developing countries reached 99.0 per cent — 312 million out of the world total of 315 million. By the year 2000, this proportion is expected to increase to over 99 per cent. Over the period 1970-2000, Africa will account for one fifth of the illiterate women in the world; Asia will increase its contribution by 3.7 percentage points and the Arab countries by 1.5 percentage points. The least developed countries contributed 13.1 per cent in 1970; their share will increase to 17.4 per cent in 2000. Once again, the proportion of female illiteracy will be reduced in Latin America and the Caribbean.

For the world as a whole, just under one third (32.5 per cent) of the women aged 15-44 years were illiterate in 1980. The corresponding figures for the developed and the developing countries were 1.1 and 43.9 per cent, respectively. In other words, although almost all women in this age group in the developed countries had attained the literate status, fewer than three fifths of the women aged 15-44 years in the developing countries had done so.

Among the less developed regions, there is great variation in female illiteracy rates: from 16.7 per cent in Latin America and the Caribbean to 41.8 per cent in Asia to 64.0 per cent in Africa. The rates in the Arab countries and the least developed countries, 70.0 and 79.3 per cent, respectively, were well above those for the other developing countries.

In the year 2000, the world-wide female illiteracy rate for age group 15-44 is projected to be 22.2 per cent, down 10.3 percentage points from 32.5 per cent in 1980. In the aggregated developing countries, the rate is expected to drop by 16.3 percentage points to 27.6 per cent. Likewise, Africa, Asia, and Latin America and the Caribbean are expected to reduce substantially their female illiteracy rates for this age group.

According to projections made in 1982 by the Office of Statistics of the United Nations Educational, Scientific and Cultural Organization (UNESCO), by the year 2000 there will be a world total of 311 million illiterate women aged 15-44 years — a decrease of 4 million (1.3 per cent) from the 1980 figure. In Latin America and the Caribbean, the number is expected to decline by 6 million (46.2 per cent); and in Africa, by 3 million (4.8 per cent). On the other hand, despite the substantial decrease in the female illiteracy rates for this age group projected for the period 1980-2000, Asia, the Arab countries and the least developed countries will add 6 million, 2 million and 9 million, respectively, to the ranks of illiterate women.

For age group 15-44, the female illiteracy rate world-wide in 1980 was higher than that for males. This disparity is likely to persist well into the twenty-first century if current trends continue. For the period 1980-2000, however, the difference between female and male illiteracy rates is expected to decline from 12.0 to 8.0 percentage points, thus narrowing the gap between the sexes by an average of one percentage point every five years.

The disparity between female and male illiteracy rates for this age group was substantial — over 10 percentage points — in all the less developed regions except Latin America and the Caribbean. It is estimated that the disparity will disappear in that region, as in the developed countries, by 2000, but it will remain quite high in the other less developed regions.

In 1980, the number of illiterate women in age group 15-44 was 110 million higher than that of their male counterparts. This figure is projected to decline to 104 million by 2000 (or by 5.5 per cent over 20 years). Similar decreases are expected in the developed countries, in the developing countries as a group, and in Asia and Latin America and the Caribbean. In Africa, the Arab countries and the least developed countries, however, the disparity will increase.

Age group 15-19 years

The group aged 15-19 years may be considered a touchstone for evaluation of the future prospects of the struggle against female illiteracy. Fewer than 1 per cent of the illiterate females aged 15-19 years live in the developed countries (see table 65). A comparison of data for 1970 and projections for 2000 indicates that the proportion in Africa will remain fairly steady, while those in Asia, the Arab countries and the least developed countries are expected to increase. Only the share of Latin America and the Caribbean will decline sharply.

In 1980, in the world as a whole, over one quarter (27.5 per cent) of the women aged 15-19 years were illiterate. The corresponding figures for the developed and developing countries were 0.7 and 35.0 per cent, respectively. Thus, in the developed countries, almost all the women in this age group were literate but over one third of the same group in the developing countries were still unable to read and write.

Among the less developed regions, the rate varied from 7.6 per cent in Latin America and the Caribbean to 34.7 per cent in Asia to 51.8 per cent in Africa. The Arab countries and the least developed countries, with female illiteracy rates of 56.8 and 69.2 per cent, respectively, were in a worse position than Africa. In this respect, the situation for this age group was similar to that for the group aged 15-44 years.

TABLE 65. PERCENTAGE DISTRIBUTION OF ILLITERATE FEMALES AGED 15-19 YEARS, TOTAL DEVELOPED COUNTRIES AND DEVELOPING COUNTRIES BY REGION OR GROUP, 1970-2000

Country group	*1970*	*1980*	*1990*	*2000*
World	100	100	100	100
Developed countries[a]	0.7	0.5	0.7	. .
Developing countries[b]	99.3	99.4	99.3	. .
Africa	19.2	20.7	17.9	18.9
Asia	75.7	76.5	79.7	78.9
Latin America and Caribbean	4.6	2.5	1.8	1.5
Arab countries[c]	7.2	8.1	8.2	9.1
Least developed countries[d]	14.7	16.3	17.9	20.6

[a] See footnote *a* to table 48.
[b] See footnote *b* to table 59.
[c] See footnote *c* to table 59.
[d] See footnote *f* to table 49.

Of the world total of 60.8 million illiterate women aged 15-19 years in 1980, 60.4 million (99.5 per cent, or almost all) were to be found in the developing countries. Of that group, 46.5 million, or 76.5 per cent, were in Asia.

By 2000, the world-wide female illiteracy rate for age group 15-19 years is expected to decline to 17.3 per cent, i.e., by 10.2 percentage points. Even though the decline will be even greater in the developing countries, their female illiteracy rates will still be relatively high. Along with the decline in the rate, the number of illiterate women in this age group will decrease from 60.8 million in 1980 to 47.0 million in 2000, i.e., by 13.8 million or 22.7 per cent. The decrease will be shared by all the less developed regions and groups of countries.

In 1980, the number of illiterate women aged 15-19 years exceeded that of their male counterparts by 18.9 million. By 2000, this overall figure is expected to decline to 7.9 million (or by 58.2 per cent). Similar decreases are expected in all the less developed regions and groups of countries.

In conclusion, the literacy situation of women aged 15-19 years is expected to improve considerably over the next 20 years or so. The improvement for this age group will be greater than for age group 15-44. However, it should be noted that the disparities between geographical regions and other groups of countries are somewhat more striking for this age group than for the others. Undoubtedly, the low illiteracy rates are the result of high enrolment ratios during the past decade.

Population dynamics and evolution of female illiteracy

Although the total number of illiterate women aged 15 years or over is projected to increase from about 491 million in 1980 to approximately 552 million in 2000, the number of illiterate women in age group 15-19 is expected to decrease by 14 million, from about 61 million in 1980 to 47 million by the end of the century. On the other hand, the number of illiterate women in 20-44 age group is expected to increase by about 10 million over that period, after an increase by about 16 million during the 1980s. By far the largest increase will be for the group aged 45 years or over. By the year 2000, the number of illiterate women in this age group will have risen by about 64 million.

However, more encouraging trends are shown in tables 66 and 67, which present the average annual growth rates of the female population and the female literate population over the period 1970-2000 for three age groups. The figures indicate that for all geographical regions and other groups of countries, excluding the developed countries, the rates of growth of the literate female population are higher than the growth rate of the total female population. The rates are particularly high in Africa, the Arab countries and the least developed countries.

Illiteracy and fertility

If high population growth rates are directly responsible for the increasing number of illiterates, an important

TABLE 66. AVERAGE ANNUAL RATE OF GROWTH OF FEMALE POPULATION, BY AGE GROUP, WORLD, TOTAL DEVELOPED COUNTRIES AND DEVELOPING COUNTRIES BY REGION OR GROUP, 1970-2000

(Percentage)

Country group	Average annual growth rate for age group:								
	15 or over			15-19			15-44		
	1970-1980	1980-1990	1990-2000	1970-1980	1980-1990	1990-2000	1970-1980	1980-1990	1990-2000
World	2.2	2.1	1.8	2.1	1.3	0.8	2.3	2.2	1.5
Developed countries[a]	1.2	0.8	0.6	0.6	−0.9	0.5	1.0	0.6	0.1
Developing countries[b]	2.7	2.6	2.2	2.6	1.8	0.8	2.8	2.7	1.9
Africa	2.7	3.0	3.2	3.1	3.0	3.4	2.8	3.0	3.3
Asia	2.6	2.5	1.9	2.3	1.6	0.0	2.6	2.5	1.5
Latin America and Caribbean	3.0	2.8	2.5	3.0	1.7	1.8	3.1	2.8	2.3
Arab countries[c]	3.1	3.1	3.2	3.6	2.6	3.2	3.2	3.1	3.2
Least developed countries[d]	2.5	2.8	3.0	3.0	2.8	3.1	2.6	2.9	3.1

[a] See footnote *a* to table 48.
[b] See footnote *b* to table 59.
[c] See footnote *c* to table 59.
[d] See footnote *f* to table 49.

TABLE 67. AVERAGE ANNUAL RATE OF GROWTH OF LITERATE FEMALE POPULATION, BY AGE GROUP, WORLD, TOTAL DEVELOPED COUNTRIES AND DEVELOPING COUNTRIES BY REGION OR GROUP, 1970-2000

(Percentage)

Country group	Average annual growth rate for age group:								
	15 or over			15-19			15-44		
	1970-1980	1980-1990	1990-2000	1970-1980	1980-1990	1990-2000	1970-1980	1980-1990	1990-2000
World	2.9	2.7	2.3	2.9	2.1	1.4	3.2	3.0	2.2
Developed countries[a]	1.3	. .	. .	0.6	. .	. .	1.1	. .	. .
Developing countries[b]	4.5	4.1	3.3	4.1	3.1	1.6	4.8	4.2	3.0
Africa	7.1	6.9	6.1	5.7	6.9	4.9	7.1	6.9	5.9
Asia	3.9	3.6	2.7	3.5	2.7	0.6	4.2	3.7	2.3
Latin America and Caribbean	4.1	3.6	3.1	4.3	2.1	2.0	4.2	3.6	2.8
Arab countries[c]	8.5	7.3	6.3	7.1	6.0	5.0	8.5	7.3	6.0
Least developed countries[d]	7.5	7.7	6.9	8.1	7.3	5.8	7.7	7.9	6.8

[a] See footnote *a* to table 48.
[b] See footnote *b* to table 59.
[c] See footnote *c* to table 59.
[d] See footnote *f* to table 49.

question arises concerning whether illiteracy could in turn be responsible for high population growth. However, the substantially expanding literature on the relationship between women's education and fertility is divided on its exact nature and degree.

In many instances, research on fertility indicates that education, especially when examined in conjunction with other predictors, can account for a significant portion of the fertility differences among various social and economic strata of a population. In other instances, however, there appears to be little or no effect of either education or literacy on fertility trends in the developing countries. The nature of the relation depends upon many other independent variables that impinge on fertility rates, particularly at the micro level, such as female participation in the labour force outside the agricultural sectors, infant mortality, income, life expectancy at birth, crude death rate, urbanization, energy consumption per capita, marriage age, women's status, type of residence and family planning programme effort. Examined in isolation, i.e., out of the context of socio-cultural and economic development variables and the rest of the related independent fertility determinants, education and literacy in themselves may have some effect on fertility reduction. Yet, in other instances, the results of research have been mixed.

In low-fertility countries, education at certain levels may have a positive effect on fertility, for example, at higher levels of the wife's educational attainment. Because the effects of the wife's education are rather weak in many developed countries (Finland, the Netherlands, Norway and the United Kingdom of Great Britain and Northern Ireland), while in others (e.g., Hungary and Poland) they are stronger, it is difficult to consider the wife's education to be a predictor of fertility increase or decrease in the developing countries, all other independent variables being equal.

Since the relationship between literacy and fertility behaviour cannot be clearly established unless considered along with other development factors, it may be worth while to consider literacy a development indicator, for it is development as a whole that is generally thought to have a stronger effect on fertility.

Summary

Despite efforts during the past few decades to reduce illiteracy in many developing countries, it will continue to afflict an increasing number of the world population, well into the twenty-first century. The percentage of illiterate people will decrease; but as a result of rapid population growth, their numbers will not diminish.

High rates of population growth place increasingly heavy burdens on educational facilities and make it very difficult to achieve desirable enrolment and literacy targets. The picture is even dimmer for females. In 1960, 58 per cent of all illiterates in the world were women, while the corresponding figure for 1980 is more than 60 per cent. In fact, 70 per cent of the increase in the number of illiterates up to the year 2000 would be contributed by females, mostly from the developing countries. In general, more women will remain incapacitated by illiteracy than their male counterparts, except in Latin America.

The reason for this alarming situation is usually sought in the failure of educational facilities to catch up with the expanding, potential clientele for education. Although this explanation may be partially correct, it presumes that there is indeed a universally increasing demand for education. Unless the roles available to literate women are increased by economic and social changes, literacy will continue to be a luxury that many countries would aspire to, yet feel they cannot afford, either economically or culturally. Although periodic literacy campaigns may prove useful momentarily, only a sustained demand for literate men and women, generated by a balanced, wide-based process of socio-cultural and economic development, will lead to a real, lasting solution to this problem.

Notes

[1] All enrolment figures presented in sections A-F of this chapter exclude China, the Democratic People's Republic of Korea and Namibia, for which the data available on enrolment were too sparse to allow projections. Furthermore, as the United Nations population estimates and projections by age exclude countries or areas with fewer than 250,000 inhabitants, these countries could not be included in the tabulations of enrolment ratios by country. Estimates for these countries or areas have, however, been included in the regional figures. The groupings used in this chapter are given below:

(a) *Developed countries:* Australia, Canada, Israel, Japan, New Zealand, South Africa, Union of Soviet Socialist Republics, United States of America and all countries of Europe;

(b) *Developing countries:* all countries not included in the developed countries, excluding China, Democratic People's Republic of Korea and Namibia;

(c) *Latin America and the Caribbean:* Americas, excluding Bermuda, Canada, St. Pierre and Miquelon, and United States of America;

(d) *South Asia:* Asia, excluding China, Democratic People's Republic of Korea, Hong Kong, Japan, Macau, Mongolia and Republic of Korea;

(e) *Least developed countries:* Afghanistan, Bangladesh, Benin, Bhutan, Botswana, Burkina Faso (formerly called Upper Volta), Burundi, Cape Verde, Central African Republic, Chad, Comoros, Democratic Yemen, Ethiopia, Gambia, Guinea, Guinea-Bissau, Haiti, Lao People's Democratic Republic, Lesotho, Malawi, Maldives, Mali, Nepal, Niger, Rwanda, Samoa, Somalia, Sudan, Uganda, United Republic of Tanzania and Yemen.

The countries or areas included in these groups do not in all cases conform to those included in the geographical regions established by the Population Division of the Department of International Economic and Social Affairs of the United Nations Secretariat. Note also that the group of developed countries referred to in this chapter includes Israel and South Africa, which the Population Division groups with the developing countries.

[2] The terms "major region" and "region" as used in this chapter do not refer to the geographical regions established by the Population Division.

[3] For the developed countries and the least developed countries, the groupings used in section G of this chapter are the same as those used in sections A-F. The other groupings used in section G are given below:

(a) *Developing countries:* All countries of Africa except South Africa, all countries of Latin America, China, Other East Asia, all countries of South Asia except Israel, Melanesia and Micronesia-Polynesia;

(b) *Arab countries:* Algeria, Djibouti, Egypt, Libyan Arab Jamahiriya, Mauritania, Morocco, Somalia, Sudan and Tunisia in Africa; and Bahrain, Democratic Yemen, Iraq, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Syrian Arab Republic, United Arab Emirates and Yemen in Western Asia.

XIII. INTERRELATIONS OF HEALTH, POPULATION AND DEVELOPMENT*

During the period under review, the focus of the perception of development as a goal for human communities has gradually broadened. The purely economic perception, typically expressed in terms of gross national product per capita, is now considered an inadequate measure of human aspirations and achievements. Data on the gross national product or the product per capita reveal nothing about how this product is distributed among the various population segments. Thus, a large degree of social injustice may be concealed. Even more fundamental, however, is the realization that the level of production and consumption of goods and services represents only one aspect of the quality of life, and it should not take precedence over all other aspects in the debate on the type of future towards which the world should strive. Such goals include the promotion of human dignity and welfare and the radical elimination of poverty — the greatest obstacle to national and international progress and peace. This change in the perception of socio-economic development has been brought about by many forces, but the increasing significance accorded to health is undoubtedly one of the most important.

Health is not only a desirable goal in itself but a means and, indeed, an indispensable component, if not a prerequisite, of social and economic development. Thus, the many vital links between health and development can be considered interacting phenomena with far-reaching implications: One such implication is the realization that availability of health services is only one of many contributions to health development and that improvement of the health status of populations requires a wide range of mutually supportive policy measures and cannot be restricted to health policy in the narrower traditional sense. The attainment of health targets depends upon: (*a*) appropriately defined progress on the economic front; (*b*) social policy measures directed towards greater equity; (*c*) education as a promoter of social self-care; (*d*) improvement of the physical and sanitary environment; (*e*) availability of adequate food supply; (*f*) implementation of appropriate population policies; and (*g*) political and institutional changes that enlist active co-operation of the public.

Hence, emphasis is placed on health development as an integral component of national and international development strategies. In this context, the formulation and implementation of appropriate population policies are particularly relevant and often of crucial importance for the long-term prospects of national development. In the effort to reduce both birth and mortality rates in developing countries, the most important policy interventions must include: education of women; changes in the status of women brought about by shifts from traditional to new occupations; improved income opportunities; access to health and family planning care and information; and changes in attitudes towards family formation.

The current situation appears less promising than might have been expected a decade ago. In the developing countries, 800 million people live in conditions of abject deprivation: their incomes are too low to ensure basic nutrition, and they have little access to the services essential to life and health. At least 450 million people have less food than is necessary for healthy functioning and survival; even more lead a precarious existence on the brink of hunger. Fewer than one third of the people in developing countries have a safe water supply and adequate sewage disposal. In urban areas, housing conditions and educational opportunities are far from satisfactory. The number of illiterate adults is increasing. About 300 million adults are not gainfully employed.

As concerns morbidity, certain communicable diseases have increased significantly (e.g., schistosomiasis) or re-emerged (e.g., malaria). Although smallpox was conquered, little progress can be reported with regard to tuberculosis or sexually transmitted diseases. In the developed countries, cardio-vascular diseases and cancer continue to be the greatest problems, and many middle-income countries are moving into the same situation. Although most of these data are approximations because basic information is lacking for many areas, they do present a realistic picture of the enormous problems to be overcome in improving the health status of the world population.

At the same time, the burgeoning cost of health care in a number of developed countries has been partially responsible for a re-examination of the relationships between the growing volume of expensive health care — particularly hospital in-patient care — and improved health indices. There is an increasing view that additional expenditure on health care, at least in the developed countries, is not resulting in a commensurate improvement in health. Furthermore, a pattern of spending that is heavily biased towards technically sophisticated in-patient care is now seen as inappropriate, even in wealthy countries. The issue is still more clear-cut in low-income countries.

A. Universal primary health care

Universal primary health care will substantially increase the total costs of the health sector even if the cost

* Prepared by the World Health Organization.

per capita for those effectively covered is much less than current costs. To illustrate this result, the average annual gap between needed and available resources is estimated to be on the order of $50,000 million (i.e., $12.50 per capita times the average population of the developing countries between now and the year 2000). The extent to which the countries themselves can bear this cost is not known, but various approaches to estimation lead to residuals of from $5,000 million to $15,000 million to be covered by international transfers, which corresponds to from 1.5 to 4.0 times the level of transfers around 1980. Furthermore, roughly $0.50 per capita per annum was available for family planning services in the developing countries; and it was thought that this amount should be approximately doubled during the 1980s to ensure appropriate coverage of family planning information and services. Of this amount, some $500 million were provided through international development assistance and some $1,000 million by the countries concerned.

Among the alternative approaches, primary health care emerged as the most important means whereby the health sector could improve the health status of the population and thus make an effective contribution to overall socio-economic progress. The principles of this approach were eventually incorporated in the more comprehensive statement on primary health care to be found in the Declaration of Alma-Ata prepared in September 1978 at the International Conference on Primary Health Care.[1] In many ways, this Conference represented the culmination of the search initiated in 1973 for an "alternative approach" to basic health services. It also laid the foundation for initiating work towards the goal of "attainment by all peoples of the world by the year 2000 of a level of health that will permit them to lead a socially and economically productive life".[2] A series of national, regional and global strategies for action was subsequently elaborated and approved by the governing bodies of the World Health Organization (WHO) in 1981/82.

The practical application of these principles of primary health care differs significantly between countries and the speed with which national primary health care programmes are being implemented also varies considerably. Nevertheless, common principles are pursued, in particular: active community involvement; support to family self-care; intersectoral approaches as part of overall development plans and maximum use of local, human and other resources; use of appropriate technologies, and priority for efforts to prevent disease and promote health, such as education concerning prevailing health problems, nutrition, maternal and child health care, family planning; adequate supply of water and basic sanitation; and immunization.

B. Monitoring of progress

In monitoring progress towards the global goal of "health for all", considerable emphasis is currently being placed on evaluation of the development process in general and on social progress, including health improvements, in particular. Increasing priority is being given to ways of measuring the impact of health actions in improving health status and to the indicators of health care derived from information for managerial use at all levels of the health care system. Agreement has been reached on 12 health-related indicators for a global review of progress, as well as on more detailed indicators for use at the regional level.

The global indicators relate to the number of countries in which:

(*a*) Health for all has been endorsed as policy at the highest official level;

(*b*) Mechanisms to involve people in implementing strategies have been set up or strengthened and are actually functioning;

(*c*) At least 5 per cent of the gross national product is spent on health;

(*d*) A reasonable percentage of the national expenditure on health is allocated to local health care;

(*e*) Health resources are equitably distributed;

(*f*) The number of developing countries in which well-defined strategies for health for all have been adopted, accompanied by explicit resource allocations, and sustained support is being received from more affluent countries to help meet the need for external resources;

(*g*) Primary health care is available to the entire population, with at least the following provisions: (i) safe water in the home or within 15 minutes' walking distance and adequate sanitary facilities in the home or immediate vicinity; (ii) immunization against diphtheria, tetanus, whooping cough, measles, poliomyelitis and tuberculosis; (iii) local health care, including availability of at least 20 essential pharmaceutical drugs, within one hour's walk or travel; and (iv) trained personnel to attend pregnancy and childbirth and to care for children up to at least one year of age;

(*h*) The nutritional status of children is adequate, in that: (i) at least 90 per cent of new-borns have a birth weight of at least 2,500 grams; and (ii) at least 90 per cent of the children have a weight for age corresponding to the WHO reference values;[3]

(*i*) The infant mortality rate for all identifiable subgroups is below 50 per 1,000 live births;

(*j*) Life expectancy at birth is over 60 years;

(*k*) The adult literacy rate for both men and women exceeds 70 per cent;

(*l*) The gross national product per capita exceeds $500.

The proportion of low-birth-weight babies, those weighing less than 2,500 grams, is an example of a regional indicator. Because birth weight is the single most important determinant of a new-born's chances for healthy survival and development and because the frequency of low birth weight is closely associated with adverse environmental conditions, this indicator reflects a major linkage between socio-economic conditions and health. However, health-related socio-economic data cover a wide spectrum of information, most of which is

collected outside the health sector, often with little or no consultation with the health administration. Their usefulness for the health sector may therefore be limited and many areas of presumed interaction with health remain largely undocumented and unquantified. During the next decade, however, it may be expected that the collection and reporting of national health indicators will make available a large volume of serial data on health status, population and other aspects of socio-economic development from various parts of the world. As the World Fertility Survey data have shown, such information can be very useful in promoting understanding of the complex interrelations between development variables and thereby providing guidance as to the most effective mix of development policies and interventions.

C. Trends in health status and care

Some of the most important interrelations between health and development are those in which population growth and change are intermediate variables. For example, the age/sex distribution of a population is largely the result of past trends in fertility and mortality. Both of these trends, the latter in particular, were strongly influenced by the health status of the population and the changes occurring in that status. Conversely, the current age/sex distribution is a strong determinant of the actual health status and health care needs of the population because the disease spectrum and the consequent needs for care vary greatly with sex and age.

Thus, in many developed countries where fertility and mortality rates have been decreasing over several decades, the population pyramids are increasingly top-heavy: the population segments aged about 65 years and in particular over 80 years, most of whom are women, are growing rapidly. This changing age/sex distribution, combined with the almost total disappearance of infectious diseases once common in childhood and the increased age-specific incidence of such non-communicable diseases as cancer and cardio-vascular disease, have radically changed the amount and nature of the demand/need for health care.

In many developing countries also, similar changes are beginning to be felt and projections indicate that these effects will accelerate. The appearance of top-heavy population pyramids highlights the importance of caring for the elderly. In fact, the need to provide such care may be a pre-condition for motivation to reduce fertility levels. In China, the introduction of an old-age pension scheme in 1982 lowered the resistance to the one-child family that senior family members had felt.

Fertility and mortality trends are also the main determinants of population growth, a demographic variable of key importance for economic growth and social development. In a substantial number of developing countries, there is serious concern about rapid population growth and programmes to reduce the growth rate receive the highest priority. An important operational element of such programmes is family planning, usually under the responsibility of the health authorities, who in most countries actively promote the programme as a health measure. It is now well documented that family planning can favourably influence the health, development and well-being of the family, particularly mothers and children, through: (*a*) avoidance of unwanted pregnancies and the occurrence of wanted births that might otherwise not have taken place; (*b*) a change in the total number of children born to a mother; (*c*) achievement of an optimal interval between pregnancies; and (*d*) changes in the time at which births occur, particularly the first and the last, in relation to the ages of the parents, especially that of the mother.

In many regions of the world, perinatal mortality and other undesirable outcomes of pregnancy have been shown to depend largely upon the age and parity of the mother and upon the interval since the preceding birth. By reducing the fertility level of high-risk mothers, family planning can also directly reduce the level of adverse outcomes of pregnancy. If there were increased access to and more judicious use of effective family planning, maternal mortality could be greatly reduced in many developing countries. For example, in Matlab, Bangladesh, of all deaths among women in the high-risk group aged 15-19 years, almost 6 out of 10 were related to pregnancy and childbirth. Among women aged 20-29, the proportion was more than 4 in 10; and for age group 30-34, over 3 in 10. Family planning could contribute much in helping to reduce this excessive mortality, as it could with respect to deaths due to illegal abortion, which occur with a frequency of from 20 to 80 (or more) per million women aged 15-44 in countries where abortion is impossible or difficult to obtain legally.

In addition to the positive health effects, the ability of women to control their own fertility through family planning has given them a new set of options, and it is seen as an essential prerequisite to their achieving full and equitable participation in social and economic development. A greater awareness of the interactions of women's status, health and development has revealed the strong effect of societal attitudes and values and of differences in life-styles on health behaviour and status — as shown, for example, in sex differentials in mortality — as well as on the practice of family planning.

In rural areas, new approaches are being tested in order to extend coverage and improve the quality of maternal and child health care and family planning programmes. Some of these are large-scale programmes; others are local adaptations. The common aim is to have these services available to virtually every household. Ways of achieving this goal will be a major concern of health authorities over the next 10-20 years. The collaboration of other extension programmes — in particular, close co-operation with or integration into family planning programmes — will be crucial for the success of this endeavour.

The results of a recent world-wide survey show that the percentage of sexually active women of reproductive ages who were practising family planning nearly doubled in some regions during the first half of the 1970s. In 1976, an estimated 34 per cent of the sexually active

couples of reproductive ages world-wide were using some contraceptive method regularly.[4] A comparison of rates of use of contraceptive methods by persons attending health care services in 1971 and 1976 indicates a significant increase over the five-year period. Among couples practising family planning, the percentages of those using oral contraceptives or intra-uterine devices and of persons undergoing sterilization increased.

However, broad differences exist both within and between countries; for example, an estimated 53 per cent of sexually active women of reproductive age practised family planning in the Western Pacific region,[5] whereas in Western Africa, the figure was only 3 per cent. A series of fertility surveys in all regions of the world showed that although a large proportion of women stated that they wanted no more children, they did not practise contraception. The inadequacy of contraceptive information and services was counted among the main reasons that some countries with high fertility levels and large populations failed to meet their targets for reduction of population growth. A world-wide estimate for 1982 mentions 500 million couples in developing countries who wanted no more children, yet had no easy access to family planning information and services. If current trends continue, this number will nearly double by the year 2000.

Some of the most important new health programmes are in the area of family health. This area is particularly significant because it is in the context of the family that the health needs of its members can be met most effectively and in ways that are easily acceptable. A sharp decrease in the early childhood mortality rates, which are currently very high, is a forceful motivation for lowering fertility rates in those regions of the world where this is considered a priority or medium-term goal. In 1978, about 17 million children under age 5 died. Had the same early childhood mortality rates found in Northern Europe existed throughout the world, only 2 million deaths would have occurred. Given the global resources and knowledge, this situation is unnecessary and disgraceful; it reflects a world-wide lack of commitment to eliminating the health disparities between the rich and the poor.

During the 1970s, changing patterns of social and economic development and the possibility of planning the timing and spacing of children had an important impact on family structures and functioning. These changes have begun to influence women's and men's economic and social roles as well as the patterns of bearing and rearing children, and hence the health of the family. In some regions, the changes in traditional family structures have left many women without adequate alternative support mechanisms — a situation that has implications both for women's health and for the health and health care of the family as a whole. Furthermore, the trend away from breast-feeding has serious consequences for infant health, and, particularly in developing countries, sometimes shortens the birth intervals.

In general, the priority health problem of mothers and children and their high levels of mortality and morbidity are largely the result of the synergistic effects of malnutrition, infection and uncontrolled fertility, which are themselves consequences of poor environmental and socio-economic conditions and status, including unavailability of health care. Children who are deprived of adequate nutrition do not do as well in school and become less productive adults. It has become increasingly clear that activities and programmes in all developmental sectors, not only the health sector, are essential for the improvement of health, particularly that of mothers and children. Within the health sector, experience in different countries has shown that health activities and programmes for the families, mothers and children are more successful when they are closely linked with other essential tasks. These efforts include education related to prevailing health problems, nutrition and communicable-disease control (including immunization); and a multidisciplinary integrated approach that ensures the effective participation of individuals, families and communities.

D. Prospects

The early part of the 1980s has not been altogether favourable for world health, and various studies of prospective economic trends undertaken by the United Nations system draw attention to the economic constraints under which the health sector may have to operate over the next decades. Moreover, the developing countries must learn from the experience of the developed countries and avoid certain undesirable effects of development, such as over-emphasis on institutional health care and high-cost technology; pollution of air, water and soil; and energy problems, which currently beset a number of countries.

Over the coming decades, health care costs will be increased by a number of factors, including: growing health consciousness that leads to public demand for improved treatment services; extension of coverage of health care so as to remove all physical and financial barriers to its ready access and utilization; introduction of environmental control measures to eliminate or at least reduce potential health hazards; and progress in biomedical research and health technology. It is hoped that human development will, at the same time, lead to improved levels of living and enhanced quality of life.

To date, statistical projections of changes in health status have largely been limited to projections of mortality. It can be argued that such mortality projections, which are mainly extrapolations of demographic trends, are of limited usefulness for health planners, particularly when viewed from the broader perspective of socio-economic development strategy. Although projections based on trends of specific diseases and underlying causative conditions show more promise, they are not yet well developed. It may be anticipated, barring unforeseen events, that by the year 2000 the majority of

the population of the developing countries will have a mean life expectancy at birth of at least 60 years and that infant mortality will exceed 50 per 1,000 live births in only a minority of populations. Thus, the current gap in life expectancy at birth between developed and developing countries, which is estimated to be on the order of 15-18 years, will be almost halved by the end of this century, provided satisfactory progress is made in all the social, economic and politico-institutional areas that influence mortality. Between the least developed countries and the other developing countries, however, there is about a 10-year disparity in life expectancy at birth. Thus, if current inequalities are to be drastically reduced, the least developed countries will have to achieve much greater gains.

NOTES

[1] *Primary Health Care: Report of the International Conference on Primary Health Care, Alma-Ata, USSR, 6-12 September 1978*, jointly sponsored by the World Health Organization and the United Nations Children's Fund, "Health for All" Series, No. 1 (Geneva, World Health Organization, 1978), pp. 2-6.

[2] *Ibid.*, p. 3.

[3] Given in World Health Organization, *Development of Indicators for Monitoring Progress towards Health for All by the Year 2000*, "Health for All" Series, No. 4 (Geneva, 1981), annex 1.

[4] Not including China or the Union of Soviet Socialist Republics.

[5] The countries in the Western Pacific region covered by the World Health Organization do not conform to the geographical groups used by the Population Division of the Department of International Economic and Social Affairs of the United Nations Secretariat. The Western Pacific region includes: Japan and Republic of Korea in East Asia; Democratic Kampuchea, Lao People's Democratic Republic, Malaysia, Philippines, Singapore and Viet Nam in South Asia; and Australia, Fiji, New Zealand, Papua New Guinea, Samoa, Solomon Islands, Tonga and Vanuatu in Oceania.

XIV. RELATION OF POPULATION GROWTH TO POVERTY AND INEQUALITY OF INCOME*

A. SOME QUESTIONS

The view of population growth as a hindrance to economic development is widely held. Rapidly increasing populations are thought to reduce the growth of income per capita, to lead to excess labour supply and unemployment, to restrict the spread of social infrastructure and to aggravate pressure on limited national resources. Income distribution figures prominently in this view: rapid population growth is seen as one factor leading to inequality in the distribution of income. Given the expected adverse effects on economic growth, it follows that most aspects of poverty, both absolute and relative, will be worsened by population growth.

Many reasons have been suggested to support the view that rapid population growth increases inequality, for example:

(*a*) Population growth increases the supply of labour in relation to land, which is fixed, and to capital, the growth of which is considered to be independent of or negatively related to population growth. This effect will tend to reduce the average remuneration of labour in relation to land and capital and, indeed, the aggregate remuneration of labour as well if labour cannot be readily substituted for other factors of production;

(*b*) Population growth tends to promote inequality of land ownership; the division of holdings leads to unviable farms in the smallest land-size groups, where land would eventually be lost through mortgage or distress sales, leading to an increase in the proportion of the landless population;

(*c*) Population growth is often more rapid among lower income groups. If the share of these groups in national income is fixed and there is little mobility, the relative incomes of the poor will decline;

(*d*) The welfare of the poor is often held to depend upon government interventions — schooling and medical facilities, nutrition programmes, employment-generating schemes and so on — for which the cost rises almost in proportion to the population covered. Thus, population growth either raises the total cost of these programmes or reduces the fraction of the population they can reach;

(*e*) High fertility and dependency limit the capacity of parents to save or to invest in the education or health of their children. This constraint is felt much more severely among the poor, leading to inequality in "human capital", and hence in income, in the next generation.

One could cite other such relationships, and they all make a strong prima facie case for the adverse effects of population growth on inequality. Subsequent sections of this chapter take a critical look at some of the assumptions built into these relations. Here, however, the main point to note is that these are expectations and hypotheses, rather than empirically verified relationships. Because frequent repetition of these hypotheses, without empirical support, often leads to their uncritical acceptance, it is doubly important to examine the empirical issues.

Several problems are encountered in testing propositions about the effects of population growth on inequality:

(*a*) The relationships mentioned above are subject to considerable lags. Although population growth of 2-3 per cent in one year may, in theory, have a significant effect, in practice, only the cumulation of growth over from 5 to 10 years is likely to result in statistically observable effects. Moreover, one of the suggested effects is essentially intergenerational; another depends upon the growth of the labour force, which follows population growth with a roughly 15-year lag; and a third depends upon household formation, which responds even more slowly. A very long time-horizon is therefore required. In most countries, however, particularly developing countries, it is not easy to separate the effects of periods of substantial political and economic change over the past 20 or 30 years from those of population growth.

(*b*) Because measures of inequality are essentially aggregative, propositions cannot be tested easily using household data; and measures of inequality at the community level are difficult to compile. Thus, empirical work depends primarily upon measures of national inequality, which must be analysed either in a time-series or in cross-section. In both cases, serious problems arise. Usable time-series of inequality are rare, and the variety of lags in the relationship with population growth makes it difficult to analyse them. International cross-sectional analysis faces problems of non-comparability, especially in measures of inequality, while structural and cultural differences between countries make it difficult to reach firm conclusions.

(*c*) A number of components are involved in the relationship between population growth and income distribution. The most serious complication arises because there is reason to expect income distribution to affect population growth, as well as vice versa; some details of this interaction are discussed below. On the whole, the lags in the effect of inequality on population

* Prepared by Gerry Rodgers, International Labour Organisation.

growth are likely to be shorter than those in the reverse relationship, so that a stylized model might show current inequality affecting current population growth, which in turn affects future inequality. The problem here is that current and future inequality will be closely related, if only because inequality is in part the result of an additional, perhaps unchanging set of structural factors, the effects of which are not always easy to isolate.

Some of these issues are covered in the remainder of this chapter. In exploring the types of relationships found in inter-country comparisons, the results obtained by several other authors are discussed and some new estimates using an International Labour Organisation (ILO) data bank are presented. The next section outlines some basic conceptual problems that arise in this field. Lastly, some of the theoretical and empirical issues that are relevant for work at the national level are re-examined.

In these discussions, migration is relatively neglected even though a good case can be made that this factor is more important for poverty and inequality than population growth *per se*. The issue is left to one side here because it is treated in some detail elsewhere.[1]

B. Inter-country comparisons

Despite their weaknesses, inter-country comparisons appear to be the easiest starting-point for empirical analysis, and several authors[2] interested in the present topic have used international cross-sectional data. Some of their principal results are summarized in tables 68 and 69.[3] Where fertility is the dependent variable, all authors except Winegarden find a strong positive relation with inequality. He finds a strong negative relation, mainly because he controls for family planning efforts.[4] Where family planning is endogenous, as in Ogawa's model, it is found to be strongly negatively associated with inequality, so that the positive relationship between fertility and inequality would probably re-emerge if family planning were also endogenous in Winegarden's model. Where inequality is the dependent variable, all authors find that it is positively — usually strongly — affected by fertility or population growth. The effect of mortality on fertility is consistently positive and that of literacy is consistently negative, while other relations fluctuate (particularly those with income) to some extent with the sample and the specifications.

These results have been criticized. Boulier, for example, considers the international data base inadequate for statistical analysis: "It is doubtful whether the income distribution data are sufficiently comparable among countries to support the econometric analysis for which they are used".[5] He also argues that the models are inadequately specified:

> "It is most unclear whether the statistical association between the distribution of income and fertility among nations is a causal association or merely a spurious correlation due to underlying (unmeasured) social and economic factors jointly determining fertility and the distribution of income".[6]

Of course, if one is unhappy with the results, the time-honoured practice is to attack the data or to postulate additional unobservable relations that would undermine those estimated. Although Boulier's remarks have merit, the use of international cross-sectional results as one element in the array of evidence must be accepted pending development of better data and improved models.

The primary interest of the authors cited here was to establish current interactions between fertility or mortality and inequality, although Winegarden also took lagged relationships into consideration. For the present study, a more interesting question appeared to be to establish interactions between income distribution and population growth over time; therefore, careful specification of lagged relationships was needed. There also seemed to be a strong case for incorporating overall income growth endogenously into such a model, given that this factor is widely believed to be closely related both to income distribution and to population growth. The results of a new international cross-sectional analysis set up in these terms is presented below in summary form.[7] The data used came mainly from a file established at the ILO by M. Hopkins, for analysis of basic needs satisfaction.[8] Some information was also added to the file from World Bank sources.

In this analysis, the first point to establish is the existence in these data of the negative relationship between equality of income distribution and population growth reported by other authors. Simple correlations for different measures and different time-periods indicate that the relation is indeed present:

(*a*) Percentage of income received by the poorest 40 per cent of households in 1970 and population growth during the period 1960-1970: $R = -0.44$;

(*b*) Percentage of income received by the poorest 40 per cent in 1970 and population growth during 1970-1977: $R = -0.42$;

(*c*) Percentage of income received by the poorest 20 per cent in 1970 and population growth during 1970-1977: $R = -0.24$;

(*d*) Percentage of income received by the poorest 40 per cent in 1960 and population growth during 1960-1970: $R = -0.32$.

The next stage is to build a model in which both population growth and inequality are endogenous; as argued above, output growth should also be endogenous in such a model. First to be considered are the interactions between these three variables. One can reasonably consider that inequality is affected by past population growth and past income growth; in both cases, a higher rate of growth tends to generate an unequal distribution. A distributed lag function would be ideal, but the data will not support it. Therefore, current inequality is assumed to be affected by growth of income and of population during the preceding decade.

It appears that income levels are more likely to affect population growth than is income growth. The components of population growth — fertility, mortality and

TABLE 68. INTERNATIONAL CROSS-SECTIONAL ANALYSES OF RELATIONSHIPS BETWEEN POPULATION GROWTH AND INCOME DISTRIBUTION, WITH FERTILITY AS DEPENDENT VARIABLE

	Analysis according to:				
	Morawetz	*Flegg*	*Repetto*	*Winegarden*	*Ogawa*
Dependent variable	General fertility rate[a]	General fertility rate[a]	Gross reproduction rate/general fertility rate	General fertility rate[a]	Crude birth rate[b]
Relationship with inequality	Positive; strong	Positive; strong	Positive; strong	Negative; strong	Positive; strong
Measure of inequality ..	Percentage share of poorest 40 per cent	Atkinson's index	Gini coefficient	Percentage share of poorest 40 per cent	Gini coefficient
Relationship with income	Negative; weak or moderate	Negative; strong	Negative; weak or moderate	Positive; strong	Negative; strong
Relationship with first difference of income ..	-	-	-	-	Positive; strong
Relationship with mortality	Positive; weak or moderate	Positive; weak or moderate	Positive; weak or moderate	Non-linear; strongly positive in relevant range	-
Relationship with literacy	Negative; weak or moderate	Negative; strong	Negative; strong	Negative; strong[c]	-
Other independent variables	None	None	None	Labour force in agriculture; family planning effort	Family planning "setting"; female labour participation
Other endogenous variables	None	Female labour force participation	Inequality; infant mortality	Inequality; life expectancy	Inequality; family planning
Number of countries ...	Up to 80	60	45	31	20

Sources: D. Morawetz, "Basic needs policies and population growth", *World Development*, vol. 6, Nos. 11 and 12 (November-December 1978); A. T. Flegg, "The role of inequality of income in the determination of birth rates", *Population Studies*, vol. 33, No. 3 (November 1979), pp. 457-477; Robert Repetto, "The interaction of fertility and the size distribution of income", *Journal of Development Studies*, vol. 14, No. 4 (July 1978), pp. 22-39; C. R. Winegarden, "Can income redistribution reduce fertility?", in *Fertility in Developing Countries: An Economic Perspective on Research and Policy Issues*, G. Farooq and G. Simmons, eds. (Geneva, International Labour Organisation, in press); and Nashiro Ogawa, "Fertility control and income distribution in developing countries with national family planning programmes", *Pakistan Development Review*, vol. XVII, No. 4 (Winter 1978), pp. 431-450.

[a] Approximate.
[b] Indirect effects through a family planning function.
[c] School enrolment.

TABLE 69. INTERNATIONAL CROSS-SECTIONAL ANALYSES OF RELATIONSHIPS BETWEEN POPULATION GROWTH AND INCOME DISTRIBUTION, WITH INEQUALITY AS DEPENDENT VARIABLE

	Analysis according to:			
	Repetto	*Winegarden*	*Ogawa*	*Ahluwalia*
Dependent variable	Gini coefficient	Percentage share of poorest 40 per cent	Gini coefficient	Percentile shares
Relationship with fertility	Positive; weak or moderate	-	Positive; strong	-
Relationship with population growth ...	-	Positive; strong	-	Positive; strong
Relationship with income	None or very weak	Positive; weak or moderate	Positive; strong	Positive; strong
Relationship with first difference of income	-	-	Negative; weak or moderate	Negative; strong
Relationship with income growth	-	Negative; strong	Positive; weak or moderate	-
Relationship with literacy	-	Negative; weak or moderate[a]	None or very weak	Negative; strong
Other independent variables	Education; dispersion; land inequality	Percentage in agriculture; public-sector investment	None	Percentage in agriculture; urbanization; "socialist"
Other endogenous variables	Fertility; infant mortality	Fertility; life expectancy	Fertility; family planning	None
Number of countries	45	31	20	60

Sources: M. S. Ahluwalia, "Inequality, poverty and development", *Journal of Development Economics*, vol. 3, No. 4 (December 1976). For citations of other sources, see table 68.

[a] School enrolment.

migration — are all commonly thought to be associated with income levels. A relationship with income distribution, either current or with fairly short lags, also is postulated here. This relationship is modelled by assuming that population growth during a given period depends upon income levels and income distribution at the beginning of the period, with income levels in turn depending upon income growth during previous periods.

During a given period, income growth may be associated with inequality at the beginning of the period for many reasons — for example, because inequality may affect savings and thus investment. Income growth is also likely to be associated with income levels at that point, in that a catching-up process through the diffusion of existing technology should make growth easier at low incomes, other things being equal. The link with population growth involves both current and lagged components. Current population growth, consisting essentially of children, will increase the number of consumers and thus reduce income per capita directly (although there may be offsetting effects, e.g., through changes in the work of adults). Past population growth, however, will be associated with increases in the current labour force and thus with higher output growth. Furthermore, lagged adaptive technological changes of the Boserup[9] type, which affect output growth, also may occur.

The interactions between our endogenous variables can be summarized as follows:

$$Q(t) = f_1\,[GP(t-1, t), GX(t-1, t)], \quad \text{(Equation 1)}$$

$$GP(t+1, t) = f_2[X(t), Q(t)], \quad \text{(Equation 2)}$$

$$GX(t+1, t) = f_3[X(t), Q(t), GP(t+1, t), GP(t, t-1), GP(t-1, t-2), \ldots] \quad \text{(Equation 3)}$$

where P = population;
GP = population growth rate;
X = output or income per capita;
GX = growth rate of output or income per capita;
Q = income inequality;
t = time.

To this system one adds the identity:

$$X(t) = X(t-1)\ (1 + GX(t, t-1)). \quad \text{(Equation 4)}$$

This system is entirely recursive, which has implications for estimation and distinguishes the model from many of its precursors, which have dealt with the estimation of simultaneous systems.[10]

The next step is to specify the form for the dependent variables and the set of exogenous variables to be included in estimable formulations of models for Q, GP and GX. This process is briefly described below.

The income share of the poorest 40 per cent of households, around 1970 as far as possible, was used for inequality.[11] Following Ahluwalia,[12] this was made a non-linear function of gross national product (GNP) per capita. That author was also followed in using a separate "socialist" dummy variable for the centrally planned economies of Eastern Europe and a variable measuring literacy. For population growth and growth of GNP per capita, total growth during the period 1960-1970 was used. The equation retained is reported in column (1) of table 70. The relatively poor performance of the population growth variable presents an interesting contrast to the correlations reported above. It was not at all improved by substituting growth during the period 1950-1970, nor was the introduction of a separate population density measure helpful.

TABLE 70. ESTIMATION OF A RECURSIVE SYSTEM OF EQUATIONS WITH THREE DEPENDENT VARIABLES: GROWTH RATES OF POPULATION AND OF INCOME PER CAPITA; AND INCOME INEQUALITY

	Dependent variables		
Independent variables	*Percentage of income received by poorest 40 per cent, around 1970* (1)	*Population growth, 1970-1977* (percentage per annum) (2)	*Growth in GNP per capita, 1970-1977* (percentage per annum) (3)
Log GNP per capita, 1970 (dollars)	−20.7	2.44	-
	(5.43)	(2.43)	
Log GNP per capita, squared, 1970 (dollars)	1.49	−0.193	-
	(4.92)	(2.51)	
GNP per capita, 1970 (dollars)	-	-	−0.000125
			(2.62)
Percentage of income to bottom 40 per cent, 1970	-	−0.048	0.00125
		(1.67)	(0.02)
Growth in GNP per capita, 1960-1970	0.539	-	-
	(2.97)		
Population growth, 1970-1977 (percentage per annum)	-	-	−0.850
			(1.91)
Population growth, 1960-1970 (percentage per annum)	−0.790	-	-
	(1.35)		
Population growth, 1950-1960 (percentage per annum)	-	-	0.716
			(1.84)
Literacy, 1970 (percentage)	0.059	−0.011	0.0119
	(3.19)	(2.19)	(0.86)
Percentage of workers in agriculture, 1970	-	0.018	-
		(2.52)	
"Socialist",[a] 1970	7.81	−0.722	-
	(4.95)	(1.68)	
Military expenditure as percentage of GNP, 1970	-	-	0.281
			(3.13)
Log investment as percentage of GNP	-	-	4.01
			(4.94)
Intercept	78.6	−4.71	−10.5
	(7.06)	(1.41)	(3.97)
R^2	0.62	0.72	0.53
N	72	67	63

NOTES: Figures shown in parentheses are t statistics. GNP = gross national product.
[a] Dummy variable for centrally planned economies of Eastern Europe.

Population growth may be itself used as a dependent variable. As an alternative, one may use the components of population growth (births, deaths and migration) as dependent variables and compute population growth on the basis of these elements. At the level of an international cross-section, however, most of the explanatory variables for these three components will be similar, so little is lost by aggregating them. For the purposes of this analysis, the simplification appears to be acceptable, although in a more detailed model there would probably be some returns to breaking down population growth. Thus, population growth during the period 1970-1977 was used as the dependent variable. With respect to the explanatory variables, the formulation was similar to that for the inequality function, except that the proportion of the population working in agriculture was added.[13] The results are given in column (2) of table 70. Among the explanatory variables, the inequality measure is statistically weakest. This finding appears at first to contradict the strong relations between inequality and fertility found by Repetto and others, but the reason is quite simple. Because greater inequality appears to be associated not only with higher fertility but with higher mortality, it is not surprising that it has a fairly weak net impact on population growth.[14]

Growth in GNP per capita during the period 1970-1977 was selected as the third endogenous variable. A similar set of explanatory variables was used, with the addition of a measure of investment and of military expenditure. The formulation for population growth allowed for both current and lagged effects; both had the expected sign and were statistically significant at the 10 per cent level.

Some general comments should be made about results of this type: (*a*) the data base is of uneven quality and often not strictly comparable across countries; (*b*) the statistical problems, notably multicollinearity, make the models very vulnerable to slight changes in specification; and (*c*) the range of variables for which data are available is limited. As stated by another user of international cross-sections: "an information base of such modest quality undeniably warrants modest conclusions".[15] Nevertheless, given the absence of good alternative ways to test the hypotheses, it is quite legitimate to look for clues even in a weak data base. Moreover, certain conclusions, while indeed modest, may be drawn from these results.

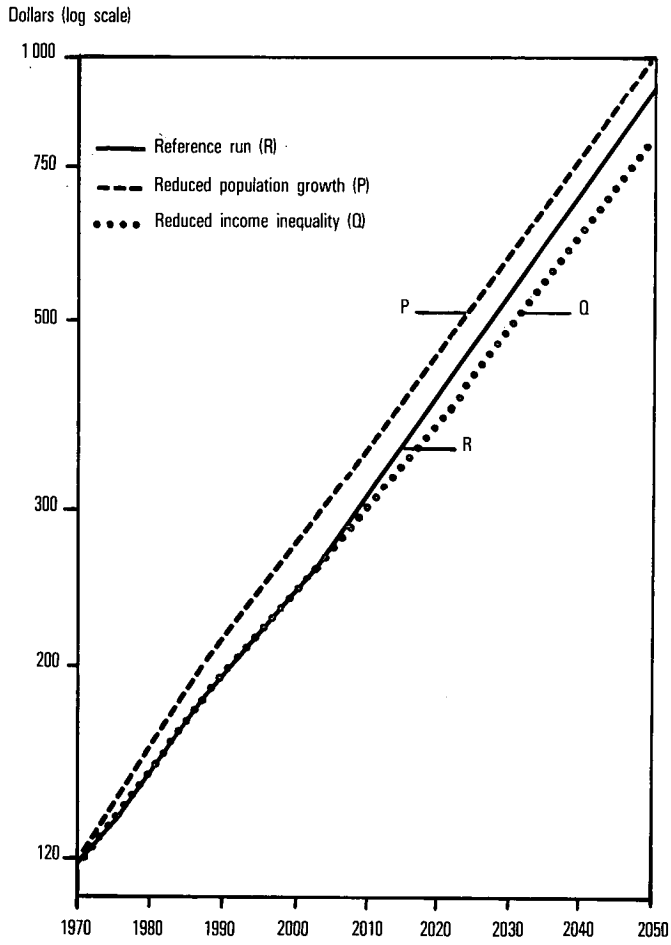
To approach such conclusions, it is necessary to assess the overall picture provided by these three equations. It is possible to solve the estimated system of equations, but results can be presented more graphically by simulating the evolution of key variables over time. This procedure, of course, is based on the assumption that inter-country differences provide guidelines to the development paths followed by individual countries.

A very simple aggregate model was constructed, with the three key behavioural equations as a core. Four other variables were also incorporated endogenously: investment; literacy; labour force share in agriculture; and proportion of children in the population (used in computations of incomes per adult equivalent).[16] The model was run for 10-year intervals from 1970 to 2050. It was necessary to select a starting-point for 1970; as an example a country with GNP per adult equivalent to about $120 in 1970 and literacy at just over 20 per cent was selected. At first, GNP grows at just under 5 per cent per annum. These figures would broadly correspond to the situation in 1970 of a relatively poor Asian country or a middle-income country in Africa.

Figures II-V present three different situations: a "reference" simulation, which represents an "average" development pattern; a "population" simulation, in which the annual population growth rate is reduced by 1 percentage point; and an "equality" simulation, in which the share in income of the poorest 40 per cent of households is raised by 5 percentage points. These changes are substantial and they imply major shifts in policy or behaviour.

Each figure shows the evolution of one variable over time under the three different model assumptions. Figure II shows GNP per adult equivalent, an approximate indicator of mean income, on a log scale (equal distances between points on this scale imply equal percentages, not absolute differences). The results are surprisingly insensitive to the quite substantial experi-

Figure II. Gross national product per adult equivalent, 1970-2050



mental changes involved: in 2050, after 80 years, the highest simulation (population) is only 21 per cent ahead of the lowest (equality). The pattern over time is also contrary to conventional expectations. Where population growth is reduced, significant income gains are built up at first (compared with the reference run), peaking at a 16 per cent gain in 1990. Thereafter, however, the gain steadily diminishes; and by the end of the simulation period, it is down to 7 per cent. This result is quite contrary to the conventional view of gains from reduced population growth, which are thought to build up slowly but eventually to become substantial. The result given here is due to the longer term positive feedbacks from population growth to GNP growth and, to a lesser extent, changes in investment and literacy. The simulation with reduced inequality differs little from the reference for the first 40 years. Thereafter, it begins to fall behind the reference run. This relative decline can be largely traced to a negative effect of the income share of the poor on investment, which, however, was statistically weak and should be interpreted cautiously.

The percentage share in income received by the poorest 40 per cent of households is shown in figure III. There is a decline in the share in all three runs, concentrated over the period 1980-2030, after which date the bottom of the Kuznets U-curve appears to be reached. The relatively more equal results obtained with the reduced inequality run merely reflect the 5 per cent experimental change, but the pattern with the population run is interesting. At first, reducing population growth reduces inequality — it raises the share of the poorest 40 per cent — because of the direct effect of population growth in the equality function. The longer term indirect relationships, however, have the opposite effect, operating through the effects on GNP per capita (figure II) and literacy. Eventually, the population run stabilizes with the income share of the poorest 40 per cent about half a percentage point below the reference run, which is not much but is opposite in sign to the result expected by those who view high population growth as a major cause of inequality.

If figure III suggests that reducing population growth is unlikely to reduce inequality, figure IV gives some indication that reducing inequality may reduce population growth. In all three runs shown in figure IV, population growth declines quite sharply after the year 2000. The reduction in inequality generates a decline in population growth of about 0.2 percentage point in relation to the reference run.

Figure III. Percentage of income received by poorest 40 per cent of households, 1970-2050

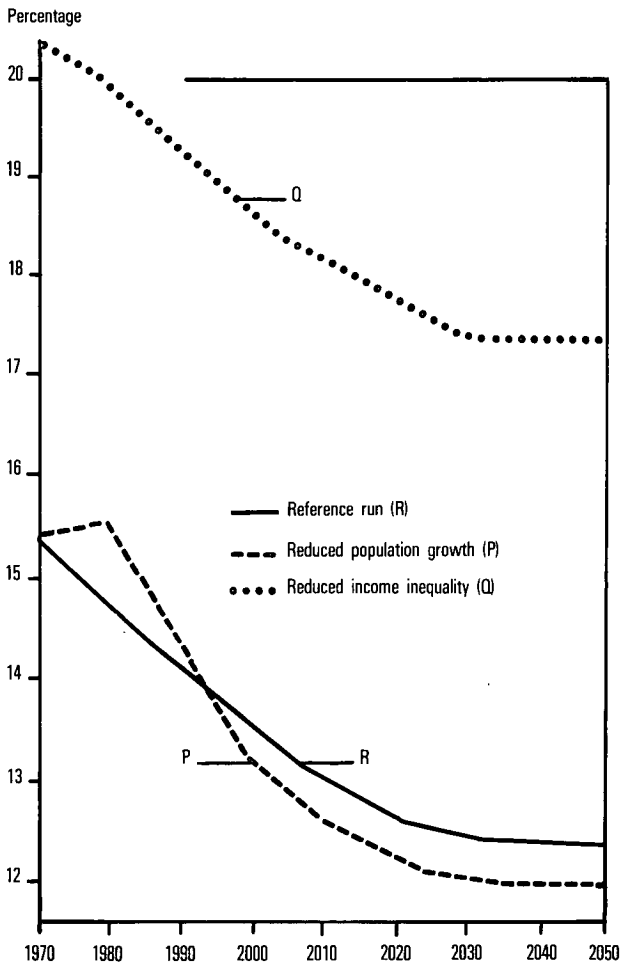


Figure IV. Annual population growth, 1970-2050

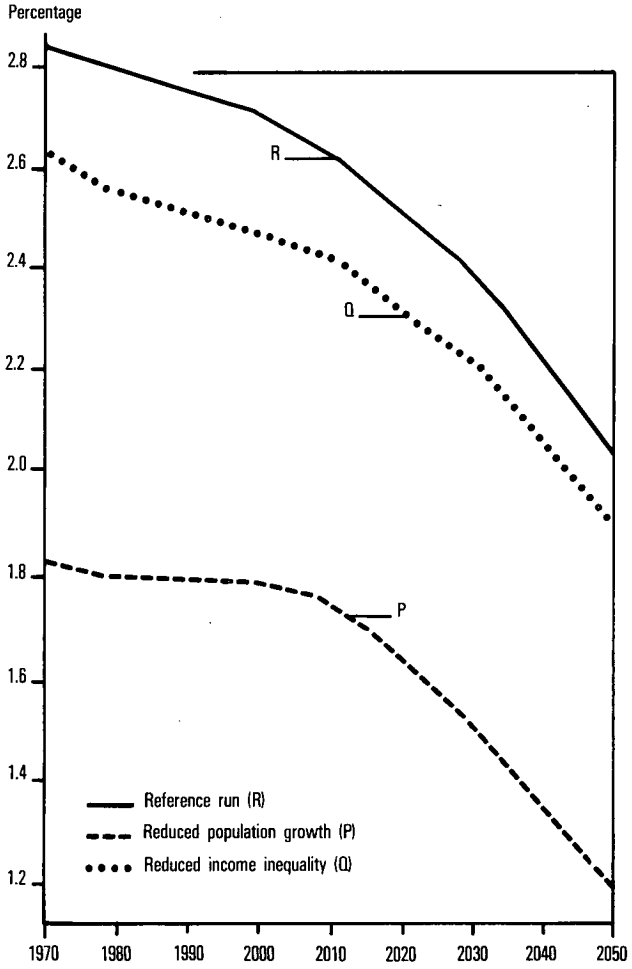
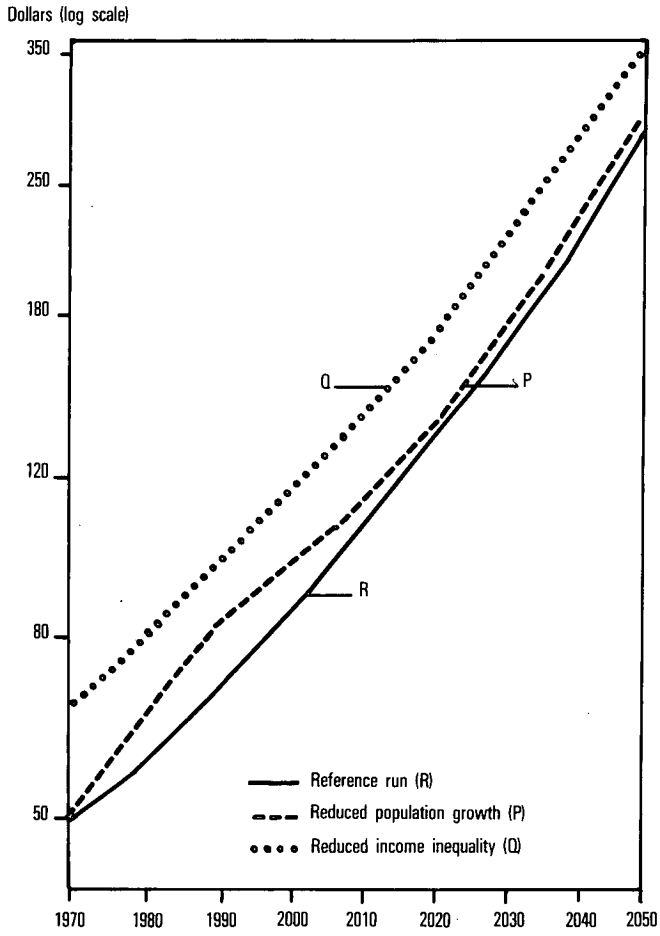


Figure V combines the information from figures II and III to give an indicator of incomes among the poor. Despite worsening income distribution, the incomes of the poor rise steadily in all three runs. The impact of reduced population growth parallels that found in figure II but is somewhat more extreme. The maximum gain due to reduced population growth is about 18 per cent in 1990; but it drops away more rapidly than is shown in figure II and is down to 3 per cent at the end of the simulation. The run where inequality is reduced generates gains for the poor throughout the simulation period, peaking at 36 per cent in 1990, then declining to 23 per cent in 2050. Thus, in figure V, the performance of the reduced-inequality run is consistently and substantially better than that for reduced population growth.

These results suggest that, contrary to expectations, reducing population growth does not appear to generate long-term benefits for the poor in this model, although some short-term gains are found. Increasing equality does appear to generate some decline in population growth, as well as persistent gains in incomes among the poor; but the reductions in population growth look small when set against the substantial reduction in inequality assumed.

Undoubtedly, improvements can be made in the specification of this model and particularly in the data base on which it is estimated. However, the view that population growth will increase inequality and poverty is so dominant in the literature that one would still expect this result to appear strongly. After all, many of the other results are as expected; and the fact that this result is not raises questions.

Figure V. Income per adult equivalent among poorest 40 per cent of households, 1970-2050



C. Conceptual problems

At this point, before pursuing the empirical issues further, it is appropriate to address some conceptual and methodological questions. The central problem is that inequality and poverty are not the simple variables assumed in the preceding section; they are complex both conceptually and empirically. Three major sets of particularly relevant issues are discussed below.

Nature of unit of analysis

The "household" is used as a unit of analysis in the majority of official statistics on income, consumption and related measures, although definitions of this unit vary considerably. In many fertility analyses also, models of "household" decision-making are used; but the number, size and composition of households are systematically associated both with income and with fertility.[17] In one study,[18] for instance, household income per capita in Colombia is decomposed by the number of adults and of children; a positive relation was found between the number of adults and household income per capita, and a negative relation between the number of children and household income per capita. In general, therefore, households with higher fertility will report lower incomes per capita. Thus, the distribution of fertility across the population is directly reflected in income inequality per capita. Although household income per capita was used in the above-mentioned study of Colombia, most official statistics, especially for income distribution, use incomes per household; and this unit was used in the international cross-sectional analysis. Larger households tend to report higher total incomes, again generating an automatic relationship between inequality and demographic change. The way in which this affects the relations between population growth and inequality will depend upon how fertility and mortality changes are distributed across the population and also upon the time-lags between changes in population growth and changes in age composition. In general, however, there will be an effect.

The problem is actually even broader, because the most relevant concept of inequality might involve individuals, nuclear families, households, larger kin groups, such as the Chinese *chia*; or entire communities or classes.[19] For example, a drop in population growth arising from a fertility decline may be directly associated with changes in the relative status of women and thus modify sexual inequality even if household income inequality remains unchanged. At a different level, fertility and mortality changes that have a significant impact on the distribution of household income may have no effect on inequality between communities.

Reference time-period

The second issue, which is in some ways related to the first, concerns the time-period over which income is measured. The shorter the period, in general, the more unequal will be the measured distribution of income. The distribution of income over a period of years, or over a lifetime, will usually be less unequal than the distribution of, say, last year's income. Thus, a part of measured inequality can be traced to income changes over the life cycle, because in many — but not all — occupations, income rises with age and experience. Because population growth affects the age distribution of populations, it also affects this aspect of inequality. In a rapidly growing population, a larger segment will be concentrated in the younger age groups whose incomes are lower. Age composition alone can account for a substantial fraction of measured inequality, although age was found to be distinctly less important for inequality in Colombia than in the Netherlands or the United States of America.[20] Such factors have been shown to contribute significantly to explaining changes over time in measured inequality in Japan[21] and the United States.[22]

Another point about the time-horizon, often overlooked, is that average incomes are rising in most societies. Thus, future generations can expect to have higher incomes, on average, than the current generation. If a reduction in population growth eventually increases income, which is not an obvious result, as was shown in section B, it may increase intergenerational inequality. Whether this point is important will depend upon whether significant costs must be borne by current generations. Given the long-term nature of demographic processes, however, the issue cannot be ignored.

Conceptualization and measurement of welfare in relation to inequality and demographic change

Concern with welfare, not just income, is implied in the concern with poverty and inequality. This has several consequences, one of which is the need to broaden the definition of income to encompass measures of "non-market income", including valuation of leisure, or, more important for poverty analysis, measures of access to education, health and other public goods. For example, it has been found[23] that educational enrolment is lower in large families. Growing populations put exceptionally heavy demands on educational facilities and some aspects of health infrastructure, quite possibly resulting in inequality in access to these services. There may, in particular, be differential access to goods and services by birth order, with higher order children being relatively disadvantaged. Thus, a distinct link between high fertility and inequality is generated.

A second aspect, which also has far-reaching consequences for interactions between inequality and demographic change, is to consider the direct implication for welfare of mortality decline.[24] Without a corresponding drop in fertility, a mortality decline reduces income per capita if nothing else changes, but it is unambiguously an increase in welfare. How this aspect affects measured inequality depends upon the distribution of mortality declines. In most populations, recent mortality declines have probably been concentrated in the lower and middle income ranges, thus increasing inequality in income per capita while reducing it in welfare.

A third, equally fundamental aspect is to consider the value of children to parents. One study[25] discusses the psychic issues, while practical examples of the economic rationality of high fertility are provided in another.[26] Measured welfare should somehow take into account the value of children to parents; wanted children therefore enter into both the numerator and the denominator of the measure of welfare. As concerns "unwanted" children, if their numbers could be measured, it might be plausible to consider them to belong only in the denominator. On the other hand, it is not obvious that high fertility is in the interests of the children themselves, as opposed to their parents, at least beyond a certain family size, which is difficult to determine. The complications for analysis of inequality in the face of changing mortality and fertility are apparent.

The main conclusion to draw from these conceptual and methodological issues is that the problem is distinctly more complex than might appear at first sight. Indeed, many of the more important points — e.g., the last one — are not amenable to empirical treatment. In interpreting empirical findings, it is necessary to be aware of these different aspects of inequality and the correspondingly varied links with demographic change.

D. Question of return to structures and processes

If largely negative results are obtained from international comparisons and if it is desired to face up to the methodological issues outlined above, it is necessary to return to the structures and processes at work within countries to see whether they permit further advances. The issues raised by the effects of inequality on population growth are quite distinct from those involved in the generation of inequality; therefore, they are discussed separately.

Effects of inequality on population growth

Little attention is given here to the influence of inequality on population growth, as this issue has been abundantly discussed elsewhere.[27] As has been stated,[28] most researchers who have explored non-linearities in the effects of income on fertility have found them; thus, it follows that the pattern of inequality will also affect fertility and hence population growth.[29] Indeed, many of the variables commonly found to be related to fertility, such as education, female labour supply, land ownership and child work, are closely linked with patterns of social inequality. Consequently, fertility is undoubtedly affected by the pattern of inequality. Experiments with a "basic needs" strategy, using an economic-demographic model of the Philippines with population growth endogenous,[30] indicated that broad, welfare-oriented policies can substantially affect fertility, and, to a lesser extent, because there are also changes in mortality, population

growth. The size of this effect is more debatable. Although the bulk of the evidence suggests that less inequality is associated with lower fertility, there are counter-examples and analysis calls for a case-by-case approach.

The more aggregative, structural relations between inequality and population growth have received less attention. An example is the question whether any reason exists to believe that inequality *per se* affects fertility and thus population growth, as opposed to indirect effects due to the societal distribution of the variables entering into micro-level fertility functions. It is difficult to obtain evidence on this aspect, although there must be some expectation that the answer will be positive. The distribution of access to jobs and to productive assets will presumably modify perceptions of the benefits of high fertility. Exactly how will depend upon the fertility model appropriate to a given social environment.

In some circumstances, those with more assets and easier job access for their children will tend to have higher fertility — this model, which is widely reported,[31] is plausible if fertility behaviour is predicated on the need for and use of family labour. In such cases, a more equal distribution of assets and job access may be expected to raise fertility, not just because of movements along a household fertility function but because of shifts in community expectations. In contrast, high fertility may be a response to the insecurity of families in an economic system where job access is uncertain.[32] A large number of sons may be needed to ensure that one or more shall obtain some source of income or shall survive to provide some insurance against catastrophe. Where this model is valid, more equal access to jobs and assets may be expected to lower fertility. These issues, however, require more empirical work.

Effects of population growth on inequality and poverty

Although some writers give the impression that the reduction of population growth is a major objective in itself, the final objective must clearly be couched in terms of personal and social welfare. It is therefore ultimately more interesting — but considerably more difficult — to assess the effects of population growth on inequality and poverty, rather than the reverse.

The analytical and empirical problems faced at the local level are well illustrated in a study of relations between population and poverty in Java.[33] The authors' view — which may be correct — is that population growth is the key constraint on alleviation of poverty in Java; but they do not prove it. Indeed, it cannot be proved on the basis of these village studies. Rather, every problem is asserted to be due to population growth. Land holdings are small, employment is inadequate, output is insufficient, in some cases incomes have fallen; in every case, population pressure is the prime culprit. Their data show, however, that the technological possibilities in agriculture are far from exhausted and that labour intensities are much higher on the smallest plots, so that there appears to be scope for further intensification; that land productivity, compared with another study carried out 40 years before, is over twice as high and rice production per capita, despite population growth, appears to be rather similar to the district average given in the earlier study; and that peasants refuse opportunities to migrate to new areas where their incomes are said to be several times higher. Although the structure of economic relations, which generates differential incomes for different groups, is surely fundamental to understanding how the system evolves, no picture of this factor emerges from this study of Java.

Another study of population growth in Java[34] develops a more thoughtful model of involution, a historical process of absorption of population increase into traditional production systems by steady increase of intensification without reducing output per worker. This author views the system as "treading water" as population increases. While such a process continues, the impact of population increase on inequality is likely to be marginal. The report notes that the limits of involution in Java were being approached and that rural labour will become increasingly proletarianized unless rapid industrialization could absorb the growth in labour force. In either case, the pressure of population may eventually facilitate the evolution of more polarized, capitalist production relations in the place of a decreasingly viable peasantry. Although this model appears to be coherent, the empirical support for the last point is weak. Capitalist production relations appear to have first developed in Indonesia on plantations set up under the colonial régime and subsequently in the process of industrialization. Neither case seems to be empirically linked to population increase, except in so far as population growth made a pool of labour available. In Africa, however, which has low population density, wage labour for plantations has been forced out of subsistence agriculture by other means. For 50 years or more, observers of Java have been forecasting that the agricultural system cannot absorb more population growth. Nevertheless, it still survives.

The authors of these two studies obviously operate with quite different theoretical frameworks, which condition their understanding of the effects of population growth. It is worth while to explore briefly the implications of alternative models of social processes. After all, although certain direct implications of population growth for inequality have been discussed, the bulk of the impact is surely indirect and thus depends upon the pattern of social relationships that leads to inequality.

Subsistence models

Production for subsistence within a family unit is analytically quite straightforward in hunting and gathering communities or in egalitarian peasant societies. Aside from ecological and technological factors, relationships between labour input, dependency, production and socially accepted levels of subsistence determine a pattern of behaviour that may, as in a Chayanovian model, result in life-cycle fluctuations.[35] The evolution of such societies in the face of population growth,

whether by out-migration of excess labour or by involution, is built around maintenance of the subsistence level.

In exploitative feudal or capitalist systems, however, the subsistence level becomes a key determinant of "surplus" extraction and inequality. The classical, Ricardian model has production levels determined by the equality of marginal product with the subsistence wage, which in turn determines profits and rent because of diminishing returns to land. Wages are maintained at subsistence level by demographic forces. A basic Marxian model of capitalist development uses similar notions, except that a relative surplus population, which provides the "reserve army", is actively promoted by employers, whether by labour-saving innovation or by promotion of the growth of the wage labour force. Social relations of production, which will depend upon the division of labour, the nature of jobs, the technological environment and so on, will combine with the subsistence wage to determine the overall rate of surplus extraction and thus of inequality. Relationships of this type are, of course, not confined to wage labour: they can equally apply to various forms of tenancy or share-cropping arrangements, production relations involving exchange labour and so on.

In such systems, population growth is relatively unimportant; paradoxically, at the same time, it is crucial as a source of surplus labour. The degree of inequality, however, is a property of the social relations of production. Thus, although population increase may be fundamental for the growth of the economic system as a whole, it has only secondary effects on inequality. This is the basis for much of the Marxian critique of conventional demography; "over-population is not a matter of too many people, but of unequal distribution of resources".[36]

Neo-classical models

Although neo-classical techniques are often extended to cover subsistence wages, the main characteristic of neo-classical models is that wage levels are endogenous. By treating wages as exogenous, a subsistence model predetermines a major aspect of inequality. In contrast, neo-classical models incorporate wage levels and factor shares into a simultaneous determination of all major economic variables. Income distribution thus becomes a consequence of demands for output and supplies of input, and of the technological characteristics of production processes. The human-capital theory extends the model to cover differentials in education and other personal characteristics, investment in which occurs up to the point where returns equal marginal product; optimality can be expected in societies with perfect capital markets and where there is perfect foresight. For several reasons, models of this type most clearly predict adverse effects of population growth on equality: (*a*) the labour force grows in relation to the stock of capital and land and is therefore remunerated less, especially if the elasticity of substitution is low; (*b*) children are substituted for other forms of investment, leading to slower production growth and relatively higher returns to capital; and (*c*) there is a substitution of quantity (of children) for quality, which increases the returns to quality and thus promotes wage differentials (in most empirical applications, one should read "education" for "quality").

The essence of the neo-classical model is that it describes a complete system, so that tests of these predicted partial relationships on their own are of rather dubious value. On the whole, the few attempts to build comprehensive systems models on a neo-classical foundation have not found strong links between population growth and income distribution,[37] although stronger links have been found between income distribution and migration.

Institutional models

For many analysts, "institutions" form, in Blaug's terminology, part of the "defensive belt" around their core (usually neo-classical) model. This class of models includes those in which certain wage or price differentials are set conventionally, which is true for many models of urban labour markets in which "modern" sectors are distinguished from "traditional" or "informal" sectors. In such models, the wage differential may arise from (*a*) turnover considerations; (*b*) a tendency for paternalist welfare objectives to be accepted by modern-sector enterprises; (*c*) indirect effects of international labour markets on wage levels; (*d*) minimum wage legislation; (*e*) the impact of "ability to pay"; or (*f*) other factors affecting only the modern sectors. In contrast, entry into informal sectors is usually assumed to be free, with wages set by the market or by rural alternatives.

Many other models incorporate constraints on behaviour, various differentials and other exogenous social institutions. These factors and a variety of other features of labour markets are usually called upon to provide realism in models for which market response and outcome is the basic underlying hypothesis. As a result, the expected effects of population growth in such models are partially diluted versions of those in the pure neo-classical model; additional relationships with population growth depend upon the precise institutions invoked. In dualistic labour-market models, population growth might drive down wages in the informal sector while leaving modern-sector wages unchanged, thus increasing inequality. If the wage differential is fixed, however, effects on inequality would arise only through changes in the overall wage share, through the usual neo-classical mechanisms.

Structural approaches

A number of models of labour use, production and distribution do not rely primarily upon the market. This approach is characteristic of segmentation and related models, in which the allocation of persons to jobs and of incomes to those jobs is part of a process of social control rather than a question of optimal resource allocation. Productivity is a technological and/or social

characteristic of jobs, not of the persons who occupy them.

The perspective discussed below is very different from that in the neo-classical model: (*a*) rigidity rather than fluidity is the rule; and (*b*) the labour market is segmented on the basis of sex, race, education, migrant status or any other usable characteristic. These characteristics are then used to screen persons for jobs, regardless of whether the characteristic is relevant to the performance of the job. In this procedure, the labour force is divided into groups with conflicting interests, permitting relatively high wages to be paid to more powerful groups of workers, without this leading to higher wages for weaker groups. The result is a hierarchized and differentiated employment structure, with considerable wage differentials across sectors and groups of workers and a relatively smaller wage share as a whole. Different underlying models of production and distribution can lead to a labour-market theory of this type. For some, segmentation in terms of "primary" and "secondary" sectors or in terms of "static" or "progressive" jobs derives mainly from the inner logic of production technology. For others, segmentation is a manifestation of the social relations of production under capitalism and reflects the interests of capitalists in maximizing the share of profits.[38]

In these models, population growth is of importance mainly in so far as it facilitates control of the labour force. For example, a rapid influx of inexperienced and ill-trained youths in labour markets, due to high rates of population growth, might facilitate the lowering of overall wage levels; or lower wages might be paid to this group, using age as a basis for segmentation. In the latter case, higher population growth would be associated with greater wage inequality; and in the former, with lower remunerations for labour in relation to other factors. On the other hand, declining fertility might lead to rapid growth of an unorganized and relatively exploitable female labour force. However, as in the case of the subsistence models, the basic pattern of inequality is shaped by economic forces and population growth is a secondary, facilitating phenomenon.

In all these models, a primary factor is the relative rates of growth of different segments of the population. The usual expectation is that the group growing most rapidly is likely to be disadvantaged; if this group is relatively poor, inequality will increase. A simple macro-economic model with this assumption and this result has been presented.[39] In practice, however, neither estimated fertility nor mortality relationships entirely support this position. It is true that white-collar workers and other upper classes generally tend to have low fertility; but persons without assets also are frequently found to have lower than average fertility, for example, in India,[40] Indonesia[41] and Kenya.[42] Moreover, a positive relation between land holding and fertility is often reported.[43] In addition, mortality tends to be higher among the poor, so that population growth may be distinctly lower than average among the poorest groups. In such a situation, population growth may be concentrated among groups who own enough land so that subdivision of their holdings is not in itself a primary cause of landlessness (although landlessness may at the same time be increasing for other reasons). The effects of population growth on inequality through this relationship are then far from obvious.

The last sentence might be considered to summarize the discussions in this chapter. Beginning from one or another of the four classes of models outlined above, it is possible to develop general propositions about the impact of population growth on inequality in specific economic and cultural settings. As has been shown, however, empirical analysis of such relationships is difficult; and debate tends to centre on the merits of the assumptions of the underlying model, rather than on directly testing its predictions. Perhaps as a result, there does not appear to be much empirical support, other than from international cross-sectional analyses, for the position that population growth leads to greater inequality.

Obvious reasons exist for expecting such relationships to be present in certain situations. In particular, some of the conceptual and methodological issues raised in section C identify aspects of inequality that are directly related to demographic change; these aspects should, if possible, be separated out for analytical purposes. Age distributions, the distribution of access to population-related public services, the satisfaction to parents from childbearing, unequal risks of mortality and the other factors there discussed will often be relevant for analysis of interactions between population growth and inequality. Apart from these specific topics, interesting though they may be, the literature, national or international, does not provide a convincing demonstration that the effects of population growth on inequality are important. It will, perhaps, be most productive if future research in this area is concentrated on the multiple roles of population growth in the transformation of systems of production rather than on direct relations between population growth and inequality. Surely these transformations are the key to understanding the changes in inequality, which can then be traced in part — and indirectly — to population growth. Only in specific economic, social and historical contexts will it be possible to answer the questions whether these links are strong and whether they are positive or negative.

NOTES

[1] Gerry B. Rodgers, "Migration and income distribution", World Employment Programme research working paper WEP 2-21/WP.108, restricted; Geneva, International Labour Organisation, 1981 (mimeographed).

[2] M. S. Ahluwalia, "Inequality, poverty and development", *Journal of Development Economics*, vol. 3, No. 4 (December 1976); Robert Repetto, "The interaction of fertility and the size distribution of income", *Journal of Development Studies*, vol. 14, No. 4 (July 1978), pp. 22-39; Robert Repetto, *Economic Equality and Fertility in Developing Countries* (Baltimore, Md., Johns Hopkins University Press, 1979); D. Morawetz, "Basic needs policies and population growth", *World Development*, vol. 6, Nos. 11-12 (November-December 1978); Naohiro Ogawa, "Fertility control and income distribution in developing countries with national family planning programmes", *Pakistan Development Review*, vol. XVII, No. 4 (Winter 1978), pp. 431-450; A. T. Flegg, "The role of inequality in the determination of

birth rates", *Population Studies*, vol. 33, No. 3 (November 1979), pp. 457-477; Gerry B. Rodgers, "Income and inequality as determinants of mortality: an international cross-section analysis", *Population Studies*, vol. 33, No. 2 (July 1979), pp. 343-351; R. S. Moreland, *A Demographic-economic Model for Developing Countries: Bachue-International* (Geneva, International Labour Organisation, in press); and Calman R. Winegarden, "A simultaneous-equations model of population growth and income distribution", *Applied Economics*, vol. 10, No. 4 (December 1978), pp. 319-330, and "Can income redistribution reduce fertility?", in *Fertility in Developing Countries: An Economic Perspective on Research and Policy Issues*, G. Farooq and G. Simmons, eds. (Geneva, International Labour Organisation, in press).

[3] Tables 68 and 69 do not include mortality functions, which are more straightforward. Most authors report several specifications, so the summary in the table gives the main tendencies from reported results.

[4] The definition of the education variable is also relevant. See Gerry B. Rodgers, "Population growth, poverty and inequality in an international perspective", World Employment Programme research working paper, restricted; Geneva, International Labour Organisation, 1982 (mimeographed).

[5] Bryan L. Boulier, "Income redistribution and fertility decline: a skeptical view", in "Income distribution and the family", Yoram Ben-Porath, ed., *Population and Development Review*, supplement to vol. 8 (1982), p. 169.

[6] *Ibid.*, 170.

[7] Rodgers, "Population growth, poverty and inequality . . .".

[8] Details of this file are reported in R. Rietschin, "Les determinants de la satisfaction des besoins essentiels et leur impact", World Employment Programme research working paper WEP 2-32/WP.24, restricted; Geneva, International Labour Organisation, 1981 (mimeographed). Results of another analysis using the file are given in G. Sheehan and M. Hopkins, *Basic Needs Performance* (Geneva, International Labour Organisation, 1979).

[9] Ester Boserup, *Population and Technological Change: A Study of Long-Term Trends* (Chicago, Ill., University of Chicago Press, 1981).

[10] This statement does not imply that the model is free of problems involving correlation of residuals. Indeed, there is bound to be some auto-correlation. However, simultaneous-equation techniques are not appropriate to deal with this problem.

[11] A variety of other measures are possible, but this choice was convenient for subsequent analysis of poverty. Some conceptual problems are discussed in the next section.

[12] *Loc. cit.*

[13] See Richard Anker, "An analysis of fertility differentials in developing countries", *Review of Economics and Statistics*, vol. LX, No. 4 (February 1978).

[14] Rodgers, "Income and inequality as determinants of mortality . . .".

[15] D. Wheeler, "Basic needs fulfilment and economic growth", *Journal of Development Economics*, vol. 7 (1980).

[16] Adult equivalents are estimated as adults + 0.5 (children). Details of the specification and estimation of the functions of the aggregate model are given in Rodgers, "Population growth, poverty and inequality . . .".

[17] Simon Kuznets, "Demographic aspects of the size distribution of income: an exploratory essay", *Economic Development and Cultural Change*, vol. 25, No. 1 (October 1976), pp. 1-94; and United Nations, *Some Socio-demographic Correlates of Income Inequalities: A Case Study of the Philippines* (ST/ESA/SER.R/39).

[18] T. Paul Schultz, "Age of individuals and family composition and income distribution", in *International Population Conference, Manila 1981; Solicited Papers* (Liège, International Union for the Scientific Study of Population, 1981), vol. 3, pp. 23-48.

[19] Susan Greenhalgh, "Income units: the ethnographic alternative to standardization", in "Income distribution and the family", Ben-Porath, ed., pp. 70-91.

[20] Schultz, *loc. cit.*

[21] R. O. Wada, "Impact of economic growth on the size distribution of income: the post-war experience of Japan", World Employment Programme research working paper WEP 2-23/WP.37, restricted; Geneva, International Labour Organisation, 1975 (mimeographed).

[22] Morton Paglin, "The measurement and trend of inequality: a basic revision", *American Economic Review*, vol. 65, No. 4 (September 1975), pp. 598-609.

[23] René Wéry, "The demand for education in the Philippines", World Employment Programme research working paper WEP 2-21/WP.51, restricted; Geneva, International Labour Organisation, 1977 (mimeographed).

[24] This aspect is clearly brought out in Simon Kuznets, *Recent Population Trends in Less Developed Countries and Implications for Internal Income Inequality*, Economic Growth Center Discussion Paper No. 21 (New Haven, Conn., Yale University, 1977).

[25] Richard J. Blandy, "The welfare analysis of fertility reduction", *Economic Journal*, vol. 84, No. 333 (March 1974).

[26] Mahmood Mamdani, *The Myth of Population Control: Family, Caste, and Class in an Indian Village* (New York and London, Monthly Review Press, 1972).

[27] See, *inter alia*, Farooq and Simmons, *op. cit.*

[28] Robert Repetto, "A reply", in "Income distribution and the family", Ben-Porath, ed., pp. 174-178.

[29] A similar comment may be made about mortality.

[30] M. J. D. Hopkins, G. B. Rodgers and R. Wéry, "Evaluating a basic-needs strategy and population policies: the BACHUE approach", *International Labour Review*, vol. 114, No. 3 (November-December 1976), pp. 261-279.

[31] See, for example, Göran Djurfeldt and Staffan Lindberg, "Family planning in a Tamil village", in *Poverty and Population Control*, Lars Bondestam and Staffan Bergström, eds. (London, Academic Press, 1980), pp. 103-123.

[32] For a description of such a system in South Asia, see Mead Cain, "Risk and insurance: perspectives on fertility and agrarian change in India and Bangladesh", *Population and Development Review*, vol. 7, No. 3 (September 1981), pp. 435-474.

[33] D. H. Penny and M. Singarimbun, "Population and poverty in rural Java: some economic arithmetic from Sriharjo", Ithaca, N.Y., Cornell International Agricultural Development Mimeograph, No. 41, 1973.

[34] Clifford Geertz, *Agricultural Involution: The Processes of Ecological Change in Indonesia* (Berkeley, Cal., University of California Press for Association of Asian Studies, 1963).

[35] Daniel Thorner, Basile Kerblay and R. E. F. Smith, eds., *A. V. Chayanov on the Theory of Peasant Economy* (Homewood, Ill., R. D. Irwin for American Economic Association, 1966).

[36] K. L. Michaelson, *And the Poor Get Children: Radical Perspectives on Population Dynamics* (New York/London, Monthly Review Press, 1981).

[37] See, for example, Irma Adelman and Sherman Robinson, *Income Distribution Policy in Developing Countries: A Case Study of Korea* (Stanford, Cal., Stanford University Press for the World Bank, 1978) (this publication refers to the Republic of Korea).

[38] Martin Carnoy and others, *Can Educational Policy Equalise Income Distribution in Latin America?* (Westmead, England, Saxon House on behalf of the International Labour Office, 1979).

[39] M. S. Ahluwalia and Hollis B. Chenery, "A model of distribution and growth", in *Redistribution with Growth: Policies to Improve Income Distribution in Developing Countries in the Context of Economic Growth*, Hollis B. Chenery and others, eds. (London, Oxford University Press, 1974).

[40] Djurfeldt and Lindberg, *loc. cit.*

[41] Penny and Singarimbun, *op. cit.*

[42] Richard Anker and James C. Knowles, *Fertility Determinants in Developing Countries: A Case Study of Kenya* (Liège, Ordina Editions, 1982).

[43] Penny and Singarimbun, *op. cit.*

XV. INTEGRATION OF DEMOGRAPHIC FACTORS INTO DEVELOPMENT PLANNING AND PROGRAMMES*

The important role of population in development and the need to integrate demographic factors into development planning are explicitly affirmed in the World Population Plan of Action. The Plan recommends that "population measures and programmes should be integrated into comprehensive social and economic plans and programmes and this integration should be reflected in the goals, instrumentalities and organizations for planning within the countries".[1] The ultimate goal of development, as recognized in the Plan, is not only to accelerate economic growth but to reduce disparities between the social classes with respect to education, health and other social services. Emphasized also is the need to formulate and implement adequate population policies as an integral part of national development strategy, taking into account the interrelations between social and economic variables and demographic factors.

In carrying out these recommendations, the United Nations has expanded its technical co-operation activities with the countries concerned in diverse population and development fields, including studies of the interaction between social, economic and demographic variables, formulation and implementation of policies, integration of demographic factors into the planning process, training of national staff and improvement of the data base and institutional arrangements.

A. National problems and policies

The close relationship between population and social and economic development is recognized in most countries: the population not only benefits from development programmes but, as the provider of human resources, is an essential component of the development process. The interaction between structural change in the population and such development also is generally recognized at the aggregate, regional and sectoral levels. In many countries, however, it has not yet been possible to take this factor fully into account in development planning.

In many developing countries, structural change in population trends has not encouraged economic development and often has created serious obstacles to the achievement of national development objectives. Rapid population growth, particularly in the least developed countries, has been directly associated with a host of problems, including unemployment, appalling housing conditions and health hazards. Even in countries in which the rate of economic growth has significantly increased, income gains per capita have been relatively modest because of a high population growth rate. In part as a result of demographic trends, economic growth has often increased the share of total income going to the already privileged population segment.

Recognizing this problem, increasing numbers of countries are giving social objectives high priority in their national development plans. Rather than limiting the development objectives to economic growth and to raising income per capita, many Governments have been concentrating on reducing social injustices, eradicating poverty and improving the level of living of each person and the entire population.

In regional development, serious problems have also been caused by internal migration, often resulting from imbalances between the spatial distributions of population and resources. Rural poverty and underemployment, combined with urban crowding and unemployment, have been closely associated both with rapid population growth and development and with unbalanced spatial distribution and undesirable rural-urban migration trends. In many developing countries, urban development and industrialization have led to high concentrations of economic activities in and around well-established areas, encouraging rural-urban migration and causing pollution and unemployment in already overcrowded areas. Although migration may provide the receiving areas with the labour force needed for their development, it may also contribute to an increase in income disparities between rural and urban areas.

Changes in the size and structure of a population are generally recognized to influence the development of certain planning sectors, for example, in calculating requirements in health services, education, food, housing and social welfare. Although progress has been made in planning, especially with regard to health, education and manpower, in most cases, demographic factors have not been incorporated as an integral part of overall development planning in a broad multidisciplinary context. Conversely, efforts to study the effects of sectoral development on population change have fallen far short of policy requirements. The impact of development in health, education and food-supply on mortality reduction and the effect of urban housing and social welfare programmes on rural-urban migration trends need to be studied.

When population trends were not in harmony with development policies and goals, many Governments have considered it necessary to modify those trends with new population policies. Too often, however, such poli-

* Prepared by the Department of Technical Co-operation for Development of the United Nations Secretariat and the Population Division of the secretariat of the Economic and Social Commission for Asia and the Pacific.

cies have been formulated and implemented in isolation rather than as an integral part of overall development strategy and in accordance with development policies. Frequently, lack of knowledge of the interactions between demographic and socio-economic factors, as well as insufficient expertise, resources and institutional arrangements in the field, have caused or aggravated shortcomings in achieving integrated population policies and the integration of demographic factors in development planning. Although awareness of demographic problems has been increasing in most countries, the formulation and implementation of national projects and programmes to solve these problems have often lagged badly. As a result, since the World Population Conference in 1974, Governments have requested assistance in the field of population and development.

To provide the basic input for formulating population policies and integrating demographic factors into development planning, numerous research studies on the interrelations between demographic variables and socio-economic factors were undertaken during the past decade. The first task in population and development projects has usually been a general overview and examination of the nature of the relationships between demographic, social and economic factors, including an assessment of country knowledge in this field. In general, these studies were carried out on the basis of available data and information, mostly from past population censuses, socio-economic surveys and registration systems of various government offices. Such studies may contribute to the assessment of country problems and needs with regard to population and development and to the identification of the specific activities required.

Because migration is closely related to many development processes and objectives, a matter of particular concern to many Governments has been lack of knowledge concerning migration patterns. Emphasis has therefore been placed on analysing internal-migration patterns and their causal interrelations with development factors. Important areas of study are the actual and potential level of development of resources, the generation of employment and the development of education and health services, in both departure and destination areas. Other socio-economic factors directly linked to the individual, household or community, such as household income, profession, marital status, religion, traditions and beliefs, are also included in these studies. The importance that Governments attach to each factor depends upon its knowledge of migration patterns and the availability of data and resources, as well as upon the main study objectives.

Most migration studies have been carried out on the basis of data provided by population censuses or national migration surveys, or from *ad hoc* surveys in selected areas, using a limited number of specific variables. These surveys were designed for in-depth studies, especially at the community and village levels.

Of concern also to most developing countries is the interrelation between migration and rural and urban development. Mass rural-urban migration not only creates overcrowding, unemployment and pollution in the cities but deprives rural areas of a young, active labour force for their potential development. For a number of Governments, particularly those with a large proportion of nomads, the movement of nomadic populations also is of concern. The estimation and preparation of subnational projections of basic requirements for food and for educational and health services are complicated by this constant movement.

Although most developing countries assigned a relatively low priority to international migration during previous decades, it has begun to cause concern to an increasing number of Governments. International immigrants have exerted a great impact not only on demographic structure but on the social and economic situations of host countries. Many Governments are conscious of the need to understand more fully the impact of immigration and to consider it in planning development. However, no extensive studies on this subject were carried out during the past decade. The lack of reliable data and the difficulty of achieving full participation and co-ordination between the countries concerned have led to a scarcity of knowledge about international migration, particularly in relation to social and economic development, in both departure and arrival countries.

The significant association between fertility and mortality levels and socio-economic conditions is recognized in many countries. Studies have usually been undertaken as research components in the context of maternal and child health and family planning programmes or of population policy and development planning. In general, these studies have shown that improvements in living conditions, educational levels and income are significantly correlated with reductions in fertility and mortality levels.

During the past decade, studies of mortality patterns and their interrelations with socio-economic factors also were neglected by many countries, perhaps because mortality levels had been declining in many parts of the world. In some countries of Africa, however, high mortality levels — particularly those of infant mortality — continue to cause concern. Some countries of the Sahel area have conducted studies on the relationship between infant mortality patterns and such socio-economic factors as education, nutrition, economic activities, employment status and household income.

In some countries, studies on the interrelations between population factors and development have concerned only the impact of population size and age/sex distribution on consumption patterns and the development of country resources. This type of study usually leads to the projection of consumption needs of the population, which have been, in many developing countries, basic elements used in formulating policies on population growth.

During the past decade, many Asian countries carried out studies on the spatial distribution of population and development of resources at both the national and regional levels. These efforts led to the adoption of policies calling for the reduction of population growth through family planning programmes.

Although the interrelations between fertility behaviour and women's conditions and participation in the labour force have been analysed in most population and development projects, few projects have been designed specifically to study the problems of women and their role in development.

For many Governments, population policies are no longer limited to the reduction of population growth but are conceived of in relation to social and economic development. Thus, studies of the interaction between population change and socio-economic factors have provided basic data for the formulation of population policies. Determining the potential impact of alternative population policies on social and economic development objectives has also often been part of efforts to formulate improved policies in the context of development strategy.

During the past decade, the population policies most frequently formulated and implemented concerned fertility, mortality, population growth and internal and international migration. Most countries of Asia have adopted policies directed to reducing fertility and population growth; and in most cases, these policies have been well implemented. In Africa, Latin America, Western Asia and other regions of Asia, interest in migration policies has been evinced. Most countries are still at the stage of conducting studies and formulating policy, but some have actually implemented migration policies, such as population resettlement and reduction of rural-urban migration, through social and economic decentralization and the creation of new development zones in rural areas.

Many countries have recognized the need to strengthen existing institutional arrangements for population policy formulation and to integrate better demographic factors into the development planning process. Several national population commissions have been established, most of them at the cabinet level. Their main functions are to define adequate population policies in the context of social and economic development in order to co-ordinate the implementation of those policies as well as that of other population-related activities.

Population units, which usually constitute the technical secretariat of the national population commission, have also been established. In certain countries, particularly where there is no national population commission, population units are often located in the Ministry of Planning or the Ministry of Social Development. With the technical co-operation of the United Nations, more than 15 units or similar institutions have been established to undertake research for formulating population policy and integrating demographic factors into national development planning.

Activities to integrate demographic factors into development planning depend a great deal upon studies of the interaction between population change and social and economic factors and also upon the results of specific research projects for population policy. In general, very few country projects have been designed specifically for the integration of demographic factors into planning as such. This subject usually has been part of a larger population and development study project or part of the activities of the national population units.

Large-scale demographic-economic models have generally been considered impractical for diagnostic and predictive purposes because they involve many variables and assumptions. In many developing countries, however, demographic factors have been successfully incorporated in small-scale development models and some submodels have been used to explain the interrelation between certain demographic variables and development factors and the effect of population policies on development planning objectives. In Bolivia, for example, efforts are being made to integrate such demographic variables as population growth, size and sex/age structure of family and urban/rural distribution in household consumption models. The use of other submodels has also been explored to examine the impact of population policies on development programming.

Although research in this field has been hindered by the paucity of reliable data on population and development, few projects have been designed specifically to collect demographic, social and economic data, apart from particular studies. In other words, improvement in the quality of data has been increasingly linked with the objectives of specific studies. For example, numerous *ad hoc* surveys have been designed to collect data needed for such studies. Improvement in the quality of information on population and development has also been sought through the establishment of data bases, including the standardization of definitions and concepts, the adjustment of differences due to coverage and time reference and the correction of errors.

Although the role of population in development has been fully recognized and some countries have significantly improved their knowledge of the interaction between population change and development, many others are still at the exploratory stage. In these countries, research and studies in this field have either been lacking or have not been directed to understanding the complex interaction between demographic and development factors with a view to formulating population policies and integrating demographic factors into development planning. In many countries, particularly in Africa and Western Asia, population activities are still limited to the collection and analysis of demographic data. Among the problems that must be solved are the lack of interest of planners in demographic studies, the lack of local expertise and experience in the field of population and development, and the limitations of resources. Moreover, the importance of formulating population policies has not been well understood by certain planners and policy-makers. Therefore, population policy research and formulation have been left to the discretion of demographers and statisticians. Another obstacle has been the lack of co-ordination among the government offices involved.

Some countries that have taken action to control or modify demographic trends, especially internal migration, have failed to achieve their objectives for lack of

attention to the demographic impact of such socio-economic factors as religion, tradition, culture and ethnicity. Specifically, programmes to decentralize development, with the goal of reducing disparities in income, education and employment among social groups, often create new problems of overcrowding and unemployment because the population policy relating to migration has not been well defined or formulated on the basis of studies of the impact of development on migration behaviour.

Where family planning programmes have been implemented to curb population growth, the social and economic aspects of these programmes and their impact on development have often been neglected. Research on the effect of family planning programmes on social, cultural and economic conditions and on the potential for development of resources in terms of labour force supply, employment and consumption requirements would provide valuable information for development planning and would facilitate the integration of those programmes into the national development plan.

Progress in the integration of demographic factors and population policies into the development planning process has been rather slow. In many countries, the demographic studies were not designed for development planning purposes, simply because the demographers who conducted them were not familiar with the process and techniques of development planning. Furthermore, some planners have maintained that the role of population in development planning should be confined to the impact of population size and growth. In some countries, the development strategy has over-emphasized economic growth and neglected to take into account the problems and needs of the various population segments.

Although the importance of adequate institutional arrangements for the formulation of population policies and the integration of population factors into the development process has been generally recognized and some progress has been made in this respect, such arrangements are still lacking in a number of developing countries. The respective roles of government institutions for population research and study and for the formulation of population policies often have not been well defined. In a number of developing countries, differences still persist among the offices of statistics, planning, labour, health and social welfare concerning responsibility for supervising population research activities, because no central government institution exists to co-ordinate these activities. Many Governments still assign relatively low priority to the formulation of population policy and the establishment of related institutional arrangements. In addition, the legislative procedure necessary to establish such institutions is delayed because a number of Governments still view population matters as family planning.

Although a very large number of national staff were trained during the past decade, many countries continue to lack expertise and experience, particularly in population policy and development planning. The assistance of international experts and consultants will be required for at least some time, not only to undertake research but to continue the training of local personnel — a long process — so that projects may be continued satisfactorily by national staff after the international staff have completed their assignments and departed.

B. Institutional capacity in population and development planning

More and more countries, particularly in Asia and Latin America, are taking steps to establish institutional arrangements for consideration of population elements in formulating social and economic policies and development plans. In other countries, demographic variables are little considered in national planning; they continue to be treated as exogenous planning components. Furthermore, to a great extent, population policies and targets continue to be adopted independently of social and economic policies and the major socio-economic aspects of development plans. In order to achieve an integrated approach to population, human resources and development planning, there must be a continuous long-term effort and much hard work in such areas as data collection, processing and analysis, and policy research. For this purpose, there is a need to create a viable national institutional capacity through the establishment of a population planning unit. The substantive content of the work programme of such units would, of course, vary from country to country; but they should be staffed with qualified persons from relevant disciplines, at high levels within the administrative structure of national planning bodies.

Extremely complex problems arise concerning the relations of population and human resources with population and development interactions, and they have major implications for national policy goals with respect to population and development. Even though many of the effects of population dynamics on development are long term and not highly visible, the need for relevant research on population-related issues, as an element in national policy-making and socio-economic planning, has been clearly brought out in empirical studies.

Obviously, the requirements for dealing with problems related to population and development vary from country to country, depending upon the unique demographic, social, economic and political conditions. It is now well recognized that population programmes designed to deal with only one issue are not effective and that a broader approach to the adoption of population policies and development planning strategies is required. Population problems relate not only to population growth but to the prevailing levels of mortality and to population movements, particularly rapid rural-urban migration and international migration. For comprehensive development planning, these problems must be considered in their broad perspective.

C. Integration of population and development in the region of the Economic and Social Commission for Asia and the Pacific

In the study of population, the two-way interrelations between population and development variables were

recognized at an early stage. Various aspects of population affect the development process and its manifestations and are simultaneously affected by them. Since population and development are interconnected, it has been increasingly recognized that the two could be dealt with in a more unified fashion. This position was reaffirmed in the World Population Plan of Action adopted by the World Population Conference at Bucharest in 1974. "An integrated approach to population and related development issues" was also accepted as the theme of the Third Asian and Pacific Population Conference in 1982:

> "The Conference aimed to further understanding of the two-way interrelationships between population and development and to stress the need to take into full consideration relevant population factors in the formulation and implementation of policies and programmes for achieving overall national development goals, and recognize, in particular, the influence of development on population dynamics."[2]

Although the idea of integrating population and development issues is attractive, it raises problems at both the formulation and the implementation stages. The very concept of integration has been variously defined in different contexts to denote co-ordination or collaboration or a complete merger of demographic and developmental approaches. However, integration is generally understood to connote the establishment of linkages between interdependent and interactive sectors of population and development programmes.

Even though the two-way relationship between population and development issues is recognized, the elements or aspects of both population and development considered suited for integration would depend upon the circumstances prevailing in each country. The population aspects include size, density, growth rate, fertility, mortality, age structure, spatial distribution, internal migration, urbanization and the growth of cities, and international migration. The majority of the countries in the region served by the Economic and Social Commission for Asia and the Pacific (ESCAP) are concerned about their rapid rates of population growth; and, more specifically, programmes related to family planning continue to be of vital importance. However, almost every population variable has a vital link with the development process and has assumed importance in one country or another at certain stages of their development. Development issues that have received special attention in this context are maternal and child health care, reduction of infant and child mortality, provision of nutrition to children, education, rural development programmes, population redistribution, increased participation of women in development and community participation in development programmes.

Because the integration of population and development issues depends upon the population and development situation in each country and must be carried out within the existing socio-economic and cultural framework, there can be no uniform prescription for it. In the ESCAP region, the majority of the countries have been concerned with population growth and high fertility. In more recent years and for some countries, however, fertility has fallen very significantly and concerns about spatial distribution and international migration have assumed greater importance.[3]

Vigorous attempts have been made to co-ordinate family planning programmes with maternal and child health care, nutrition programmes, social welfare and rural development schemes. It is becoming increasingly evident that even though family planning programmes have had an independent effect in lowering fertility rates in many countries, their impact tends to be greater when socio-economic development trends also are conducive to fertility decline.

According to one review,[4] family planning and other government programmes appear to have played a major role in all the recent sharp declines in fertility among rural populations in Asia. In this situation, therefore, the integration of population and development programmes is likely to provide greater potential for success in reducing fertility. Apart from this favourable trend, however, the search in recent years for specific development policies that can be expected to influence population growth rates has failed to produce a really actionable list of policies.[5] As the review of the situation in Asia concludes:

> "There is a long way to go before population is fully integrated into development planning in the region, if 'full integration' is taken to mean that effects of economic policies and trends on population trends (and vice versa) are given close consideration."[6]

The available evidence does suggest that progress has been made since the Second Asian Population Conference in integrating population factors into development planning. The planning structures developed to bring about this integration have varied among countries in the ESCAP region. For instance, Bangladesh, Pakistan and Sri Lanka established a population division at the central ministerial level. In other countries, including Burma, China, India, Maldives, Nepal and the Philippines, a population commission, leading group or department in a central ministry was established. In Indonesia, Malaysia and Singapore, high-level national family planning/population boards were created; and in the Republic of Korea and Thailand, committees on population policy direct the population programmes. In still other countries, the central planning office was made responsible for population policy.

Nevertheless, progress has been rather slow, owing both to the limited knowledge of diverse population processes and to the likelihood that planning structures and approaches had acquired rigidities that precluded taking into account the needs of population planning. Although the importance of population factors to development planning has been recognized, the interrelations between population and development were still not adequately appreciated. The entire field of integration is still at an experimental stage and its success in every situation cannot be guaranteed. However, the creation

of a strong population planning body close to the centre of governmental power and supported by adequate resources could provide the necessary impetus for the successful integration of population and development programmes. This action should ensure that economic growth, social development, family welfare and family planning programmes shall be mutually supportive.

Summary

During the next decade, demographic patterns and trends are likely to continue to exert strong pressure on national development. For example, in most developing countries, increased internal migration may very well increase the imbalance between the spatial distributions of population and labour force and of resources. High levels of rural-urban migration will continue to aggravate housing shortages, unemployment and overcrowding in large cities. It is also likely that disparities, in terms of income, employment and living and working conditions, among countries, particularly between the least developed and the developed, will encourage international migration and may create a number of problems in both the countries of departure and the receiving countries.

Insufficient education, low income and the absence of basic health care and other necessities, such as drinking-water and food, will slow mortality decline — in particular, infant mortality decline — in many countries in Africa, Latin America and Western Asia.

Rapid population growth continues to exert great pressure on the development of a number of countries, especially in Asia, because of their large population size and the relatively low resource development potential. During the next decade, countries should undertake studies of the interactions between family planning programmes as a means of curbing population growth and social and economic development factors, for example, education, participation in the labour force, household income and development of resources.

There is an increasing need to formulate adequate population policies based on national development priorities, which take into account the interaction between population change and socio-economic variables. More priority should be given to the establishment of high-level government institutions, such as national population commissions, to define adequate population policy in the context of national development planning. Population policy and development units also should be set up to provide the national population commissions with technical advice and basic information through research and studies. These units could also provide technical advice to ministers of planning and other government departments on the integration of demographic factors and population policies into development programmes.

Notes

[1] *Review and Appraisal of the World Population Plan of Action* (United Nations publication, Sales No. E.79.XIII.7), annex I, para. 95.

[2] *Report of the Third Asian and Pacific Population Conference*, Colombo, Sri Lanka, 20-29 September 1982, p. 1.

[3] United Nations Secretariat, "Integration of population and development policies: a comparison of the developing regions of the world", special paper No. 12 prepared for the Third Asian and Pacific Population Conference, p. 14.

[4] Gavin W. Jones, "Review of the integration of population and development policies and programmes in Asia" (POP/APPC.3/BP/1), background paper prepared for the Third Asian and Pacific Population Conference, pp. 8-9.

[5] *Ibid.* p. 10.

[6] *Ibid.* p. 14.

XVI. ASPECTS OF POPULATION AND DEVELOPMENT IN THE REGION OF THE ECONOMIC COMMISSION FOR EUROPE*

During the decade since the adoption of the World Population Plan of Action and in part as a result of it, the importance of the interrelations between population and development, including resources and the environment, has become generally accepted. The broad range and complex nature of the problems involved have also become apparent as interest has grown and research has rapidly increased. One aspect of the problem, that of the economic and social implications of demographic trends and related policy issues in the region of the Economic Commission for Europe (ECE), is dealt with here.

The problem of population and development interrelations in this region differs from the type found in the developing countries. The most common characteristics of countries in the ECE region are low and declining population growth and comparatively high levels of economic and social development. Thus, for most, but not all, of these countries, a primary question relating to population and development concerns the economic and social consequences of slow and declining demographic growth associated with progressive aging of the population.

Limitations of space make it impossible to discuss in detail even one relatively circumscribed aspect of the problem. The purpose here, after a brief summary of the demographic background, is to provide a broad review of the knowledge in this field and to point out the major substantive and policy issues.

A. Demographic background

Since the beginning of the 1970s, the primary population trend in the ECE region has been the continuing long-term decline in growth to levels well below those for the rest of the world. The average annual population growth rate during the 1970s was about 0.8 per cent,[1] which represented between one third and two fifths of the rate for the rest of the world. Even in the relatively short time-span of one decade, this rate implies that the share of the region's population in the world total declined from 26.1 to 23.5 per cent between 1970 and 1980. The trend during that period was, however, only a phase in the long-term decline of the population growth in the region as a whole. The annual rate of 0.8 per cent compares with one of somewhat less than 1.1 per cent during the 1960s and with a projected growth of just over 0.6 per cent for the 1980s. Estimates and projections over a longer period reveal the same pattern: between 1950 and 2020, population growth in the region has been estimated and projected to fall from somewhat over 1.3 per cent for the 1950s to barely 0.4 per cent between 2010 and 2020, a reduction by about two thirds from the original level (see table 71).

Two additional aspects should be mentioned before the economic and social implications of those trends and the policy responses to them are discussed. From a world-wide perspective, the ECE region appears, with a few exceptions, to be demographically homogenous. From a regional perspective, however, substantial differences are found in both past and prospective population trends. When countries are grouped in broad classes as a function of current growth rates, a considerable range is observed. During the period 1975-1980, the country groups, according to the average annual rate of population growth, were:

(*a*) *Under 0.5 per cent, 15 countries:* Austria; Belgium; Cyprus; Denmark; Finland; France; German Democratic Republic; Germany, Federal Republic of; Hungary; Italy; Luxembourg; Norway; Sweden; Switzerland; United Kingdom of Great Britain and Northern Ireland;

(*b*) *From 0.5 to 0.99 per cent, 11 countries:* Bulgaria; Czechoslovakia; Greece; Malta; Netherlands; Portugal; Spain; Romania; Union of Soviet Socialist Republics; United States of America; Yugoslavia;

(*c*) *From 1.0 to 1.5 per cent, 4 countries:* Canada; Iceland; Ireland; Poland;

(*d*) *Over 1.5 per cent, 2 countries:* Albania; Turkey.

At one extreme are the countries with near-zero growth and at the other those with annual growth rates of 2.5 per cent. Certain geographical patterns also appear in the growth trends. All but four Western European countries[2] fall within the low-growth class (under 0.5 per cent). Half of the Eastern European countries and the USSR are in the intermediate-growth group (from 0.5 to 0.99 per cent). Furthermore, the growth rate for Poland is at the margin of the upper limit of this group. Most of the Southern European countries also are in the moderate-growth group. As concerns Northern America, population growth in the United States during the period covered was in the higher range of the intermediate group, but that of Canada was substantially higher. The demographic characteristics of Albania and Turkey more closely resemble those of developing countries than the trends of countries in the ECE region. Lastly, the position of both Iceland and Ireland differs substantially from that of the other countries in Western Europe.

These largely geographically determined differences in growth patterns imply significant variations in population growth among the ECE subregions, which are

* Prepared by the Economic Commission for Europe.

TABLE 71. POPULATION GROWTH, REGION OF THE ECONOMIC COMMISSION FOR EUROPE, BY SUBREGION, 1950-2020

(Percentage)

Region and Subregion	*Average annual growth rate*						
	1950-1960	*1960-1970*	*1970-1980*	*1980-1990*	*1990-2000*	*2000-2010*	*2010-2020*
Total region	1.32	1.07	0.80	0.73	0.61	0.46	0.41
Western Europe[a]	0.76	0.79	0.34	0.09	0.07	−0.08	−0.12
Southern Europe[b]	1.45	1.38	1.52	1.38	1.19	0.94	0.84
Eastern Europe and USSR	1.48	1.04	0.85	0.79	0.60	0.52	0.45
Northern America	1.81	1.31	0.91	1.00	0.88	0.63	0.56

Source: Demographic Indicators of Countries: Estimates and Projections as Assessed in 1980 (United Nations publication, Sales No. E.82.XIII.5).

[a]Including the countries of Northern Europe, as well as Italy, which the Population Division of the Department of International Economic and Social Affairs of the United Nations Secretariat includes in Southern Europe.

[b]Excluding Italy. Including Cyprus and Turkey, which the Population Division classifies as developing countries and includes in Western Asia.

projected to continue for the foreseeable future. Although the implied trends show, for all subregions, a decline in the rate of increase over the entire projection period (up to the year 2020), the differentials between the subregions remain fairly constant.[3] By the second decade of the twenty-first century, population growth is projected to be negative in Western Europe, about 0.5 per cent for Eastern Europe and the USSR, as well as for Northern America, and slightly below 1 per cent for Southern Europe (see table 71). Fundamentally, the direction of demographic change and, presumably, its implications for economic and social developments within the region are similar. Nevertheless, differences of degree will remain. In particular, the impact of societal response where population still increases, albeit slowly, may differ substantially from that in subregions with sustained negative growth.

The progressive aging of populations, defined as an increase in the proportion of the population in the older age groups, is one of the major implications of slowing population growth and, in particular, of the underlying decline in fertility. The demographic aspects of aging in the ECE region cannot be discussed here in detail, but certain basic features are outlined to provide background information.

The aging of populations is far more advanced in the ECE region than in the rest of the world. In 1980, the proportion of those aged 60 years or over in the region as a whole stood at 15 per cent, compared with less than 7 per cent elsewhere. The degree to which the population in the ECE region has aged can also be gauged by the fact that whereas in 1980 the total regional population of the region represented 23.5 per cent of the world total, the regional share of those aged 60 or over was more than 41 per cent.

Over the past three decades, aging progressed at a considerable rate: between 1950 and 1980, the share of the group aged 60 years or over in the total population rose from 11.6 to 15 per cent. Demographic projections show that this share will continue to grow for the rest of the century, albeit at a slower absolute and relative pace. During the period 1980-2000, the annual growth rate of the aged population is projected to drop to 1.4 per cent, compared with the rate of over 1.9 per cent for the period 1950-1980. However, because overall population growth is also expected to decline between 1980 and 2000, the share of the aged in the total will still increase substantially, from 15.0 to 17.3 per cent.

Two other developments, which should be mentioned briefly, have accompanied the aging process in the ECE region. First, between 1950 and 1980, the increase in the number of women aged 60 years or over was considerably higher (85 per cent) than that for men (65 per cent). However, it is projected that this growth difference will be reversed between 1980 and 2000 (a 40 per cent increase for men compared with 27 per cent for women). Secondly, there has been a significant rise in the proportion of the very old (75 years or over). Between 1950 and 1980, the number of those in this age group increased by 127 per cent, compared with a percentage rise of 64 per cent for the group aged 60-74 years. However, the growth of these two age groups is projected to be more balanced between 1980 and 2000.

In discussing the consequences of the aging process, two factors related to the demographic dimensions of aging should be kept in mind. First, the impact of this process is easier to absorb if it occurs gradually over a longer period of time. As is true of all societal change, adjustments may be more or less automatic if the changes themselves occur at a moderate and balanced pace. In the majority of the ECE countries, the aging process has been evolving over a longer period and the comment on the pace of change may be more relevant to the developing countries that are experiencing a rapid decline in fertility than to those ECE countries. However, in many countries of the ECE region, aging has not proceeded at a smooth pace. Significant distortions in the age structure, including that of the aged population, have occurred as a result of fluctuations or longer term swings in fertility, mortality and international migration.

The second aspect concerns the well-known, but sometimes ignored, fact that the aging of populations involves not only an increase in the proportion of older people but a decline in that of the young, owing to underlying causes. Both theoretical models and empirical data confirm this effect. Thus, the aging process and its consequences should be considered not merely an

evolution in a selected age segment but part of the structural transformation of the entire population and, moreover, a process associated with a slow overall population increase.

B. Economic and social implications

The many discussions of the economic and social consequences of slow, zero or even negative population growth in combination with progressive aging of the population cannot be covered exhaustively here. The present discussion is limited to a few aspects that are directly or indirectly relevant to policy issues.

A fundamental correlate of the interdependence of population and development is that, broadly speaking, a relationship exists between the stage of population development and that of socio-economic development. Thus, high population growth and a young age structure are generally associated with low or moderate levels of economic and social development. Conversely, low growth and an aged population usually accompany high levels of economic and social development. Because the majority of the ECE countries fall in the latter category, research on population-development interrelations in those countries has focused on the problems that arise in that setting. The approach used to analyse the interrelations between population and development in such a setting does not differ fundamentally from that employed in the context of developing countries with high population growth. In both cases, the analysis of interrelations focuses on both the determinants and the consequences of population trends in relation to economic and social development.

In many aspects, this common framework also implies a common focus on specific population-development issues. At the same time, there are obviously differences between the specific population-development problems in the economically more advanced countries and those in the developing countries, as concerns not only demographic factors but the development setting.

The development process *per se* involves certain changes in economic structure, in the stock of capital and of human resources, in technology, etc., which are completely or largely independent of population factors. Obviously, an analysis of the economic impact of changing population trends is substantially conditioned by these factors. Thus, analysing the effect of slow population growth and aging on development is basically similar to dealing with the broader issue of the developmental impact of changing population size and structure. That is, the implications of slow growth and aging on economic growth are usually assessed in terms of the impact on both the supply side (i.e., production) and the demand side (i.e., needs and consumption).

The aging process, as mentioned above, simultaneously raises the proportion of the aged and decreases that of the young, which tends to result in offsetting effects on the labour force potential, i.e., the population of working age. Data for the ECE region as a whole confirm this effect. Between 1950 and 1980, despite the aging trend, the total dependency ratio (the number of those under age 15 plus those 60 years or over per 1,000 persons in age group 15-59) virtually did not change; and it is projected to remain fairly stable up to the year 2000. During the period 1950-1980, the 77 per cent increase of the population aged 60 years or over was associated with a rise of only 19 per cent for those under 15 years of age. The population in the central ages increased by 38 per cent, virtually the same as the total population (37 per cent); and, consequently, the dependency ratio barely changed (from 635 in 1950 to 630 in 1980). Relatively small changes are projected up to the year 2000: the dependency ratio is expected to increase to 645.

A less clear picture emerges with respect to the consequences of slow population growth on the supply of labour, employment and economic growth. First, the total dependency ratio does not reflect the possible effect of changes within the working-age population on labour force growth. However, a calculation carried out for eight ECE countries to compare the growth of the working-age population with that of a standardized labour force (assuming constant 1960 activity rates for different sex/age groups) suggests that between 1960 and 1980, age changes within the working-age population had a comparatively small effect[4] (see table 72). In nearly all of these countries, the impact of changes in labour force participation patterns outweighed by a considerable margin that of demographic factors.

Moreover, the absence of clear patterns of change in each of these variables both between countries and over time is suggested by a review of trends in the labour force and the working-age population over the past two decades in 12 Western European countries, Canada and the United States (table 73).[5] During the 1960s, the increase of the population of working age exceeded that of the labour force (or the decline in working-age population was less than that of the labour force) in half of the 14 countries; the growth rates were identical in one country (Sweden) and the labour force increased more rapidly than the working-age population in the others. During the 1970s, however, there was a generally rising trend in labour force participation. As a result,

Table 72. Percentage growth of working-age population and standardized labour force, selected countries in the region of the Economic Commission for Europe, 1960-1980

Country	Percentage growth of: Working-age population	Standardized labour force[a]
Austria	3.71	7.53
Belgium[b]	8.79	10.28
Canada[b]	51.66	50.42
Denmark[b]	12.07	14.31
Finland[b]	16.75	18.76
France[b]	19.79	22.20
Germany, Federal Republic of	8.60	13.33
Sweden	8.16	9.96

Source: Estimates of secretariat of the Economic Commission for Europe.

[a] Calculated on the assumption of constant 1960 sex/age activity rates.

[b] For 1960-1979.

TABLE 73. GROWTH RATES OF WORKING-AGE POPULATION, LABOUR FORCE AND EMPLOYMENT, SELECTED COUNTRIES IN THE REGION OF THE ECONOMIC COMMISSION FOR EUROPE, 1960-1980

(Average annual percentage change)

Country	Growth rates					
	1960-1970			1970-1980		
	Working-age population	Labour force	Employment	Working-age population	Labour force	Employment
Austria	−0.16	−0.53	−0.45	0.53	0.60	0.63
Belgium	0.29	0.67	0.83	0.62	0.81	0.21
Denmark	0.77	1.29	1.41	0.57	1.21	0.33
Finland	1.01	0.18	0.14	0.59	0.66	0.36
France	1.11	0.80	0.68	0.80	0.78	0.37
Germany, Federal Republic of	0.26	0.11	0.16	0.56	−0.05	−0.33
Ireland	0.23	0.01	−0.01	1.62	0.97	0.94
Netherlands	1.53	1.22	1.24	1.39[a]	0.61	0.19[a]
Norway	0.70	0.67	0.71	0.59	1.63	1.78[b]
Sweden	0.67	0.67	0.69	0.12	0.99	0.92
Switzerland	1.38	1.47	1.47	0.51	−0.34	−0.18
United Kingdom	0.22	0.34	0.25	0.25	0.40	−0.03
Canada	2.29	2.54	2.63	2.08	3.17	2.97
United States of America	1.64	1.77	1.83	1.72	2.41	2.16

Source: Economic Survey of Europe, 1982 (United Nations publication, Sales No. E.83.II.E.1).

[a] Employment expressed in man-years.

[b] For 1972-1981. Data are not comparable with the earlier period.

the labour force increased more rapidly than the working-age population in 9 of the 14 countries. These deviations of labour force growth from the trends in the working-age population are owing mainly to changes in female participation rates and, to a lesser degree, in the activity rates of men of younger and older ages. The differences in patterns of change between countries are accounted for by the varying magnitudes of such changes and, in turn, their timing.

Although these results show that the relationship between the growth of the working-age population and the labour force is not necessarily very close, it can be argued that in the long run a certain relationship must exist between the growth of the labour force potential (i.e., the population of working age) and job opportunities (i.e., employment). It has been asserted, specifically for the United Kingdom but on general grounds, that in a long-term perspective, the working-age population and employment have actually moved together on a more or less proportionate basis. Note was taken, however, that this relationship does not necessarily hold in a shorter time perspective and that actual deviations from the common trend might be protracted.[6] Comparisons of the growth in working-age population and employment for the 1950s and 1960s confirm the existence of a fairly close association between them. The correlation coefficients relating the percentage growth of the working-age population in each country to its percentage growth of employment, based on data for 15 countries, were of the order of from 0.83 to 0.87 during both decades. For the period between 1970 and 1980, however, the correlation coefficient was considerably lower, 0.56, which lends support to the hypothesis that despite the broad association between the two factors, changes in working-age population and employment may diverge significantly.

On the whole, these results suggest that, particularly in the shorter term, the relationship between demographic trends as potential determinants of the labour supply, on the one hand, and the actual supply forthcoming from the population as well as the demand for labour, on the other, is not necessarily close. In addition, there is no assurance that the actual labour supply corresponds to the demand generated by economic growth. During the 1960s, labour shortages were obviously a significant bottle-neck to economic growth in a number of Western European countries.[7] Likewise, in many Eastern European countries and in the Soviet Union, where high rates of economic expansion have prevailed in recent decades, more rapid growth was thought to be seriously impeded by the slow growth of the labour supply.[8]

The consequences that slow growth and aging of the population have for consumption and needs are generally dealt with from two perspectives: (*a*) the impact on levels and patterns of household or private consumption; and (*b*) the effect on needs in specific sectors, including health, housing, education and social services. On the whole, most research on household consumption levels and patterns has led to the conclusion that the slowdown of growth and aging in themselves have only a relatively modest impact on consumption levels. Moreover, although the demand for certain items may change significantly, consumption patterns do not seem to be strongly affected. If the indirect effects of these population changes are taken into account, however, the conclusions may have to be amended somewhat.

First, declining population growth usually implies not only changes in age distribution but changes in household size and structure, which are important determinants of consumption. Some findings suggest that the effect of changes in the number and size of households may offset, at least in part, the effect of age changes on consumption. Another indirect effect of slow population growth and aging on consumption may result from the

higher level of income per capita, which is usually assumed to result from these demographic changes. Consumption as well as, for that matter, investment would be raised by higher income.[9]

It has been widely recognized that demographic factors influence the demand in such sectors as housing, health and education. Both slow population growth and the aging of populations may be expected to affect the level and type of such services, although the magnitude of the effects is not always clear. Decelerating population growth will by itself tend to slow down the demand for housing but it is also likely to affect the number of families. If account is also taken of the changing income levels, as well as the changing attitudes and tastes of both the aged and young (for instance, a preference for maintaining or establishing their own household), the outcome becomes less evident. Sharply rising divorce rates should lead to an increased demand for housing. Nevertheless, the impact of demographic factors *per se* appears to be fairly well established, as is true for other sectors. For instance, the age/cost profiles of the health sector have been found to have a clear J-shape, which decreases after the youngest ages, but rises steeply during older ages.

The significance of the sectoral aspects of the consequences of demographic trends is enhanced by the fact that in the typical developed country, the public or state sector bears the major responsibility for providing a broad range of social services, including health, education, social security, income maintenance and social services. The role of the family (in its different forms) in attending to these needs has declined substantially although possibly not to the extreme, as is sometimes suggested. The full dimension of the problems that may arise as a result of the expanded role of government has not yet been fully explored. Indeed, assessment of the integral impact of demographic factors on services provided by government or the State has been attempted in only a few studies.

Although, as previously mentioned, analysis of the problems of low growth and the aging of populations departs basically from the same framework as the more general issue of the impact of population growth and age structure, there can be differences of emphasis between the two, such as the question of the impact on the public sector referred to above. More attention also is being given to the less tangible factors in economic growth, such as productivity, entrepreneurship, mobility and adaptability to new conditions, on the assumption that the economy becomes less dynamic and increasingly inflexible as the population ages and its growth stagnates. Many of the arguments, which are based on empirical support that is both insufficient and difficult to provide, are inconclusive. Although the arguments on either side are difficult to prove, it should be recalled that the most important determinants of economic growth and progress in the past were shown to include the so-called "intangible factors".

One finds considerable differences of opinion and, in fact, opposing views in the literature on the implications of the combined or separate effects of slow population growth and aging. Whereas some authors argue more optimistically that, on balance, these demographic trends may not constitute a serious hindrance — if any at all — to economic and social development, others stress the negative consequences. To a large extent, these differences of opinion are a consequence of the complexity of the problems involved, but in part they also can be attributed to the analytical assumptions and methods.

The first point that can be made with respect to the latter factor concerns the treatment of the demographic variables. In most cases, the empirical work has taken as a point of departure either a hypothetical stationary or stable population; few studies consider the consequences of sustained negative growth and only a few others take into account what appears to be the likelihood of fluctuations and variations in the growth and structure of population.[10] An exception is the study that states the low fertility in Europe has not evolved as a regular trend towards stationary population but as a result of fertility rates fluctuating around replacement levels for a longer period and further argues that there is "nothing to suggest that birth rates eventually will stop fluctuating".[11]

A second weakness is the sometimes overly simplistic manner in which variables other than demographic are treated in many studies. Many of the empirical results available are based on economic models that deal with only one or a few indicators and assume *ceteris paribus* conditions for the others; for example, a frequently found restrictive assumption is that of constant or at most exogeneously determined labour force participation rates.[12] It should be recognized that in practice, it is difficult to overcome some of these limitations. For instance, it is obviously very problematical to project, in the context of the longer term demographic outlook, national or per capita income over a similar time-span in order to relate the two. Nevertheless, this procedure is not infrequently undertaken and although reference is made to the restrictive nature of the assumptions, their importance in determining the results is pointed out only sporadically. Taking as an example the impact of a slow-down in population growth and aging on public-sector costs, it is obvious that the result of such an exercise will be quite different if one assumes a growth rate for income of product of about 5 per cent, which was typical for the 1960s, or the current rate of from 1 to 2 per cent.[13]

An additional issue is that the conclusion is frequently reached that certain structural rigidities must be removed in order to offset possibly adverse effects of demographic change; the difficulties faced in bringing about such changes are often underestimated or ignored.[14] It is not necessary to go so far as to argue, as some do, that the stagnation of population growth and aging create these rigidities. However, it may well be that because both these demographic trends and the structural rigidities and lack of adaptability have at least some causes in common, they are closely associated.

Only part, and until recently a minor part, of the work undertaken on the problems of slow population growth and aging has consisted of empirical quantitative studies. Much of the literature is couched only in qualitative terms. The co-existence of opposing views on the consequences of these demographic changes can at least in part be explained by this fact. In the absence of empirical work, it is difficult to assess the weight of qualitative arguments, for instance, the comparative effect on productivity and economic growth of a mobile but inexperienced young labour force and that of an experienced but less mobile older labour force.

Despite some of these limitations, current knowledge of the subject has helped to increase the understanding of the nature of the problems involved and their multidimensional characteristics. It has also been a significant influence in creating awareness of the far-reaching policy implications of demographic developments.

C. Short-term prospects

In assessing population-development interrelations in the ECE region, it should be recognized that there has been a significant shift from long-term problems to short-run issues in recent years, due mainly to actual developments.[15] Since the early 1970s, economic trends, as they had emerged after the Second World War, have changed radically. Economic growth has slowed in nearly all countries of the ECE region and has even stagnated in some. Questions related to longer term issues have therefore been relegated to a secondary place as concern with economic recovery in the near future has become predominant.

From the perspective of population, the long-term view of its interrelations with economic and social development is the most essential; but in the current circumstances, the short-run view cannot be ignored. Increasing concern about prospects for the shorter run problem is, to a considerable extent, justified in the ECE region by current population trends and the outlook for the immediate future.

It can be argued that in most developed countries population growth may be expected to fluctuate within fairly narrow limits; this assertion is not true for changes in the age structure. Due to past fluctuations in fertility, mortality and international migration, recent trends and the prospects for the 1980s reveal sharp fluctuations in the age structure, which are bound to have significant economic and social implications.[16] In addition, although little is known concerning the effect of economic fluctuations on demographic factors, there is evidence that both nuptiality and fertility respond at least to some extent to business cycles.[17] Considering the severity of the current recession, if such an effect exists it may have a substantial influence on both current and future demographic developments.

The magnitude of these variations can be gauged from the changes in working-age population during the period 1975-1990, as shown by data based on United Nations estimates and projections of the working-age population for the ECE region as a whole and its various subregions (table 74). For the former, the average annual increase of the population of working age was just below 7 million during the period 1975-1980 and will be on the same order of magnitude during the first half of the 1980s. For the period 1985-1990, however, annual growth is projected to drop by nearly 40 per cent, to just over 4 million. The changes in some of the subregions, particularly Western Europe and Northern America, are even more marked. During the period 1980-1985, the average annual absolute increase in the number of people of working age in Western Europe is expected to be some 60 per cent higher than it was for 1975-1980. During 1985-1990, however, the average increase will be only one sixth as large. In Northern America, the average annual increase, which was still over 2.2 million for 1975-1980, will fall to 1.5 million during the second half of the decade. In Eastern Europe and the USSR, a slow-down will not become manifest until the latter part of the decade; and in Southern Europe, whose demographic evolution has differed and still differs from that in the rest of the region, average annual increases in the number of the population of working age will remain fairly uniform for the entire period.

Substantial differences in the evolution of individual age groups are concealed in the data for the broad age group, as they are in those for the region as a whole. From the point of view of labour supply, areas of special interest are the changes in the younger age groups, who represent potential entrants into the labour market; and those at more advanced ages, who reflect the possible magnitude of the outflow of workers through retirement or death. The extent of variation is obvious from the estimates and projections relating to these two groups given in table 75.

In the younger age groups, fluctuations reflect, in particular, the substantial variations in fertility trends during recent decades. Different trends for the various subregions reflect the different timing and extent of fertility changes. The difference in trends from 1980 to 1985 between Eastern Europe and the USSR, on the one hand, and Western Europe, on the other, is owing mainly to the fact that the decline of fertility in the former countries preceded that in the latter. In Northern America, the full impact of the fertility decline appears during the current five-year period; it will

Table 74. Average annual change in working-age population, region of the Economic Commission for Europe, by subregion, 1975-1980—1985-1990

(Thousands)

Subregion	*1975-1980*	*1980-1985*	*1985-1990*
ECE region	6 989	6 958	4 269
Western Europe[a]	1 091	1 632	281
Southern Europe[b]	1 324	1 423	1 296
Eastern Europe and USSR	2 306	2 360	1 628
Northern America	2 268	1 543	1 064

Source: See table 71.
[a] See footnote *a* to table 71.
[b] See footnote *b* to table 71.

TABLE 75. AVERAGE ANNUAL CHANGE IN POPULATION AGED 15-24 AND 55-64 YEARS, REGION OF THE ECONOMIC COMMISSION FOR EUROPE, BY SUBREGION, 1975-1980 —1985-1990

(Thousands)

Region and Subregion	Age group 15-24			Age group 55-64		
	1975-1980	*1980-1985*	*1985-1990*	*1975-1980*	*1980-1985*	*1985-1990*
ECE region	1 455	−1 372	−1 952	692	3 500	638
Western Europe[a]	524	263	−674	172	753	−127
Southern Europe[b]	424	173	131	157	469	311
Eastern Europe and USSR	177	−1 138	−543	33	2 131	638
Northern America	330	−670	−866	330	147	−184

Source: See table 71.
[a] See footnote *a* to table 71.
[b] See footnote *b* to table 71.

become even stronger during the last half of the 1980s. In Western Europe, on the other hand, the major effect will not occur until the period 1985-1990. Lastly, in Southern Europe, the average annual increase is shown to decline between the periods 1975-1980 and 1980-1985; subsequently, comparatively little change is expected.

It is more difficult to interpret trends in the older age groups, because they respond not only to possible fertility differentials and fluctuations in the past but to nearly lifelong mortality and migration experience, including the disturbances caused by war. Again, fluctuations are very pronounced. For the ECE region as a whole, the period 1980-1985, with a more than fivefold average annual increase in numbers, stands out in comparison with the other periods. This period also is one of very high increases in all subregions except Northern America. The average annual increase in Eastern Europe and the USSR, from virtually nothing to more than 2 million between the last half of the 1970s and the first half of the 1980s, is particularly important. During the period 1985-1990, a slow-down is projected for all subregions, with actual declines in Western Europe and Northern America.

The magnitude of the fluctuations in the age distribution described above are not duplicated in many parts of the world, although deficient age data or incomplete knowledge of past demographic trends may conceal important fluctuations in some developing countries. However, in a setting of sustained population growth, the possible effect of such disturbances may be less important. In the large majority of the countries in the ECE region, the evolution of the age distribution outlined above is associated with, and is in fact partially a consequence of, low or at most moderate population growth. The implications of this combination of sharp age distribution fluctuations and slow population growth are not yet clearly known or even perceived.

There can be little doubt, however, that sharp fluctuations in age distributions imply complex problems from an economic point of view. For example, a relative over-supply of potential young workers, at least in the current economic setting in Western Europe and Northern America, may become an acute shortage of new entrants into the labour market within the next few years (assuming that economic conditions improve). Likewise, the current high potential outflow of older workers from the labour force, further reinforced by declining participation rates, may create serious pressures on the economy through social security systems and result in increased participation rates for older workers as social security programmes are forced to raise the retirement age in order to remain solvent. Social programmes for the aging also may be adversely affected. The magnitude of the demographic changes suggested by the data given above and the comparatively high speed with which they occur require highly flexible policy-making to adjust to them. This situation is arising at a time when, for economic and other reasons, there already is a strong demand for temporary adjustments and structural changes.

SUMMARY

In the light of current conditions and trends, the growing concern with short-term problems does not appear unjustified. Nevertheless, to the extent that it overshadows longer term considerations, certain long-run issues will be ignored or receive less attention than they deserve. Prospective population trends are among the questions not likely to receive full consideration.

According to United Nations projections, about half of the countries in the ECE region will have negative or zero population growth by the end of the century.[18] By the end of the second decade of the twenty-first century, the annual decline in some 10 countries is projected to be close to or over 0.5 per cent. During most of this period, the aging of populations will be accentuated. It seems obvious that these prospective demographic changes will cause policy problems of a dimension not much smaller than those currently faced by the developing countries, where excessive population growth threatens their future.

In formulating a policy response, the economic and social consequences of the projected demographic trends will be an important element. For the most appropriate choice of policies, better knowledge of those consequences is essential. Identification of the type and scope of knowledge most needed for policy purposes is equally important. The preceding brief summary suggests that the major impact of the demographic trends is likely to be felt in the public or state sector. Because knowledge

of the implications of population trends on this sector is fairly limited, high priority should be assigned to this area. An approach that integrates the different dimensions of the problem and incorporates both long-term and short-run considerations should be followed.

However, improvement of the knowledge of current and projected population trends should not be restricted to the public sector: better understanding of its impact on the private sector is also needed. Such an approach would make it possible to accept or reject the assumption that the major consequences of these demographic trends emerge in the public sector. The corroboration or rejection of this hypothesis would have significant implications for policy-making.

If slow population growth and aging have comparatively little effect on the private sector, as most findings suggest, there are no grounds to assume that families and households will change patterns of reproductive behaviour and increase fertility for economic reasons. In these circumstances, if it is desired to reverse demographic trends, a well-designed and effective government population policy will be essential.

NOTES

[1] Since the region served by the Economic Commission for Europe includes most, but not all, of the developed countries, this growth rate practically coincides with that of the "more developed regions" used in the United Nations population projections. The rate for the region is slightly higher because it includes some countries, Turkey in particular, that still have a comparatively high rate of growth. (The Population Division of the Department of International Economic and Social Affairs of the United Nations Secretariat classifies Cyprus and Turkey as developing countries.)

[2] The subregional groups used by the Economic Commission for Europe differ in several respects from those used by the Population Division. In the ECE classification, Western Europe includes the countries of both Northern and Western Europe, as well as Italy. Southern Europe excludes Italy and includes Cyprus and Turkey. The Population Division includes Italy in Southern Europe; Cyprus and Turkey are included in Western Asia.

[3] The exception is Southern Europe; the difference between the growth rate for this subregion and the average for the entire region is projected to narrow considerably between 1980 and the year 2020.

[4] In the two countries where the difference was significant (Austria and the Federal Republic of Germany), the major factor was not a change in the age distribution but a strongly imbalanced sex distribution in 1960, which normalized itself gradually over the two following decades.

[5] See also *Economic Survey of Europe, 1982* (United Nations publication, Sales No. E.83.II.E.1), section 1.6(i).

[6] M. Beenstock and P. Werburton, "An aggregate model of the UK labour market", *Oxford Economic Papers (New Series)*, vol. 34, No. 2 (July 1982), pp. 235-275.

[7] The case of these countries may serve as an illustration of the possible indirect effect of slow population growth on subsequent economic growth. The labour shortage during the 1960s was probably one of the factors responsible for the rapid increase in wages, which contributed to the profit squeeze and ultimately to the slow-down of economic growth. The downward inflexibility of wages may in turn have been one of the factors that depressed economic growth during the 1970s.

[8] The problems caused by the slow growth of labour force were already discussed in the early post-war economic plans of a number of Eastern European countries and the Soviet Union. See, for instance, *Economic Survey of Europe in 1959* (United Nations publication, Sales No. 60.II.E.1), chap. 3, pp. 3 and 6.

[9] See, for instance, Donald Eilensteine and James P. Cunningham, "Projected consumption patterns for a stationary population", *Population Studies*, vol. 26, No. 2 (July 1972), pp. 223-231; and Thomas J. Espenshade, "How a trend towards a stationary population affects consumer demand", *Population Studies*, vol. 32, No. 1 (March 1978), pp. 147-158.

[10] William J. Serow, "Socio-economic implications of changing age composition of low fertility countries. Empirical evidence: an assessment, in particular, of its practical significance", in *International Population Conference, Manila 1981: Solicited Papers* (Liège, International Union for the Scientific Study of Population, 1981), vol. 3, pp. 271-284.

[11] Hilde Wander, "Zero population growth now: the lessons from Europe" in Thomas J. Espenshade and William J. Serow, *The Economic Consequences of Slowing Population Growth* (New York, 1978), pp. 42-44.

[12] *Loc. cit.*

[13] Many of the studies made in the 1960s and early 1970s assumed, for instance, high rates of economic growth, reasonable for that period but unrealistic in the light of developments since then.

[14] *Loc. cit.*

[15] To what extent this change was reinforced by a recognition of the inherent limitations of long-term forecasts is not clear. The unpredictability of "shocks", beginning with the oil crisis of 1973, may have been an additional factor.

[16] As already noted, Wander, *loc. cit.*, points out that there is no convincing argument that fluctuations in the birth rate will stop automatically.

[17] See, for instance, Dudley Kirk, "The influence of business cycles on marriage and birth rates" in *Demographic and Economic Change in Developed Countries*, Ansley J. Coale, ed. (Princeton, N.J., Princeton University Press, 1960), pp. 241-257.

[18] *Demographic Indicators of Countries: Estimates and Projections as Assessed in 1980* (United Nations publication, Sales No. E.82.XIII.5).

XVII. DEVELOPMENT, POPULATION, ENVIRONMENT AND LIFE-STYLES IN LATIN AMERICA*

Both in the United Nations and elsewhere, the population-environment-resources debate has continued for more than a decade. Its polemic overtones have been evident, particularly in the days preceding the United Nations Conference on the Human Environment, held at Stockholm in 1972. These issues have been kept on the agenda of the United Nations, most prominently by setting up a system-wide, co-ordinated research programme on the interrelations of population, resources, environment and development.

Some of the related problems are discussed briefly below, from the vantage point of the practical experience of the Economic Commission for Latin America (ECLA)[1] and its policy perceptions as a United Nations regional commission located in a less developed region. Because the main thrust of the exercise concerning population, resources, environment and development appears to be directed towards the developing countries, the latter point is relevant.

During the 1960s, the neo-Malthusian overtones of some statements on environmental problems helped to make the public and decision-makers aware of many of the issues hitherto ignored. Because of their one-sidedness and politically naïve postulations, however, they also damaged the environmental cause. The developing countries, in particular, reacted negatively to discussions of the threats to natural-resource availability and to some of the proposed ways of dealing with them. They were particularly sensitive to anything relating to population growth. Therefore, the population issue was virtually ignored in the Conference Declaration and the Action Plan for the Human Environment agreed on at Stockholm.[2]

The World Population Conference, held at Bucharest in 1974, was more explicit on the interrelations between population, resources and environment; and the issue was presented in a manner agreeable to the participating countries.[3] Following the sixth special session of the General Assembly and the adoption of the New International Economic Order (resolutions 3201 (S-VI) and 3202 (S-VI)), the Cocoyoc Declaration[4] represented a further attempt to bring a greater policy and substantive balance into the discussions. Among other things, the symposium at Cocoyoc emphasized the impact of patterns of development and life-styles in developed countries on the global environment and the natural-resource base. The General Assembly call for the current programme was inspired in part by the Cocoyoc Declaration, which was circulated as a document of the Second Committee.

After a slow beginning, the programme on the interrelations of population, resources, environment and development has in recent years led to notable advances in understanding and analysing the issues involved and in exploring lines of action that could be successfully pursued at the international level. Nevertheless, some of the old controversies persist; and it is also difficult to apply a truly integrated perspective to the issues at stake. Moreover, some very simplistic ideas, including those borrowed from the biological sciences, are occasionally brought into the discussion in order to handle a very complex social reality.

Development, of course, subsumes population, resources and environment; but other variables in the development process are just as important and cannot be ignored. Thus, it can be argued that the "integrated" or "systems" approach to development would be a more adequate concept to use and by definition would subsume the interrelations of population, resources, environment and development. In practice, however, the current formula is an attempt to highlight the complex interaction between these variables, which is often treated perfunctorily or not effectively dealt with in the decision-making process. Thus, the policy relevance and visibility in various programmes and documentation accorded them is of value.

Through the studies and discussions over the past decade, several policy premises have emerged:

(*a*) The programme is not a demographic exercise. It is primarily addressed to the interrelation between society, on the one hand, and the environment and the natural-resource base, on the other hand, as realized through the development process. In this effort, population is a dependent variable. In some instances, therefore, population and demographic factors play a marginal role in the way the interrelation evolves; at other times, they are critically important. The General Assembly recognized this point when it substituted the word "people" for "population" in the title of the interrelation exercise. As a logical step further, "society" could have been substituted for "people". People do not constitute an amorphous mass or numbers, nor are they free or freely inspired agents: they interact with the environment and natural-resource base through their society and as members of society. However, if "society" had been substituted for "population", the prominence of the demographic variables would have been reduced and the programme would not be such an important part of the work of the United Nations Secretariat;

(*b*) In practice, issues concerning population, resources, environment and development are manifested in

* Prepared by the Economic Commission for Latin America.

very diverse ways and with varying relative importance. Such factors as levels of development, geographical and climatic characteristics, the natural-resource base, socio-economic structures and patterns, poverty and wealth, technological development, tradition and culture, the nature of ecosystems, and the increasing integration and interlinkage of the international community and global processes all have their effect;

(*c*) Patterns of development and life-styles, and societal arrangements, play a critical role in the interrelationship and make for a fundamental difference in the nature and scope of the impact of a given population size on the environment and the natural-resource base;

(*d*) Environmental pollution and the use of global resources depend more upon the consumption patterns and life-styles of the developed countries and their diffusion to developing countries than upon the rates of population growth in the latter group. On the basis of the premises given above and empirical work done by ECLA, this chapter illustrates how the demographic dynamics of Latin America over the past two decades and the environmental problems faced by the people of the region are related to the specific productive structures and consumption patterns that prevailed to different degrees, depending upon the country, during that time and are currently even more widespread.

One major problem in this task derives from the diversity of situations found in the Latin American region, as concerns: (*a*) levels of development; (*b*) rates of population growth and other demographic characteristics derived therefrom; (*c*) population distributed between rural and urban areas and among internal regions; (*d*) different endowments of natural resources; (*e*) the type and depth of environmental problems. To present a picture that would be relevant for policy, those differences should be taken into account. However, limitations of space make it impossible to describe every situation. As a compromise solution, the problem is approached at two levels. The first provides a description of what ECLA has identified as the common features of a development style that has been or is being adopted by most Latin American countries, to varying degrees, and relates them to the major social and demographic trends. This analysis is unavoidably rather abstract. The second section of the chapter refers more concretely to two particular processes in which development, population, environment and resources are interrelated and to which ECLA has paid special attention: the survival of peasants in semi-arid ecosystems in the highlands; and the expansion of the agricultural frontier.[5]

At both levels of analysis, a second problem arises: although the findings from environmental and socio-demographic studies reinforce each other, few, if any, environmental studies have explicitly integrated the socio-demographic dimension; and vice versa, the environmental constraints are seldom taken into account in socio-demographic studies. As a result, there are a number of gaps in the knowledge of the links between development, population and the environment. The present discussion is therefore exploratory in character. In fact, the analysis of those interrelations forms a new area of study in Latin America; and ECLA plans to investigate this topic in more detail.

A. Style of development, life-styles and population

During the 1940s and 1950s, the economically most advanced countries of Latin America were at the import-substitution stage, which gradually extended to some relatively less advanced countries in the region. Slowly at first but rather abruptly during the 1970s, this stage evolved towards a new development style characterized by a profound change in the way Latin America entered into the world economy and in its internationalization process and manner of linking with the developed countries, mainly the market economies. In this process, both transnational corporations and private international banks play a dominant role. Moreover, in various economic, financial and technological fields, the Governments have followed policies of greater openness to the exterior.

Since ECLA has published a number of studies on this new style of development, it is unnecessary to present a detailed analysis of its structure and functioning.[6] The following discussion summarizes the main changes that have occurred in the productive structure and in the life-styles and consumption patterns of the population, with a brief mention of some of the inequities in the distribution of the benefits of progress which have been a central part of it.

Changes in productive structure

Up to the 1950s, foreign capital was invested in the exportation of primary products and frequently in urban and transport services. Since that period, direct foreign investment in the manufacturing sector has increased considerably. Transnational corporations currently hold an important share in manufacturing output. They dominate the key sectors of greatest dynamism and technological progress, particularly in the industries concerned with chemicals, basic metals, engineering and motor cars. Transnational corporations are the channel for a significant proportion of imports, external financing and the incorporation of technology by the countries of the region. They also play an important role in agro-industrial development. In contrast to what happened during the 1950s and early 1960s, when the bulk of capital flowing into Latin America was official long-term capital, a large proportion of short- or medium-term capital currently comes from private banks and commercial sources. Public enterprise still covers basic industrial areas, particularly in the large and medium-sized countries, with the aim of supporting overall and manufacturing development; and national private enterprise maintains its predominance in the traditional industries producing non-durable consumer goods. However, in the new style now dominating development in Latin America, transnational corporations are undoubtedly the main agents of production and financing.

Manufacturing industry as a whole has developed significantly since the 1950s. Between 1950 and 1978, the annual growth rate was 6.5 per cent, exceeding the world average of 5.9 per cent. That growth has been accompanied by major structural changes. In 1950, non-durable consumer goods represented almost two thirds of total manufacturing production, as opposed to roughly 40 per cent in 1978. In contrast, the relative importance of intermediate products in manufacturing output rose from less than 25 per cent of the total to more than one third in 1978. However, reflecting the changing life-styles, the relative change has been most striking in the consumer durables and investment goods sector. In 1950, this sector represented 11 per cent of total manufactures; and in 1978, it accounted for more than one quarter of the manufactures produced. Although manufactures of non-durable consumer goods declined in relative importance over that period, their growth rate was well above the population growth rate; thus, the supply per capita increased.

The transformation of the Latin American productive structure since 1950 has inevitably modified the composition of the labour force. Broadly defined, the industrial sphere (including manufacturing, construction, electricity and transport) employed about 22 per cent of the economically active population in 1950; it accounted for 27 per cent in 1980. Between 1950 and 1970, the annual growth rate was 2.7 per cent; and between 1970 and 1980, 3.8 per cent. Adding to this the indirect effects of other activities, industrialization affected 35 per cent of the labour force in 1950 and 47 per cent in 1980. The share of the tertiary sectors (commerce and services) also increased from 23 per cent in 1950 to 36.9 per cent in 1980. The agricultural labour force, on the contrary, decreased from 53.8 per cent in 1950 to 35 per cent in 1980.[7]

Together with changes in the economic structure and the composition of the labour force, the expansion of the educational system and high urbanization rates have contributed to a rapid increase of the middle classes. Enrolment in educational institutions increased considerably at all levels between 1960 and 1980, but enrolment of the group aged 18-23 in institutions of higher education was particularly dramatic, rising from slightly over 6 per cent to 16 per cent.[8] With regard to urbanization, the population living in locations with 20,000 or more inhabitants rose from slightly more than 40 million in 1950 to nearly 173 million in 1980, absorbing 66 per cent of the total population growth in the region during the period. The resulting considerable expansion of the middle classes over the past decades led one of the authors of the most recent study on the subject to conclude that "in the 1980s some countries are attaining and even exceeding the proportion of middle class existing in the developed countries, while others are rapidly approaching such levels".[9]

Changes in the economic and industrial structures and increasing urbanization have also contributed to an increase in the number of urban industrial wage workers, particularly in the medium-sized and large countries, although there are signs that the trend might have slowed or even stopped in some of them during the late 1970s.

The agricultural sector also has been affected by the emerging style of development in Latin America. Over the past 25 years, the traditional hacienda system has been transformed to make way for an agrarian structure that, while maintaining a high concentration in the ownership of natural resources, is better adapted to the requirements of the current development style. The land-ownership agriculture/peasant agriculture dichotomy has increasingly become the capitalist agriculture/peasant agriculture relationship. The rapid growth of the number of capital/technology-intensive farms has introduced significant changes in agriculture, including increased use of fertilizers, improved seeds and machinery. Between 1951 and 1975, the average annual rate of increase in fertilizer use was slightly over 13 per cent; and the use per hectare harvested rose from 5.5 to nearly 45 kilograms. Similarly, the number of tractors increased by 5.5 times between 1950 and 1975.[10] Broad differences are found, however, between countries, specific geographical areas, types of establishments and production items.

The growth of capitalist agriculture is closely associated with the transnationalization of agricultural activities and the organization of transnationally controlled agro-industrial complexes. Nearly 30 per cent of the total number of foreign investments made by transnational food and beverage firms are concentrated in Latin America; of these, 70 per cent originated in Northern America.[11]

The development of capital- and technology-intensive agriculture has not necessarily meant a reduction of peasant economy nor an increase in the proportion of wage earners in the agricultural labour force. On the contrary, although there are wide inter-country variations,[12] the persistence of peasant agriculture is another major characteristic of recent agricultural development in Latin America. The increasing substitution of seasonal for permanent workers, on the other hand, has conspired against the expansion of the latter group and in part explains the survival of the peasant economy.

Although it is not possible here to analyse in detail the relationship of development and resources, it should be mentioned that the dynamism and the productive and technological changes characterizing the dominant development style have led to striking differences between the structure of energy supply and demand. Latin America has abundant resources of the three traditionally most important forms of commercial energy: hydrocarbons (petroleum and natural gas); hydroelectricity; and coal. These resources, however, are distributed very unevenly in the region, although the considerable sources of hydroelectricity are more uniformly distributed than those of hydrocarbons or coal. The known reserves of the last two energy sources are concentrated in a few countries (petroleum in Venezuela and Mexico; coal in Colombia and Mexico). In contrast, the structure of demand for energy in all the countries is

fundamentally based on petroleum. Although only five countries produce sufficient oil to meet their needs, the total consumption of hydrocarbons represents 75 per cent of total energy consumption. Hydroelectricity, on the other hand, is used only to a limited extent in relation to its production potential; and the importance of coal as a source of energy is even smaller. This trend has led to a relative decline in the exportable surplus: in 1950, the region consumed as products 27 per cent of its petroleum output and 17 per cent of its natural-gas production; in 1979, these proportions had risen to 66 and 52 per cent, respectively.[13] Between 1960 and 1979, the consumption as products of the petroleum output increased from 300 kilograms per capita to 508 kilograms per capita, or almost 70 per cent; and the consumption of natural gas increased five times. Consumption has increased despite the stagnation and slight decline in petroleum output during the 1970s owing to the conservationist policy applied by Venezuela. Only after 1977 did the decline begin to be compensated by increasing production in Ecuador and Mexico. The higher demand for petroleum in the non-producing countries of the region had to be met with more imports. In relative terms, such imports increased 74 per cent between 1970 and 1979; however, the participation of the Latin American exporting countries in total regional imports over that period decreased from 38 to 15 per cent. That is, an increasing proportion of the petroleum imported by Latin American countries comes from outside the region, while at the same time the exports of petroleum from the region to Europe and the United States of America have increased.[14] Thus, the petroleum-producing countries of Latin America have strengthened their ties with the more developed regions but the non-producing countries are now more vulnerable to decisions taken elsewhere.

Inequities in distribution of benefits

Since the 1950s, Latin America has clearly undergone a process of economic growth and social change of considerable importance. The nature of that process has led — and still leads — to the formation of highly inequitable societies, characterized by a very high concentration of income and wealth in small segments of the population, very large numbers of people living in conditions of extreme poverty, high labour force underutilization; and, as a consequence, a high percentage of the population suffering from malnutrition.

The most recent estimates made for Argentina, Brazil, Chile, Colombia, Mexico, Peru and Venezuela — seven countries that together contain nearly 80 per cent of the population and account for over 90 per cent of the product of Latin America — show that in 1975 the richest 10 per cent of the households received slightly more than 47 per cent of the total income, while the poorest 40 per cent did not even receive 8 per cent. This high degree of inequality becomes even more striking if the average incomes of the two groups are compared, for the average income of the first group was over 24 times that of the second group in 1975. Furthermore, between 1960 and 1975, inequality, far from being attenuated, increased in that the share of the income received by the poorest 40 per cent of the population fell slightly and the share of the 10 per cent of the population in the richest group and that of the 20 per cent in the group just below the richest rose slightly.

The data for 1970 on the number of people living in extreme poverty in Latin America are no less disappointing: 19 per cent of the population were in this group — that is, they could not obtain the minimum calorie intake. Forty per cent were below the absolute poverty line in that they could not satisfy basic housing, education and health needs. In absolute terms, those percentages amount to 54 million and 113 million persons, respectively. Proportionally, that situation was an improvement compared with 1960, when more than half of the population of Latin America were defined as poor and a quarter as extremely poor. Indirect estimates for 1978 suggest that the situation has continued to improve in relative terms, but the incomes of one third of the population are still below the poverty line. Furthermore, since 1960, there has been no change in the absolute number of people living below that line.

Poverty, as is all too well known, is linked with unemployment and underemployment. In the Latin American region, it is estimated that unemployment and underemployment, on the whole, affect the equivalent of 28 per cent of the economically active population. This situation is very likely to have worsened since the mid-1970s, because of the faltering economic growth rate in numerous countries. Open unemployment is very high in many countries. Much larger, however, is the proportion of the population that is underemployed or receives an income below a given minimum. More than half of this population segment, which is estimated at 22 per cent, live in rural areas. Naturally, the structure of poverty situations is to some extent similar to that of unemployment.

According to an estimate[15] that in all probability is conservative, considering how many of the regional population live in absolute poverty, no less than 15 per cent of the Latin American population, about 50 million people, suffer from malnutrition.

Changes in life-styles

During the past few decades, Latin America has also experienced profound changes in life-styles and in consumption patterns. These changes are closely related to and partially explained by the increasing urban character of the society, the growth of the middle classes, the tertiarization of the labour force, the monetarization of rural economies and the expansion of the mass media. However, all these factors have been mainly facilitating factors for the adoption by all but the most deprived social classes of a consumerist ideology, which originated in the fractions of the upper and middle classes who are more in contact with the life-styles and consumption patterns predominating in the developed countries and were diffused from them to the other social strata.

New life-styles are first — and more easily — perceived as changes in consumption patterns. For instance, a recent study[16] found that in urban contexts the use of durable goods extends to practically the entire middle class and to substantial segments of the lower classes; and that, although less widespread than in the cities, the purchase of such goods has also diffused widely among the rural population. The purchase of durable goods was found to be relatively independent of the degree to which supposedly more basic needs had been satisfied or of short-term variations in family income.

Savings behaviour also indicates the effect of the new consumption patterns on most social strata. The scant information available shows that in large cities, indebtedness through instalment payments extends over the middle, lower-middle and lower strata. At the same time, there appears to be a clear correlation between the more or less modern nature of the setting of the family unit and its savings behaviour. A study undertaken by ECLA[17] found that in the large cities, such as São Paulo and Caracas, the relative percentage of saving in relation to income received was less than that recorded in smaller urban localities and in rural areas. The relationship between expenditure and indebtedness showed the same situation: in the larger cities, income was 10 per cent below total expenditure; in more backward (rural) localities, saving was 10 per cent more than monthly income. In other words, the closer families are to the diffusion centres of the consumerist ideology, the more their savings behaviour will reflect the adoption of that ideology.

The new consumption patterns are closely related to other, perhaps more long-lasting patterns in family organization and in basic motivations towards the family and children, which have drastically changed the population growth trends that prevailed up to the mid-1960s.

Mode of development, life-styles and population growth

During the mid-1960s, the growth rate of the total population of Latin America reached its peak. Since then, it has declined rather rapidly. Between the periods 1960-1965 and 1980-1985, it fell from 2.9 to 2.4 per cent; and it is expected to fall to 2.1 per cent for 1995-2000. Thus, from the period 1960-1965 to the end of the century, the population growth rate is expected to decline by 28 per cent; and an even sharper decline is projected for the period 2000-2025.[18]

The regional averages, of course, conceal wide differences among countries. During the period 1960-1965, Argentina and Uruguay had growth rates lower than those which the region as a whole is expected to have at the end of the projection period; they will also experience much slower growth rates than the Latin American average. On the contrary, in Chile, Colombia, Costa Rica, Cuba, the Dominican Republic and Panama — and a little later, Brazil and Mexico — the growth rates have declined more rapidly than the Latin American average. Lastly, in some countries, e.g. Bolivia, Haiti and Peru, the rates of population growth have not yet reached a peak; and in others, the rates will continue to be stable or will decrease very slowly for some time.

Changes in mortality and fertility in the Latin American region have led to the slow-down of population growth. For Latin America as a whole, life expectancy at birth has increased; from about 52.3 years during the period 1960-1965 to 63.94 for 1980-1985. Whereas during the period 1950-1955, there were 12 out of 20 countries with a life expectancy below 52 years and only two (Argentina and Uruguay) in which the index was over 60, the situation has changed so much that today 15 countries have a life expectancy of 60 years or more, and it has not reached 52 in only one, Bolivia.

The rapid survivorship gains experienced by most countries of Latin America since the Second World War have led to the expectation that they will continue in the future, although at a diminishing rate as life expectancy approaches a biological ceiling. In a number of countries, however, there are now some indications that the slowdown in mortality decline has begun to occur earlier than expected.[19]

The deceleration of the decline is linked to the great differences in life expectancy of various social groups and different regions within a country. Although the persistence of wide regional differences within a country has been confirmed by the most recent studies on mortality, all of them show that, on the whole, mortality differences between social groups are the most marked. Current evidence also shows that the urban population frequently contains the most seriously affected groups, as concerns the probability of dying in childhood, and the greatest disparities between social groups.[20]

The general decline in mortality in the region is due mainly to a decrease in the number of deaths caused by respiratory, infectious and parasitic diseases. Differences among social groups in the incidence of these causes of death, which are associated with nutritional deficiences, seem to be the reason for the greater or lesser life expectancy at birth of the members of those groups. It is also likely that a country's heterogeneity with respect to excessive infant and child mortality levels is due to the disproportionate weight of those diseases in some countries. Because these diseases are the most closely linked with levels of living, some Latin American countries may have already reached a mortality level such that future gains will require that improvements in preventive and curative health be accompanied by a rise in the level of living of the most deprived regions and social groups. Inasmuch as income continues to be highly concentrated and large fractions of the population remain below the poverty line, the deceleration of mortality decline may become more acute. Thus, slower population growth due to higher than expected mortality is probably the result of the inability of the prevailing development style to improve income distribution and reduce extreme poverty.

The actual decline of population growth in the region is due to decreasing fertility. In general, all the countries in which fertility began to decline more significantly during the 1960s and early 1970s have experienced very rapid drops. In Brazil, Chile, Colombia and Costa Rica, fertility began to decline rapidly during the period 1960-1965. Total fertility rates[21] in those countries are estimated to be 37, 40, 43 and 57 per cent lower, respectively, than at the beginning of the 1960s. In Panama and the Dominican Republic, the most pronounced declines began during the second half of the 1960s and they have also been very rapid: 31 and 41 per cent, respectively. In Cuba, the early years of the revolution, from 1959 to 1964, were marked by a "baby boom". Around 1965, however, fertility began to decline rapidly and it is currently less than half the level for 1965-1970. Cuba now has the lowest fertility level in Latin America. Lastly, although fertility decline began late in Mexico, the decreases during the 1970s and 1980s amounted to 22 per cent of the level at the beginning of the 1970s.

There is no generally accepted explanation of the factors and processes that brought about the rapid change of fertility in a number of Latin American countries.[22] Although family planning programmes have undoubtedly played a role in changing motivations towards family size and in providing the means for its control, it is recognized that they would have been unsuccessful had it not been for more basic social and economic changes leading to preferences for smaller family sizes. On the other hand, it does not seem possible to explain such large and sudden fertility declines simply as an expansion of population segments that already had lower fertility at the beginning of the decline, or by changes solely in the fertility behaviour of those groups. What needs to be explained is a change in motivations and attitudes towards children and family size that has affected most urban strata and an increasing proportion of the rural population. Without attempting to solve problems that require much more research, it is possible to enumerate several factors that have unquestionably contributed to this change.

Whatever the style of development, certain processes contribute to the decline of fertility: urbanization; increase in educational levels, particularly of women; and changes in female labour force participation towards occupations in the secondary and tertiary sectors, where the incompatibility between a woman's roles as mother and as worker is stronger than in agriculture and other traditional female occupations. However, differences in development patterns are important because they in great part determine the degree to which all social groups benefit from educational improvement and the opportunities open for women in non-traditional occupations. In Latin America, as was mentioned, there have been considerable improvements in educational opportunities and higher degrees of urbanization, together with more or less radical changes in the occupational structure and a rapid expansion of the middle classes.

Although these factors have undoubtedly contributed to the fertility decline, they are by no means sufficient to explain the phenomenon. In fact, the nature of the development style adopted by most countries of Latin America has been such that only a small, although increasing, number of people participate directly in the benefits of economic development. Changes in fertility patterns are found not only in this group but sometimes in social groups and regions only marginally touched by those benefits and even among others who have suffered some deterioration of their levels of living. Thus, in attempting to explain those changes, one must broaden the spectrum of factors.

In all probability, the type of development being followed by the Latin American countries has, for different reasons depending upon their structural position, tended to accelerate changes in motivations and attitudes towards children and family of most social strata and not only of those most benefited by it. The relationship between the adoption by the middle classes of new life-styles and consumption patterns, and preferences for smaller families was already mentioned. Those new patterns and a consumerist ideology have also been diffused to the urban working classes and to growing numbers of small farmers and agricultural wage workers. In these cases, however, structural changes have led to higher subsistence costs for children and the labour force, which have probably contributed to weaken the motivation for large families. Furthermore, because the more deprived lower-class urban groups are unable to provide for their children's basic needs, they also have been motivated to limit family size.

Moreover, in some countries, the implementation of development policies and strategies oriented to make national development patterns more compatible with the dominant transnational development style has lowered the real wages of the working classes, thus putting more constraints on the motivation for additional births. In other words, family planning would have become an integral part of either the social-mobility strategy of some urban and rural strata or the survival strategy of others.

Structural and short-term changes linked to the degree of development reached and to the type of development adopted, plus the diffusion of a consumerist ideology and of new consumption habits and the implementation of public and private family planning programmes, would then give rise to changes in fertility-related motivations and attitudes. Those changes, together with a much wider availability of contraceptives, would have led to a rapid fertility decline in the countries of Latin America containing the majority of the region's population.[23]

One important consequence is that the rate of population growth is now slower than that of agricultural production. The most conservative forecasts of agricultural production to the year 2000 estimate that output will grow at faster rates than population.[24] If past or current trends are not altered by deliberate policies or changes in the international scenario, agricultural out-

put may grow at 3.1 per cent per annum, that is, at between 6 and 10 percentage points faster than the growth of population.

In 1975, the average supply of calories per capita was already 6 per cent higher than the estimated daily minimum requirement of 2,400 calories. Assuming the projected trends in population growth and that the trends in agricultural production are not altered, by the year 2000, the average supply per capita will be 2,888 calories a day for the region as a whole.[25] It can therefore be concluded that the problems of malnutrition found in the region are not caused by insufficient output or by population growing more rapidly than food production. Rather, these problems are the consequence of distortions in income distribution provoked by the dominant type of development, which in turn affects the consumption capacity and preferences of different social groups.

Development style and urbanization patterns

The new development style described above emerged during a period in which Latin America became predominantly urban. According to the most recent estimates by the Centro Latinoamericano de Demografía (CELADE), about 57.6 per cent of the total population of the region was urban in 1970. Between 1970 and 1980, the urban population increased by 65 million, reaching over 64.4 per cent of the total regional population. The addition of 178 million more between 1980 and 2000 will mean that more than three fourths of the population of Latin America will live in urban areas by the end of the century.[26] Moreover, the secular high degrees of population concentration in the great metropolitan areas has recently increased, as shown by the fact that between 1950 and 1975, the population residing in urban places with 20,000 or more inhabitants increased from slightly over 40 million to 142 million, resulting in a proportionate rise from 9.2 to 22 per cent.[27]

The question is whether those secular trends have been accelerated or slowed by the emergent transnational development style. The sparse information available suggests that in most cases, up to at least around 1970, the degree of concentration of the industrial product and of labour force demand was increasing in the largest metropolitan centres;[28] but that in all the countries analysed, the size and participation of smaller localities in total employment also increased. A number of factors have contributed to this change. In some cases, Brazil being the most noteworthy example, smaller cities have grown because the development of a more complex interurban division of labour introduced differences into the occupational profiles of cities of different sizes. In those cases, the emergence of market poles and services poles has permitted a dispersion of the urban population together with a higher concentration of the most modern industrial activities in the largest metropolitan areas. However, this case appears to be very exceptional in Latin America. The growth of smaller urban localities is more frequently explained in part as the result of investment allocations made by transnational corporations or their national associates attracted by the proximity of natural resources. In other cases, small urban places have grown as a consequence of the expansion of the agricultural frontier and of changes in the organization of agricultural production. Lastly, some cities and towns have grown, at least for some time, because of governmental regional and urban development policies. One or a combination of the above-mentioned factors has led to the emergence of so-called "centres of explosive growth" in Latin America, which are highly vulnerable to decisions taken in the main metropolitan centres and are characterized in most cases by acute shortages of basic services and very disparate levels of living.

The indications are that although the concentration of population in the metropolitan areas of the capital cities has declined in some countries (Argentina, Peru, Uruguay and Venezuela) and has remained stable in another (Chile), all of them are facing higher concentrations in the macro regions where the capital cities are located. In fact, since the emerging transnational styles have reinforced the role of metropolitan macro regions as the headquarters of the most important political and economic agents (both transnational and national), as producers of economic surplus and as recipients and beneficiaries of the surplus produced by other national regions, a change in this trend towards higher population concentration is unlikely unless the prevailing development style is significantly modified.

Regardless of the mode of development, the rapid, massive urbanization and metropolitanization that have been characteristic of Latin American patterns of population distribution would have affected the ecosystems and the use of resources. However, some social and environmental consequences are more directly related to the transnational style.

First, the rate of geographical expansion of the metropolitan areas exceeds that of their population growth because of the construction both of very exclusive residential neighbourhoods in some sectors and of shanty towns in others. This unnecessary expansion has been to the detriment of the arable land surrounding the cities and has raised considerably the investment costs of infrastructure.

The expansion pattern is related to the predominant role played by financing and banking firms in real estate and the consequent increase in the price of metropolitan land. In association with large construction firms, they also control the building and housing market; and they concentrate housing production on meeting the needs of the upper and middle classes, leaving unsatisfied those of the poorer strata with more acute housing shortages. Governmental efforts to fill the void left by private firms and to reduce those shortages have been insufficient to avoid the rapid expansion of the shanty towns found on the peripheries of most, if not all, large metropolises in Latin America.

The inability of Governments to keep pace with the rapid growth of socially and ecologically marginal

intra-metropolitan areas and to reduce the existing deficits in housing and infrastructure has contributed to the permanence of very poor sanitary conditions in those areas. The ensuing health problems are aggravated by a medical practice that has, in general, followed the specialization patterns of the developed countries and concentrates on meeting the health needs of the upper and middle classes. Although governmental health services attempt to care for those neglected by private practice, their efforts have been insufficient to provide for adequate health care to the poorer social classes. The disadvantaged position of the lower classes with regard to health care is further worsened by the high cost of medicines and drugs, which are produced almost exclusively by transnational pharmaceutical firms.[29]

Although the rapid growth of metropolitan areas is not in itself the cause of these social and environmental consequences, it may aggravate and make more evident some pre-existing problems of the region.[30] Those problems, nevertheless, do not deter migration to the metropolitan areas. Contrary to the former pessimistic view of the possibilities that urban migrants had to improve their lives in the cities, there is now abundant evidence that migrants are no more disadvantaged than metropolitan natives as concerns economic and social opportunities and do not suffer from serious social and psychological maladjustments to their new environment.[31] On the contrary, migration to metropolitan areas gives those born in smaller urban places or rural areas more opportunities than they had at their places of origin to participate in the sophisticated and diversified metropolitan consumer market. In other words, despite the social and ecological segregation they will have to share with the native members of the poorer social classes, poor migrants perceive geographical mobility to large cities as social mobility.

The interrelations between the type of development, urbanization and the environment apply not only to the metropolitan level but to that of the smaller urban centres. Although these interrelations are less prominent in smaller towns, recent studies have called attention to the fact that the emergence of centres of "explosive" growth and of growth poles has had a strong negative impact on the local ecosystems. Moreover, many of these localities appear to suffer even more acute manifestations of the problems usually considered to characterize only larger centres: high unemployment rates; urban segregation; marginality; and infrastructural deficits.[32]

The sparse information available on the problems at that level suffices to highlight the fact that considerably more attention should be devoted to this topic, both because such studies might help to identify more fully some vaguely perceived social and environmental problems and because former residents of those towns, who were forced out by such problems, form an important segment of the migrants to large metropolitan centres. At the same time, deficient as it is, the information on the social and environmental problems faced and provoked by medium-sized and small towns has served to reinforce the consensus reached by Latin American experts that no relationship necessarily exists between the degree of concentration and the degree of environmental deterioration and that the distribution of the cost and benefits derived from environmental change depends more upon the general style of development than upon the size of the urban centre or the speed of its growth.[33]

B. Stability and change of life-styles, environment and demographic dynamics in rural areas: selected cases

Three main processes are taking place in the rural areas of Latin America: (*a*) the expansion of commercial agriculture organized as capitalistic firms and the consequent increase in the number of agricultural wage workers; (*b*) the survival of peasant agriculture in areas where it has traditionally been important; and (*c*) the expansion of the agricultural frontier. The last two processes have been studied by ECLA from the perspectives both of their implications for the levels of living of the populations involved and of their interactions with selected environments.[34] There are advantages in dealing with them separately, even though both are very closely related, because, to a great extent, those who move to frontier areas are peasants from traditional areas and the processes taking place in one affect the other.

Population and peasant survival in high-altitude ecosystems

The Andean countries are among those where the number of peasant productive units not only has increased considerably over time but has done so at a higher rate than agricultural wage work. Estimates for eight Latin American countries, including those of the Andean region, indicate that between the mid-1960s and the mid-1970s the number of single-family productive units, usually considered an operational definition of peasant holdings, experienced a 38 per cent increase, as a consequence of subdivisions, agrarian reform programmes and the expansion of the agricultural frontier.[35] Furthermore, between 1960 and 1970, peasant labourers, i.e., those classified by the census as independent workers and as unpaid family workers, had higher rates of growth than agricultural wage workers in Bolivia, Ecuador and Peru,[36] among other countries. The economic importance of peasant production in the Andean region also must be considered. Owners of fewer than 5 hectares produce between 50 and 60 per cent of the goods for final consumption, and peasants own no less than 30 per cent of the total head of cattle.[37]

No major technological improvements have been made for the high-altitude ecosystems of the Andean areas. The intensive use of their limited resources of organic matter and energy has been made possible only by resorting to a complex and coherent system of social organization. Some of the mechanisms used by peasant families and communities to survive in such an environment in different historical circumstances include the principle of reciprocity, communal institutions for utilization of natural resources, the principle that each

family and community should have access to different ecological floors and participation of all family members in productive activities. Although the origins of this system of social organization date back to the pre-Columbian period, it has thus far proved to be both very stable and highly adaptable to changing social, economic and environmental pressures. The partial but increasing integration of peasant families and communities into the modern socio-economic system prevailing in their national societies is, however, posing new challenges of far-reaching consequences for the future of these groups.

During the past 15 or 20 years, the direct integration of highland communities into the national and international economic systems has been accelerated by agrarian reform programmes, the modernization of large farms and the concomitant internal changes of the communities. The production of commercial crops, a more common participation of their members in the wage-labour market, the limited but increasing incorporation of industrial input in the production process, the use of commercial loans and the purchase of manufactured goods are all expressions of a much wider direct integration of those communities into an urban-industrial economic system. Moreover, there has been an increase of acculturation to the consumption patterns and life-styles dominant in the cities. However, surveys concerning peasant motives and attitudes reveal that changes in consumption habits and in life-styles are in great part adaptations to a new economic and socio-cultural environment; these changes do not necessarily imply the complete disappearance of traditional culture and social organization. On the contrary, it appears that Andean peasants move either to agricultural frontier areas or to the cities mostly as part of a family and community survival strategy; they are far from being a mass of people eager to leave their land and to abandon completely their culture.

The changes in the consumption habits and life-styles of Andean peasants can be explained in part by two interrelated sets of processes. The first has an external origin and could be labelled the "diffusion of Western urban culture to the countryside". The progress made in basic education, the extension of highways and paved roads, the expansion of communication networks as well as the influence of mass media and commercial advertising, higher degrees of urbanization and more geographical mobility of the younger generations have certainly played an important role in such changes. At the same time, however, the increasing integration of peasant families and communities into a market economy and their changes in consumption patterns and life-styles are also part of family and community survival strategies adopted as a response to the atomization of their holdings brought about by social, environmental and institutional constraints.

No direct measurement of the components of demographic growth of the peasant population is available, but there is little doubt that its annual rate of increase has been slower than that of the national population and of most if not all other social groups. This slow rate is caused by out-migration and very high rates of general and child mortality, rather than low fertility. The fertility rate, although lower than that in other rural areas, is still high. However, in contrast to past trends, population growth is currently constant in the majority of peasant communities. The abolition of serf-like relationships and of compulsory work has curtailed the earlier drastic fluctuations in the number of peasants. Furthermore, governmental epidemic control campaigns have decreased contagious diseases, and improvements in transportation systems have made it easier to reach medical posts in case of serious illness.

Although slow, the resulting growth of peasant populations encroached by commercial farms or living in areas where all potentially arable land is already under cultivation and with very limited access to financial resources and modern technology input has increased the fragmentation of peasant holdings and contributed to the general impoverishment of the Andean peasantry. In Peru, for instance, the average size of small holdings (fewer than 5 hectares) was 15.3 per cent smaller in 1970 than in 1960; and in Ecuador, 13 per cent smaller.[38] In Bolivia, a study of four highland haciendas showed that they had doubled in size since 1953;[39] and in 1975, the mean size of the land area tilled by highland peasant families fluctuated between 0.93 hectare in the north and 1.35 hectares in the central area.[40]

The survival strategies adopted by peasants in response to the atomization of their holdings include a number of interrelated components, one of which is more intensive land use without technological improvements. Analysis of the data available shows that a reduction in the size of the productive units leads to a larger number of annual crops due to faster cultural rotation, the reduction or elimination of fallow periods and, in some cases, the harvesting of some areas that were previously considered unproductive. In Bolivia, as a result of this response, the area harvested by peasant families increased by almost 60 per cent between 1950 and 1974-1976.[41]

A second component is the adoption of modern technologies and the acceptance of changes in deeply ingrained production habits. Studies in different Andean regions confirm that, far from opposing innovations, peasants utilize improved seeds, chemical fertilizers and pesticides; and they are willing to change sowing techniques whenever those changes are thought necessary to reach what they consider their normal subsistence level. In fact, lack of cash income rather than traditionalism appears to be the primary reason that peasants do not use more technological input.

A third and most central component of the survival strategies used by peasant families is diversification of sources of income, including commercial activities and art crafts. In most cases, these activities are seen as providing complementary income to that derived from agricultural production. In some instances, however, peasants earn practically no income from agricultural activities and devote almost all their time to art crafts and commerce. Another source of income comes from selling their agricultural and cattle production in the

neighbouring markets. The degree to which this effort is possible depends on agro-ecological conditions, family size and access to the markets. A higher proportion of peasant production is sold when agro-ecological conditions are favourable for crops that are not directly consumed by the producer and his immediate family. Unfortunately, in the Andean highlands, where the main crops are wheat, barley, quinua, potatoes and corn, this is rarely the case. In those regions, it is difficult to sell more than 25 per cent of agricultural production; and peasants have very little opportunity to earn by this means the cash income they need to purchase more suitable technological input. Family size also affects the proportion of agricultural production that can be marketed. Generalizing from a number of surveys, it is possible to say that the smaller the family size, the higher will be the proportion of peasant production sold in the market and the higher the proportion left to be used as seeds next year. This factor makes it even more difficult for highland peasant families to earn cash income from agricultural activities alone, even though the expansion of highway networks in recent years has considerably improved access to markets.

In general, the smaller the size of the peasant holding, the larger will be the proportion of family income earned through wage work outside the family farm. Temporal migration of one or two family members is one way of raising family income. Remittances either in cash or in durable goods and food items from the migrant son or daughter also help to satisfy family needs. Eventually, the entire family may be forced to move to a city or to an agricultural frontier area.

The levels of living of the highland peasant population do not appear to have improved, despite their efforts and those of Governments. Calorie intake, for instance, is still below the minimum considered normal (2,400 calories daily). In some areas of the Bolivian highlands, it has been found that the daily calorie intake per capita is no more than 1,802; and in some places it reaches only 1,325 calories. In contrast, calorie consumption per capita for Bolivia as a whole increased from 1,624 in 1950 to 2,206 in 1975.[42] Furthermore, peasant productivity has decreased and soil deterioration has increased in all highland areas.

These problems of social, economic and ecological deterioration have coincided with relatively low rates of natural population growth, due to very high mortality and comparatively low fertility. Because of the lack of basic services and the very low income level of most of the peasant population, their mortality levels are considerably higher than those of other social groups of the same countries. In Bolivia, for example, data for 1975 show that the children of highland peasants had a probability of dying before age 2 that ranged from 256 to 264 per 1,000, depending upon their relative proximity to an urban centre, while the figure for the children of the upper middle class living in the main cities was 129 per 1,000.[43] In Ecuador, it was found[44] that the probability of dying before age 2 was 37.8 per cent higher for the children of the Indian population living in the highlands, most of them probably peasants, than that of the non-Indian population living in those areas. In Peru, infant mortality in the rural areas of the highlands was 146.3 per 1,000 in 1977-1978, considerably higher than the rate of 112.2 per 1,000 found among the rural population living in coastal areas.[45]

Furthermore, although highland peasants have high fertility levels, they are lower than those of other rural groups. In Ecuador, for instance, the National Fertility Survey conducted in 1976 found a mean of 4.87 children ever born to highland peasant women aged 15-49 years (standardized by age and duration of marriage), while coastal peasant women of the same ages had an average of 5.37 children.[46] A detailed analysis of the 1975 census of Bolivia led to the conclusion that fertility levels were high and increasing in all agricultural groups, but again that highland peasant women had lower levels than those of the agricultural frontier areas.[47] In both cases, the available evidence suggests that such comparatively low fertility can be attributed to a longer breast-feeding period among Andean women because the social organization of production permits women to work while being in close contact with their children, as well as to lower nuptiality due to the selective out-migration of young male adults.

The fact that social, economic and ecological conditions have deteriorated in the Andean highlands despite comparatively slow rates of population growth indicates that the problems faced by the population of those areas are caused more by structural and institutional factors then by demographic factors. Accordingly, there is an urgent need for institutional and technological changes directed towards improving agricultural output and opening more employment opportunities in the highland areas. Where there is high population density, however, a necessary complement to such changes might be planned migration to agricultural frontier areas.

Expansion of the agricultural frontier: some demographic and environmental consequences

Undoubtedly, one of the most noteworthy trends in Latin American agricultural development is the expansion of the agricultural frontier. Growth in agricultural production has been and continues to be based mainly on an increase in the area harvested. During the 1960s, the expansion of this area accounted for two thirds of the increase in the harvest, with the remaining third accounted for by higher yields. Although productivity is contributing increasingly to the total produced, three fifths of the expansion of agricultural productivity during the 1970s was still accounted for by a more extensive area harvested.[48] During the past decade, the regional area harvested rose from 85 million hectares to 100 million hectares. Most of that increase has been concentrated in Bolivia, Brazil, Costa Rica, Ecuador, Mexico, Panama, Paraguay and Venezuela. Of these countries, Brazil is the most striking case when the process is viewed in a longer perspective: between 1950 and 1975, the area harvested increased from 17.5 million hectares to 42 million hectares; and it has continued to increase.[49]

The expansion of the agricultural frontier has raised three interrelated questions: its demographic effects for the country as a whole and for sending and receiving places; the economic and social conditions under which it takes place; and the environmental consequences both for the frontier and for other areas.

In the prevailing development style, a number of important functions are fulfilled by migration flows to frontier areas. In this way, the rural population of consolidated areas can escape the unemployment and land scarcities produced by the increasing dominance of market-oriented, capital-intensive agricultural firms in their areas of origin, as well as avoid long periods of unemployment in the cities. For Governments, the encouragement of spontaneous settlements and the organization of Government-sponsored settlement schemes offer ways to raise farm production without making politically dangerous structural changes in the land tenure system and to alleviate social pressures in the cities. Lastly, frontier settlers allow the expansion of capitalistic firms by first performing the tasks involved in opening up operations and later providing the necessary labour force. From the demographic perspective, the population redistribution effects attributed to the expansion of the agricultural frontier are one of the main reasons that Governments encourage and/or organize land settlement schemes. Some information from Bolivia and Brazil provides an idea of the degree to which that function has actually been accomplished.

Until 1952, most of the Bolivian population resided in the highlands and valleys where the indigenous population had lived for centuries. In 1953, the agrarian reform abolished the dependency relations between land owners and peasants, thereby giving the peasants freedom of movement at a time when the Government was encouraging the development of the eastern areas of the country in tropical savannahs. As a consequence of those two factors and of high population pressure in the area of traditional peasant agriculture, massive eastward population movements began and have continued over the past 30 years. Between the population censuses of 1950 and 1976, the rural population of the eastern region increased at an annual rate of 3 per cent while that of the highlands and valleys barely grew at 1 per cent.[50] Despite these differences in rates of growth, however, 80 per cent of the Bolivian population continued to live in the highlands and valleys in 1976. Studies done by the Bolivian Ministry of Planning indicate that in order for the rural population of those regions to remain stationary, about 3 million people should migrate from them between the periods 1980-1985 and 2020-2025; of that total, 60 per cent should move to the eastern plains.[51]

Recent Governments of Brazil have viewed the expansion of the agricultural frontier as a safety-valve for conflicts derived from structural unemployment and as a way of increasing farm production without making major changes in land tenure systems. During the past 20 years, the Amazon area has been the frontier. A recent study of preliminary data provided by the 1980 population census of Brazil[52] allows some tentative conclusions as to the degree to which the expansion of the Amazon frontier has fulfilled government expectations.

Between 1970 and 1980, Rodônia, one of the states composing that area, had an annual population growth rate of 15.8 per cent, by far the largest rate of all Brazilian states. Furthermore, during the same period, the Amazonia region had the most rapid rates of growth in Brazil: 5 per cent per annum, or twice the national rate. If these rates give the impression that the Amazonia region has fulfilled its population redistribution role, a look at the absolute numbers of migrants leads to the opposite conclusion. During the period 1970-1980, there were an estimated 915,000 migrants to the northern region, and no more than 500,000 were estimated to be migrants from other regions to the Amazonia rural areas. In contrast, it has been estimated that to absorb the structural over-population found in other regions, an additional 2.4 million families should migrate to the agricultural frontier areas.[53]

In sum, both the Bolivian and the Brazilian experiences do indicate that the expansion of the agricultural frontier is significantly contributing to resolving social pressures in other regions or is having important population redistribution effects at the national level.

The Brazilian experience illustrates the importance of economic, social and technological factors operating in the agricultural frontier areas with respect both to their capacity to attract and retain population and to the ecological problems derived therefrom. Up to the 1960s, the Paraná and Centre-West regions of Brazil had the highest net migration. Provisional data from the 1980 population census show that in the former region, there were 1.5 million more out-migrants between 1970 and 1980; and that in the latter, net migrants accounted for only 736,000 in a total population of 7.5 million. Students of the subject agree that such a sudden reversal of previous trends is related to changes in crop composition and to the adoption of a style of development that gives priority to agricultural production based on mechanization rather than on a permanent labour force. This new type of agricultural development has modified the relations of production and has forced tenant farmers and "renters", as well as former permanent wage labourers, to become seasonal wage labourers with an urban residence (*boias frias*), to seek work in the cities or to move to new frontier areas. In Rodônia also, studies of recent social and economic changes[54] indicate that processes similar to those in the Paraná and Centre-West regions are now under way and that it is highly probable that the expulsion of small farmers may be even faster in Rodônia than in the other two regions.[55]

Although the problems faced by Brazilian frontier settlers cannot be completely generalized to other frontier areas, there are indications that in most of them the organizational and technological model applied to agricultural activities tends to replicate those of the consolidated agricultural areas, although they have very different ecological characteristics. Where they are found, atomization of holdings, landlessness, lack of permanent

work, marginalization and the resulting widespread poverty arise more from the structural technological and institutional characteristics of the expansion of the agricultural frontier than from demographic factors.

However, the frontier areas have comparatively high rates of natural population growth, due to higher fertility levels than are found in other rural areas. Higher nuptiality due to the predominance of male migration and hence to high sex ratios seems to be particularly important in explaining such fertility. Furthermore, it is possible that migrants have higher fertility than non-migrants, that the breast-feeding period is shorter and that other traditional controls of fertility-related behaviour have been weakened in frontier areas. It has also been argued, more speculatively, that higher fertility is a demographic response of frontier migrants to land availability in those areas.[56]

Mortality levels, on the contrary, are surprisingly low among Bolivian and Brazilian frontier settlers. In the Bolivian areas of consolidated agriculture, 3 out of 10 children die before they reach age 2; but only 1.9 children born in the frontier areas of the Eastern Meadows do so.[57] In Brazil, although life expectancy at birth of the Amazonian population is about the same as the national average, it has increased more rapidly.[58]

Migration and comparatively high rates of population growth combine and reinforce each other to make the rural population increase at very high rates. Population densities in those areas are still low but the organization of large farms has severely restricted access to land, while mechanization and seasonal wage labour make it difficult to find permanent jobs in the agricultural sector. Some consequences of these processes are spontaneous occupations of poorer soils, invasions of Indian lands and of forest reserves, return migration to the cities and the growth of urban centres that are populated mainly by migrants trying to obtain land or to be hired as seasonal wage labourers and that have very poor health and educational services.

There is little knowledge about the environmental consequences of expanding the agricultural frontier.[59] However, preliminary results of a study being conducted by the ECLA/United Nations Environment Programme Project on Styles of Development and Environment indicate that over the next five years 294,340 square kilometres will begin to be incorporated into the harvested areas of South America and that at least 66 per cent of the expansion of the agricultural frontier will take place in areas where the ecological impact will be high, mainly in the Amazon ecosystem.

The expansion of the agricultural frontier will continue to be an important means of increasing agricultural production in Latin America. The question is whether and/or how the ecological costs may be reduced and the social and economic benefits may be sustained. The Brazilian experience suggests that an increasing number of small farmers encroached on by large farms will inflict considerable ecological damage in their attempt to obtain more land but that the damage derived from the activities of large ranches and of agro-industrial enterprises may be even more serious. At the same time, it shows the need for Governments to include ecological considerations in the formulation and implementation of policies if the environmental costs are to be reduced.

C. Major guidelines for future action

An attempt has been made in this chapter to illustrate how the demographic dynamics of Latin America during the past two decades and some environmental problems are related to the specific productive structures and consumption patterns prevailing in most countries of the region, or in specific regions of those countries. The first section summarized a number of structural changes caused by the adoption of a style of development in which transnational corporations play the dominant role in the key productive sectors and in financing and services. Those changes were subsequently related to the main trends of demographic change in Latin America.

A first general conclusion derived from that analysis is that the above-mentioned changes have accelerated the decline of fertility but that they have also maintained very unequal probabilities of dying during the first years of age, depending upon social origin and place of residence. Thus, it is quite probable that survivorship gains might have slowed earlier than had been expected. From a policy viewpoint, this conclusion suggests that a combination of preventive and curative health measures, with decisive efforts to reduce extreme poverty, will be needed to bring about future declines in mortality. The studies being done by ECLA indicate that most countries of the region have already reached a level of economic and institutional development that would permit the elimination of extreme poverty if the political will to do it exists.

A second conclusion is that the prevailing style of development has not — and in all probability will not — modify substantially the secular patterns of urban concentration and metropolitanization, and that most of the environmental problems associated with metropolitanization and residential segregation are more a consequence of the development style and of the stratification system of Latin American societies than of the size of the metropolitan centres or the speed of their growth. From the political point of view, it appears that the solution to some of the more acute problems of metropolitan development (and the environmental relations involved in it) does not depend upon their recognition, which has already been secured, or upon technical instruments, which are available, but upon the possibility of removing obstacles to implementation of the policies set forth for that purpose. In most cases, this depends to a great extent upon such factors as the negotiating capacity of the Government *vis-à-vis* the large transnational corporations, the natural-resource policies, the technological capacity of the country in key sectors and the negotiating capacity of the local authority and people.

In the second section, two related problems were discussed: the socio-demographic and environmental

problems faced by peasants in high-altitude ecosystems; and the population and environmental problems of agricultural frontier areas. The social and economic importance of peasants in the Andean highlands makes their future important not only for them but for the whole society. The analysis made here and the studies by ECLA on the subject clearly point to the need to devise and implement new approaches to the work of the Andean rural development organizations. On the basis of a diagnostic study of the management and the social and productive organization of resources in peasant communities, those approaches should promote the increase of their resources and the responsible and equitable management of the micro-regional ecosystems through a communal and intercommunity arrangement for popular participation in rural development programmes.

In large part, the expansion of the agricultural frontier has been a spontaneous response to social and economic problems faced by the population in traditional areas of peasant agriculture. The ways in which new areas have been occupied and the systems used have resulted in major environmental changes at a high social cost — and probably a high ecological cost. The technological model applied to agricultural activities on the frontier has replicated the technological pattern of the consolidated agricultural areas. This model frequently tends not to make the best use of the attributes of the ecosystems of virgin areas (water-retaining capacity, recycling, shade etc.), and it imposes untenable objectives of maximizing land productivity. Moreover, it tends to reproduce land tenure patterns and labour relations that leave a growing number of people without access to land or to permanent jobs. To avoid these social and environmental costs, Governments must review that model, giving special attention to technological changes and to the analysis of the appropriation of surpluses. It is equally necessary that experiences with planned settlements be examined so as to avoid aggravating, rather than diminishing, those environmental and social costs.

Although the analysis of peasant economies in high-altitude ecosystems and of the social, economic and environmental conditions in agricultural frontier areas does not cover the entire agricultural system in Latin America, it does show the need for the Governments of the region to formulate and implement policies directed towards modifying the predominant style of agricultural development. The continuation of that style would make food production grow faster than population, but it would also increase the concentration of land, capital and production. In some ecosystems, it would also lead to depletion of resources or to negative disruptions of an environment for which the techniques involved are inappropriate. In the long run, this result would imply the failure of the entire effort made to attain a sustainable production from those ecosystems.

Summary

The analysis of the interrelations of population, development style, life-styles and the environment in Latin America provides some useful guidelines for future action, even though the specific conclusions reached are necessarily tentative because of the paucity of relevant data.

The dominance of a development style in which transnational corporations play a central role demonstrates that many apparently local manifestations of problems related to population, resources, environment and development have their cause elsewhere — in distant centres of decision-making or in a process triggered by someone else. In fact, a critical part of the interplay for the interrelations of these factors in the future is likely to take place in the developed countries, because of the truly global reach of many of their domestic and international policies and also because they act as centres that diffuse world-wide patterns and systems of production and consumption, transnational life-styles, technologies etc.

Thus, in the developed countries, the evolution and application of patterns of development, life-styles and technologies that are environmentally sound and that conserve energy and natural resources are of fundamental importance for the way in which the above-mentioned interrelations will evolve both in those countries and globally.

What takes place in the developing countries is not likely to have such great influence world-wide, although in many instances it will be of critical importance for their domestic development. Uncritical assimilation of development styles from the developed countries, the lack of policy sensitivity for the interrelations and the absence of effective instruments and experience to deal with them can lead to possible local breakdowns, and in many localities, including some major metropolitan areas in the developing countries, to social, environmental and resource crises.

Throughout the world, integrated, systematic thinking, planning, policy and decision-making are prerequisite to dealing with these interrelations. In this context, different specific population policies will play a critical role. The problem that remains is that decision-makers and institutions still must learn how to think in an integrated and systematic manner. Even more important, once they learn to do this, they must learn how to apply their thinking effectively. There is still a considerable gap between the dynamic, unpredictable real world and the desired schemes, models and plans.

A number of tasks could be usefully undertaken internationally, and particularly by the United Nations system, to fill that gap. First, there must be considerably greater efforts to improve the data base and to elaborate and systematically to follow indicators of the quantitative evolution of the issues involved. Secondly, case studies must be made of special instances of the interrelations between population, resources, environment and development, in order to increase the understanding and knowledge of the problems involved and to provide solutions to them. Thirdly, more efforts must be made to elaborate integrated approaches and understanding of the problems involved, so as to overcome the

narrow and unisectoral approaches that tend to impede progress in working out adequate solutions. Concentration on those three main tasks will allow the building of better and continuously improved models and for projections that are global and of long-term significance.

The United Nations is uniquely suited to analyse and highlight the policy implications, from a global perspective, of the interrelations between population, resources, environment and development, because ultimately these aspects will evolve in the context of the entire development process. Moreover, particularly as this process concerns the developing countries, it will be strongly influenced by and related to the creation of an adequate material base and an equitable resolution of the many structural problems, including access to and distribution of natural resources, inherent in the North-South economic and political relations.

NOTES

[1] This commission is currently called the Economic Commission for Latin America and the Caribbean (ECLAC).

[2] *Report of the United Nations Conference on the Human Environment, Stockholm, 5-16 June 1972* (United Nations publication, Sales No. E.73.II.A.14).

[3] *Report of the United Nations World Population Conference, 1974, Bucharest, 19-30 August 1974* (United Nations publication, Sales No. E.75.XIII.3), pp. 95-106.

[4] Adopted by the participants in the United Nations Environment Programme/United Nations Conference on Trade and Development Symposium on Patterns of Resource Use, Environment and Development Strategies, Cocoyoc, Mexico, 8-12 October 1974.

[5] The first subject was discussed at the Economic Commission for Latin America/United Nations Environment Programme Regional Seminar on Agrarian Policies and Peasant Survival in High Altitude Ecosystems, Quito, Ecuador, 23-26 March 1982. The second was the topic of the Economic Commission for Latin America Seminar on the Expansion of the Agricultural Frontier and the Environment in Latin America, Brasilia, 10-13 November 1981.

[6] See, among others, the following articles in *CEPAL Review*, No. 1 (First semester, 1976), part 1 (United Nations publication, Sales No. E.76.II.G.2): Raúl Prebisch, "A critique of peripheral capitalism"; Enrique Iglesias, "Situations and prospects of the Latin American economy in 1975"; Marshall Wolfe, "Approaches to development: who is approaching what?"; Aníbal Pinto, "Styles of development in Latin America"; Jorge Graciarena, "Power and development styles". See also Osvaldo Sunkel, "The interaction between styles of development and the environment in Latin America", *CEPAL Review*, No. 12 (December 1980) (United Nations publication, Sales No. E.80.II.G.5); and comments on Sunkel, *loc. cit.*, by Aníbal Pinto, Jorge Sábato, Gabriel Valdés and Jorge Wilheim.

[7] Preliminary estimates by the International Labour Organisation Regional Employment Programme for Latin America and the Caribbean, on the basis of adjusted national population censuses and adjusted surveys. The total includes information from 14 countries which account for around 95 per cent of the economically active population of Latin America: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Mexico, Panama, Peru, Uruguay and Venezuela.

[8] Economic Commission for Latin America, on the basis of data from the United Nations Educational, Scientific and Cultural Organization.

[9] Carlos Filgueira, "Consumption in the new Latin American models", *CEPAL Review*, No. 15 (December 1981) (United Nations publication, Sales No. E.81.II.G.4), p. 71.

[10] Food and Agriculture Organization of the United Nations, *Agriculture: Toward 2000; Latin America's Problems and Options* (Rome, 1981).

[11] *Ibid.*

[12] Emilio Klein, "Diferenciación social: tendencias del empleo y del ingreso agrícolas", in *Economía campesina y empleo* (Santiago, Chile, Regional Employment Programme for Latin America and the Caribbean, 1981), pp. 3-25.

[13] Economic Commission for Latin America, "Problems and orientations of development", *CEPAL Review*, No. 15 (December 1981) (United Nations publication, Sales No. E.81.II.G.2), pp. 47-69; and Economic Commission for Latin America, Division of Natural Resources, "Tendencias y perspectivas del abastecimiento de energía en América Latina (1960-1979; 1980-1990)", unpublished paper.

[14] Economic Commission for Latin America, "Tendencias y perspectivas del abastecimiento de energía...".

[15] Enrique V. Iglesias, "Development and equity: the challenge of the 1980s", *CEPAL Review*, No. 15 (December 1981) (United Nations publication, Sales No. E.81.II.G.2), p. 41.

[16] Filgueira, *loc. cit.*

[17] Economic Commission for Latin America, "Income distribution in selected major cities of Latin America and in their respective countries", *Economic Bulletin for Latin America*, vol. XVIII, Nos. 1-2 (1973) (United Nations publication, Sales No. S.73.II.G.3).

[18] Centro Latinoamericano de Demografía, *Boletín Demográfico*, vol. XIV, No. 27 (January 1981), table 2-b.

[19] See Valeria da Motta Leite, "Niveis e tendencias da mortalidade e da fecundidade no Brasil a partir do 1940", in *Anais Segundo Econtro Nacional* (São Paulo, Associaçao Brasileira de Estudos Populacionais, 1981), vol. 1, table 6; M. Martha Accinelli and María S. Muller, "Un hecho inquietante: la evolución reciente de la mortalidad en Argentina", *Notas de Población*, vol. VI, No. 17 (August 1978), pp. 9-18; Alberto Palloni, "Mortality in Latin America: emerging patterns", *Population and Development Review*, vol. 7, No. 4 (December 1981), pp. 623-650.

[20] Hugo Behm and Domingo Primante, "Mortalidad in los primeros años de vida en la América Latina", *Notas de Población*, vol. VI, No. 16 (April 1978), pp. 23-44; G. González, "Estrategias de desarrollo y transición demográfica: los casos de Brasil, Costa Rica, Cuba y Chile", Santiago, Chile, Centro Latinoamericano de Demografía, 1980 (mimeographed); G. González, "Procesos demográficos y economía campesina: el caso boliviano", Santiago, Chile, Centro Latinoamericano de Demografía, 1982 (mimeographed).

[21] The total fertility rate is the average number of children that would be born per woman if all women lived to the end of their childbearing years and bore children according to a given set of age-specific fertility rates.

[22] For efforts to explain some cases, see, among others, González, "Estrategias de desarrollo y transición demográfica..." and "Procesos demográficos y economía campesina..."; J. A. M. Carvalho, P. Paiva and D. R. Sawyer, *A Recente Queda da Fecundidade no Brasil: Evidencias e Interpretaçao*, Centro de Desenvolvimento e Planejamento Regional Monograph No. 12 (Belho Horizonte, Brazil, 1981); National Research Council, Panel on Brazil, *Levels and Recent Trends of Fertility and Mortality in Brazil*, Committee on Population and Demography Report No. 21 (Washington, D.C., National Academy Press, 1983); Hania Zlotnik, *Levels and Recent Trends in Fertility and Mortality in Colombia*, National Research Council Committee on Population and Demography Report No. 12 (Washington, D.C., National Academy Press, 1982); Paula E. Hollerbach and Sergio Díaz-Briquets, *Levels and Recent Trends of Fertility and Mortality in Cuba*, National Research Council Committee on Population and Demography Report No. 26 (Washington, D.C., National Academy Press, 1983).

[23] Cuba is, of course, a different case that cannot be discussed here because of space limitations. In this country, such societal factors as full male employment, social security and access to free public health services for all the population, compulsory primary education and age restrictions on employment have apparently led to a smaller family size norm, while the provision of fertility regulation services by the Government has provided the means to adjust actual to desired family size.

[24] Food and Agriculture Organization of the United Nations, *Latin America's Problems and Options*.

[25] *Ibid.*

[26] Centro Latinoamericano de Demografía, *Boletín Demográfico*, vol. XIV, No. 28 (July 1981).

[27] Economic Commission for Latin America, "Long-term trends and projections of Latin American economic development" (E/CEPAL/1027), 3 March 1977.

[28] V. Faria, "O sistema urbano brasilero: resumo das caracteristicas e tendencias recentes", *Estudos CEBRAP* (Centro Brasileiro de Analise e Planejamento), No. 18 (1976); Raúl Urzúa and others, "Desarrollo regional, migraciones y concentración urbana en América Latina", Santiago, Chile, Centro Latinoamericano de Demografía, Programas de Investigación Social en Población para América Latina, 1982 (mimeographed).

[29] For a more detailed discussion of these and other environmental and social effects of the style of development on the internal characteristics of the metropolitan areas, see Osvaldo Sunkel, *La dimensión ambiental en los estilos de desarrollo de América Latina* (E/CEPAL/G.1143) (July 1981), pp. 72-80.

[30] For a study examining the relationship between the rates of urban growth and urban deterioration, see Ligia Herrera, *La concentración urbana y la dispersión de la población rural: su incidencia en el deterioro del medio humano*, CELADE Series A, No. 126 (Santiago, Chile, Centro Latinoamericano de Demografía, 1976).

[31] For a discussion of the empirical evidence on this point, see Raúl Urzúa, "Social science research on population and development in Latin America", appendix 11 to the final report of the International Review Group of Social Science Research on Population and Development, Mexico City, El Colegio de México, 1978, pp. 104-111.

[32] Sunkel, *loc cit.*, pp. 78-79.

[33] See Economic Commission for Latin America, *Report of the Regional Seminar on Metropolitanization and Environment*, Curitiba, 16-19 November 1981 (E/CEPAL/L.266), 5 May 1982, "General conclusions".

[34] See note 5.

[35] Emiliano Ortega, "La experiencia latinoamericana y el desafío campesino" (E/CEPAL/PROY.6/R.45), 16 March 1982.

[36] Klein, *loc cit.*, p. 17, table 1.

[37] Junta Nacional de Algodao, Programa Andino de Desarrollo Tecnologico para el Medio Rural, Resumen (J/G.T./99), Lima, 1981; quoted in Ortega, *op. cit.*, p. 16.

[38] Klein, *loc. cit.*, table 2.

[39] Economic Commission for Latin America and Food and Agriculture Organization of the United Nations, División Agrícola Conjunta, *Bolivia: el desarrollo agrícola de post-reforma* (Santiago, Chile, 1980).

[40] *Ibid.*, p. 21.

[41] Economic Commission for Latin America and Food and Agriculture Organization of the United Nations, División Agrícola Conjunta, "La agricultura y las relaciones intersectoriales: el caso de Bolivia" (E/CEPAL/R.205), September 1979.

[42] Economic Commission for Latin America and Food and Agriculture Organization of the United Nations, *Bolivia...*, p. 48, table 14.

[43] González, "Procesos demográficos y economía campesina...", p. 24, table 5.

[44] Behm and Primante, *op. cit.*, table 5.

[45] National Fertility Survey of Peru, 1977-1978, as quoted by H. Ramos, *Mortalidad infantil y atención materno infantil en el Péru* (Santiago, Chile, Centro Latinoamericano de Demografía, 1981).

[46] M. Posso, "Estratos sociales y fecundidad en Ecuador", Santiago, Chile, Centro Latinoamericano de Demografía, 1982 (mimeographed).

[47] González, "Procesos demográficos y economía campesina...".

[48] Luis López Cordovez, "Trends and recent changes in the Latin American food and agricultural situation, *CEPAL Review*, No. 16 (April 1982) (United Nations publication, Sales No. E.82.II.G.2), p. 15.

[49] Food and Agriculture Organization of the United Nations, *Latin America's Problems and Options.*

[50] G. González, "Procesos demográficos y economía campesina: el caso boliviano", paper submitted to the Economic Commission for Latin America/United Nations Environment Programme Regional Seminar on Agrarian Policies and Peasant Survival in High Altitude Ecosystems, Quito, Ecuador, 23-26 March 1982.

[51] *Ibid.*, pp. 63 ff.; and Bolivia, Ministerio de Planeamiento y Coordinación, Programa de Políticas de Población, Modelo LRPM 2.

[52] George Martine, "Expansao retraçao de emprego no fronteira agricola" (E/CEPAL/PROY.6/R.24), 24 October 1981.

[53] *Ibid.*, table 12.

[54] *Ibid.*, and Philippe Lena, "Expansao da frontera agricola em Rodônia: ocupaçao do espaço e dinamica da estrutura agraria" (E/CEPAL/PROY.6/R.25).

[55] Martine, *op. cit.*, p. 27.

[56] Thomas W. Merrick, "Fertility and land availability in rural Brazil", *Demography*, vol. 15, No. 3 (August 1978), pp. 321-336.

[57] González, "Procesos demográficos y economía campesina...".

[58] J. A. M. Carvalho, "Evoluçao demografica recente no Brasil", *Pesquisa e Planejamento Económico*, vol. X, No. 2 (1980).

[59] N. Gligo and J. Morello, "Perspectivas de expansión de la frontera agrícola en el espacio sudamericano" (E/CEPAL/PROY.6/R.8), 3 November 1981.

XVIII. FOOD PRODUCTION IN RELATION TO POPULATION GROWTH IN AFRICA*

In the 1980s, Africa faces critical economic and socio-political problems. The most intractable of all may be those resulting from increasing population and urbanization coinciding with a decline in food production and reduced agricultural activity. The food and agriculture situation in Africa has deteriorated drastically over the past two decades, and the situation is currently reaching crisis proportions.

In various studies attesting to this situation, action plans and programmes to remedy it have been proposed. International meetings also have focused on this topic and called for immediate remedial action. Most recently, at the Twelfth Regional Conference for Africa of the Food and Agriculture Organization of the United Nations (FAO), held in Algeria in September 1982, the Director-General of FAO pointed out that domestic production of food supplies in Africa had decreased by over 10 per cent in a decade, making the food crisis there one of the major development problems in the world. He stated that the only hope for a solution was in a very pronounced increase in internal production of foodstuffs.[1]

As long ago as 1974, the World Food Conference adopted resolution IX[2] on the achievement of a desirable balance between population and food supply. It called on all Governments to make every effort to produce and distribute equitably sufficient food and income to provide an adequate diet for all human beings. Subsequently, in November 1976, the FAO Regional Conference at Freetown called on FAO, the Economic Commission for Africa (ECA) and the Organization of African Unity (OAU) to draw up a regional food plan that would enable all member States of OAU to become self-sufficient in food production within 10 years.[3] The Freetown Declaration was endorsed by the Conference of Ministers of ECA at Kinshasa in February 1977.

At the Tenth Regional Conference for Africa, convened by FAO at Arusha, United Republic of Tanzania, in September 1978, the Regional Food Plan for Africa[4] was approved. In addition, food self-sufficiency is the major objective of the Lagos Plan of Action,[5] which was adopted in 1980 and is considered the contemporary blueprint for development in Africa. Guidelines for the attainment and implementation of this goal, as presented in the Implementation Plan of the Lagos plan of Action, were approved by the heads of State and Governments members of OAU.

A number of factors have contributed to the unfortunate situation of declining food production and deteriorating agricultural activity in Africa. First, the countries of the region have encouraged and implemented agricultural policies directed more towards the development of income-generating industrial and export crops, at the expense of the indigenous food supply. Similarly, investment in the meagre agricultural research has been geared more towards these export crops.

Moreover, the pricing systems used in the countries of Africa are a major disincentive to increased agricultural production. In order to benefit urban consumers, prices of agricultural commodities and food products are controlled at too low a level. Another disincentive is to be found in the urban-oriented investment strategies of many countries. Many Governments have proclaimed agriculture and rural development to be the corner-stone of their national development plans. However, despite the primary importance of agriculture in their economies, few have actually allocated more than 5-10 per cent of their budgets to these sectors in recent years.

There is no need to elaborate on the serious constraint to rapid increases in food production imposed by the chronic lack or inadequacy of infrastructure, institutions and supporting services, particularly in relation to education and health. The adverse effects of inadequate programmes for credit, marketing, extension and training, as well as the devastating effects on the agricultural labour force of poor health and education, are all too well known. As stated in the *Regional Food Plan for Africa*:

> "Indeed, it is only through a considerable expansion and improved efficiency of the supporting services that technological innovations and modern inputs can be expected to reach the mass of the rural poor and enable the traditional subsistence farmer to produce food for the market."[6]

The problem of inadequate food and agricultural production in Africa has been further complicated by an unusual number of disasters, both natural and man-made. Large areas have been rendered desolate, unproductive or increasingly less productive through the effects of drought, desertification, overgrazing, soil erosion, diseases, pests and hostilities. Deserts have been encroaching on useful agricultural land at an annual rate of 60,000-70,000 square kilometres and are directly affecting the livelihood of about 60 million people. The Sahelian drought from 1968 to 1974 claimed the lives of over 150,000 people and millions of cattle and other livestock in the region.[7] Since 1978, drought has reappeared with increasing intensity in the Sudan-Sahelian region, in the Horn of Africa and in Southern Africa near the Kalahari Desert area. Every year, an estimated 25,000 square kilometres of land is lost to food production and rural income-earning capacity because of soil

* Prepared by the secretariat of the Economic Commission for Africa.

erosion. There is, in addition, the increasingly devastating effect that war is having on good agricultural land in Africa.

Last, but by no means least, there is the adverse effect of the rapid growth of population and increasing rate of urbanization in Africa on the food situation. During the past decade, the annual population growth rate in Africa was close to 3 per cent but food production grew at less than 2 per cent per annum, implying a serious decrease per capita. During the 1960s, the annual rate of decline in average food production per capita was −0.7 per cent; during the 1970s, it was actually worse, at' −1.6 per cent.[8] Moreover, estimates for the period 1980-1982 indicate a further deterioration. To complicate this problem, the ill-equipped townships are being overwhelmed by urbanization at annual rates that often are double the total population growth rates. Simultaneously, of course, urbanization is draining the rural areas of their youth and essential manpower.

This discussion of the reasons that food production fails to match population growth covers dietary and nutritional requirements, other factors determining the demand for food and the role of rural labour force productivity. An attempt is made to discuss the projections of food production and demand using two variants and policies and measures required to improve food production in Africa. Appropriate strategies for formulating a short-term solution to the problem are then recommended.

A. Food production, nutrition and population, 1970-1981

Food supply

The problem of food supply varies among the different regions and countries of Africa. Zimbabwe, for example, is self-sufficient in food. Other countries, although not self-sufficient, have the financial means to supplement local production by importing the required foodstuffs. In most other countries, however, there are serious financial constraints on the importation of foodstuffs to meet a shortfall in supply. For this reason and because of lack of adequate information or unreliability of data, there is need for caution in overall assessments of the food and population problem in Africa.

For the world as a whole, food production grew at 2.4 per cent per annum during the period 1970-1976, considerably exceeding the annual population growth rate of 1.9 per cent. In Africa, however, the annual growth rate of food production for the same period was 1.2 per cent, far below the population growth rate of 2.7 per cent (see table 76). In fact, during that period, only in the African region did the growth rate of population exceed that of food production. This decrease in food production was accentuated by the growth rate of cereals production at 1.9 per cent per annum. Hence, the rapid rate at which imports of cereals grew during the early 1970s — a rate that has been rising steeply ever since.

TABLE 76. AVERAGE ANNUAL RATES OF GROWTH OF POPULATION AND FOOD PRODUCTION, WORLD AND MAJOR REGIONS, 1970-1976

(Percentage)

Region	*Average annual population growth rate*	*Average annual growth rates in total food production*	*Annual growth rates in total cereal production*
World	1.9	2.4	2.7
Africa[a]	2.7	1.2	1.9
Americas			
Northern America[b]	0.9	3.1	4.1
Latin America	2.8	3.3	3.8
Asia			
East and South Asia[c]	2.5	2.8	2.5
Western Asia[d]	2.8	4.2	5.0
Europe			
Western Europe[e]	0.6	1.6	1.3
Eastern Europe and USSR[f]	0.9	1.9	1.6
Oceania[g]	1.7	3.1	6.5

Source: Food and Agriculture Organization of the United Nations, "Population, food and nutrition", in *World Population Trends and Policies: 1979 Monitoring Report, Vol. I: Population Trends* (United Nations publication, Sales No. E.79.XIII.4), pp. 200-201, tables 92 and 93.

NOTE: The countries included in the regions given in this table do not in all cases conform to the geographical groups used by the Population Division of the Department of International Economic and Social Affairs of the United Nations Secretariat. Regional groups and/or variations are given in the relevant footnotes.

[a] Excluding Egypt, Libyan Arab Jamahiriya, South Africa and Sudan.

[b] Canada and United States of America.

[c] Excluding Afghanistan, Iran (Islamic Republic of), Japan and the centrally planned economies of Asia.

[d] Including, in addition to the countries of Western Asia, Egypt, Libyan Arab Jamahiriya and Sudan in Northern Africa; and Afghanistan and Iran (Islamic Republic of) in Southern Asia. Excluding Israel.

[e] Including also all countries of Northern Europe and all countries of Southern Europe except Albania.

[f] Including Albania.

[g] Australia and New Zealand.

Population growth has been outstripping the growth of food production in an increasing number of countries. During the period 1970-1976, population grew at a higher rate than food production in two thirds of the countries of Africa, compared with half the countries during the period from 1961-1965 to 1970 (table 77).

During the period 1970-1977, total food production growth rates (table 78) were highest in Northern Africa at 2.1 per cent, followed by Eastern and Southern Africa at 1.9 per cent.[9] In Western and Central Africa, the rates were 1.1 and 1.0 per cent, respectively. For Africa as a whole, the growth rate was 1.3 per cent, much lower than the rate of 2.7 per cent for 1961-1970.

With respect to food per capita, however, the growth rate during the period 1970-1977 was negative both for Africa as a whole and for each subregion. For the African region, it was −1.4 per cent, compared with 0.03 per cent per annum for 1961-1970. Thus, both total food production and production per capita declined seriously during the 1970s.

TABLE 77. RATES OF POPULATION GROWTH AND FOOD AND CEREAL PRODUCTION, 46 COUNTRIES OF AFRICA, 1970-1976

(Percentage)

Country	Population growth	Total production		Production per capita	
		Food	Cereals	Food	Cereals
Algeria	3.2	2.5	4.5	−0.7	1.3
Angola	2.3	−0.2	0.3	−2.4	−2.0
Benin	2.7	−2.6	4.0	1.9	−2.2
Botswana	2.3	4.8	30.8	2.4	28.5
Burkina Faso[a]	2.3	1.6	4.9	−0.7	2.6
Burundi	2.4	2.1	4.0	−0.4	1.5
Cameroon[b]	1.9	1.2	2.8	−0.7	0.9
Cape Verde	1.9	6.8	54.6	4.8	52.7
Central African Republic	2.1	1.0	−2.8	1.1	−4.8
Chad	2.0	−0.1	−1.9	−2.9	−3.9
Comoros	2.5	2.5	6.8	—	4.2
Congo	2.5	1.4	23.3	−1.0	20.8
Egypt	2.4	2.1	1.4	−0.2	−1.0
Ethiopia	2.4	−1.4	−3.3	−3.7	−5.6
Gabon	1.0	1.4	12.4	0.5	11.4
Gambia	1.9	5.1	3.2	3.1	1.2
Ghana	2.8	−0.1	−1.1	−2.8	−3.8
Guinea	2.4	−0.3	−2.2	−2.6	−4.5
Guinea-Bissau	1.6	1.4	2.7	−0.2	1.1
Ivory Coast	2.5	4.9	5.5	2.4	2.9
Kenya	3.3	0.2	−0.8	−3.1	−4.0
Lesotho	2.0	1.2	−2.3	−0.8	−4.2
Liberia	2.3	4.5	11.5	2.1	9.2
Libyan Arab Jamahiriya	3.1	10.2	27.8	7.1	24.7
Madagascar	3.0	1.2	0.1	−1.3	−2.8
Malawi	2.4	2.7	1.9	1.2	−0.5
Mali	2.5	−0.3	2.1	−2.7	−0.3
Mauritania	2.0	−3.9	−6.2	−5.8	−8.2
Mauritius	1.8	0.8	—	−0.9	—
Morocco	3.0	0.8	—	−2.1	−2.9
Mozambique	2.3	−0.9	0.9	−3.1	−1.4
Niger	2.7	−1.1	1.0	−3.7	−1.7
Nigeria	2.7	−0.5	1.0	−3.1	−1.7
Rwanda	2.7	2.8	−0.2	0.1	−2.9
Senegal	2.4	9.1	7.0	6.7	4.5
Sierra Leone	2.5	2.0	3.6	−0.4	1.1
Somalia	2.6	−0.6	0.3	−3.2	−2.3
Sudan	3.1	5.4	5.4	2.2	2.2
Swaziland	2.8	4.6	3.2	1.8	0.4
Togo	2.8	−7.5	−4.7	−9.4	−7.5
Tunisia	2.3	6.5	7.9	4.1	5:5
Uganda	3.0	1.2	3.6	−1.7	0.6
United Republic of Tanzania	3.1	5.9	14.4	2.8	11.3
Zaire	2.5	1.3	1.7	−1.1	−0.8
Zambia	3.2	6.3	5.2	3.0	2.0
Zimbabwe	3.4	4.1	7.9	0.7	4.5

Source: Food and Agriculture Organization of the United Nations, "Population, food and nutrition", in *World Population Trends and Policies: 1979 Monitoring Report, Vol. I, Population Trends* (United Nations publication, Sales No. E.79.XIII.4), pp. 216-221, table 108.

[a] Formerly called the Upper Volta.

[b] Formerly called the United Republic of Cameroon.

TABLE 78. AVERAGE ANNUAL GROWTH RATES OF TOTAL FOOD PRODUCTION AND FOOD PRODUCTION PER CAPITA, AFRICA, BY SUBREGION, 1970-1977

(Percentage)

Subregion	Total food production	Food production per capita
Central Africa	1.0	−1.3
Eastern and Southern Africa	1.9	−0.9
Northern Africa	2.1	−0.7
Western Africa[a]	1.1	−1.5
Total Africa	1.3	−1.4

Source: Food and Agriculture Organization of the United Nations, *Regional Food Plan for Africa*, adopted at the Tenth Regional Conference for Africa, Arusha, United Republic of Tanzania, 18-29 September 1978 (Rome, 1980).

NOTE: The countries included in each subregion are:

Central Africa: Angola; Central African Republic; Congo; Equatorial Guinea; Gabon; Sao Tome and Principe; Zaire;

Eastern and Southern Africa: Botswana; Burundi; Comoros; Djibouti; Ethiopia; Kenya; Lesotho; Madagascar; Malawi; Mauritius; Mozambique; Namibia; Réunion; Rwanda; Seychelles; Somalia; Swaziland; Uganda; United Republic of Tanzania; Zambia; Zimbabwe;

Northern Africa: Algeria; Egypt; Libyan Arab Jamahiriya; Morocco; Sudan; Tunisia;

Western Africa: Benin; Cameroon; Ghana; Guinea; Guinea-Bissau; Ivory Coast; Liberia; Nigeria; Sierra Leone; Togo;

Sahel: Burkina Faso; Cape Verde; Chad; Gambia; Mali; Mauritania; Niger; Senegal.

[a] Including the Sahel.

The trend production figures for various food commodities for selected years from 1970 to 1980 show that these products, except for sugar and meat, grew at an annual rate of less than 2 per cent (table 79). Furthermore, although the total food production rate was 1.5 per cent for that period, the population of Africa was growing at almost twice that rate. Among the cereals, wheat production deteriorated during the periods 1970-1978, 1978-1981 and 1980-1981: the growth rates for those periods were −0.29, −1.31 and −11.98 per cent, respectively (see table 80). For rice paddy, the growth rate of 7.33 per cent during the period 1978-1981 was much higher than the rate of 4.09 per cent for 1980-1981. Growth rates for maize, millet and sorghum were 7.03, 3.88 and 8.47 per cent per annum, respectively, during 1980-1981, an increase from the corresponding rates for the period 1978-1981 of 1.54, −0.52 and 1.79 per cent.

Table 81 shows that in nearly 75 per cent of the countries members of ECA, annual rates of change in population were greater than those in total cereal production. This imbalance in the ratio of population growth to production of cereals calls attention to the serious need for improved food production.

Dietary and nutritional needs

Another disturbing and pernicious problem affecting Africa today is malnutrition — in itself a consequence of inadequate food supply. Over the past two decades, food consumption per capita fell below nutritional requirements;[10] and in 1970, an estimated 25 per cent of the population of Africa had an inadequate protein-energy supply in their diets.[11] Other contributing factors are inadequate food production, lack of knowledge of proper preparation and use of food, taboos against eating certain foods and poverty in general. Malnutrition, which contributes to morbidity and high mortality rates and reduces productivity, should not be tolerated. Another unfortunate aspect is that the most vulnerable groups are young children, pregnant women and lactating mothers, and the very old or incapacitated.

In 1961, the average daily dietary consumption was 92 per cent of the requirement per capita; in 1970, a decade later, it had not improved.[12] In 1977, only about

TABLE 79. VOLUME AND GROWTH RATE OF FOOD PRODUCTION, BY CROP, AFRICA,[a] 1970-1980

(Thousands of tons)

Crop	Food production					Percentage growth rate 1970-1980
	1970	1977	1978	1979	1980	
Wheat	6 514	5 813	7 069	6 705	7 164	0.96
Paddy rice	7 373	7 961	7 845	8 367	8 426	1.34
Millet	7 389	9 467	10 386	9 986	10 152	0.78
Sorghum	8 846	9 819	9 722	9 715	9 710	0.94
Maize	14 443	16 576	18 012	16 112	16 961	1.62
Cereals (total)	51 641	53 827	58 439	56 040	58 368	1.23
Roots and tubers (total)	68 366	77 658	78 707	80 560	83 207	1.98
Pulses (total)	4 910	4 763	4 930	5 026	4 959	0.10
Ground-nuts (in shell)	4 903	4 518	4 855	4 805	4 456	−0.95
Centrifugal sugar (raw value)	3 165	3 957	4 119	4 295	4 343	3.21
Meat (total)	4 392	4 959	5 170	5 329	5 529	2.33
Cow milk (whole fresh)	6 468	7 453	7 679	7 656	7 842	1.94
TOTAL	190 410	206 771	216 933	214 596	221 117	1.50

Source: Economic Commission for Africa, "Survey of economic and social conditions in Africa, 1980-1981" (E/ECA/CM.8/17), 11 March 1982.

[a] Excluding South Africa.

TABLE 80. GROSS PRODUCTION EXPONENTIAL GROWTH RATES FOR SOME FOOD COMMODITIES, AFRICA, BY SUBREGION, 1970-1978, 1978-1981 AND 1980-1981

(Percentage)

Food commodity and subregion	Gross exponential growth rates		
	1970-1978	1978-1981	1980-1981
Wheat			
Central Africa	−3.38	3.64	−2.03
Eastern and Southern Africa	−0.69	1.62	5.61
Northern Africa	−0.26	−1.84	−14.69
Western Africa	1.53	0.25	0.27
Great Lakes	3.72	8.59	2.72
Total Africa[a]	−0.29	−1.31	−11.98
Rice paddy			
Central Africa	2.94	5.66	2.26
Eastern and Southern Africa	0.30	1.56	−4.92
Northern Africa	−1.18	0.51	6.92
Western Africa	3.42	12.95	6.23
Great Lakes	3.38	3.75	0.81
Total Africa[a]	1.34	7.33	4.09
Maize			
Central Africa	2.02	1.28	−3.08
Eastern and Southern Africa	2.47	3.88	28.63
Northern Africa	3.32	4.99	−19.98
Western Africa	1.96	3.32	2.95
Great Lakes	2.59	0.82	3.74
Total Africa[a]	2.46	1.54	7.03
Millet			
Central Africa	1.22	−0.18	−0.80
Eastern and Southern Africa	0.26	−2.94	−2.70
Northern Africa	−1.53	−2.12	4.90
Western Africa	1.52	0.09	5.39
Great Lakes	3.07	−8.62	−23.01
Total Africa[a]	0.89	−0.52	3.88
Sorghum			
Central Africa	0.86	−6.37	73.67
Eastern and Southern Africa	0.79	−0.66	5.83
Northern Africa	3.67	8.95	26.51
Western Africa	1.47	0.57	3.70
Great Lakes	3.81	−10.69	5.69
Total Africa[a]	1.59	1.79	8.47
Cereals			
Central Africa	1.70	1.22	−0.95
Eastern and Southern Africa	0.92	2.33	11.93
Northern Africa	0.38	−1.79	−11.42
Western Africa	1.95	3.81	4.75
Great Lakes	3.00	−2.79	1.83
Total Africa[a]	1.13	1.50	0.81
Food in general			
Central Africa	1.68	2.17	2.42
Eastern and Southern Africa	1.59	1.77	5.17
Northern Africa	2.16	2.53	−0.80
Western Africa	1.77	3.91	3.20
Great Lakes	1.97	1.94	2.87
Total Africa[a]	1.82	2.88	2.54

Source: Food and Agriculture Organization of the United Nations, computer print-outs, 18 August 1982.

NOTE: The countries or areas included in each subregion are:

Central Africa: Angola; Cameroon; Central African Republic; Chad; Congo; Equatorial Guinea; Gabon; Sao Tome and Principe;

Eastern and Southern Africa: Botswana; British Indian Ocean Territory; Comoros; Djibouti; Ethiopia; Kenya; Lesotho; Madagascar; Malawi; Mauritius; Mozambique; Seychelles; Somalia; Swaziland; Uganda; United Republic of Tanzania; Zambia; Zimbabwe;

Northern Africa: Algeria; Egypt; Libyan Arab Jamahiriya; Morocco; Tunisia; Sudan; Western Sahara;

Western Africa: Benin; Burkina Faso; Cape Verde; Gambia; Ghana; Guinea; Guinea-Bissau; Ivory Coast; Liberia; Mali; Mauritania; Niger; Nigeria; St. Helena; Senegal; Sierra Leone; Togo;

Great Lakes: Burundi; Rwanda; Zaire.

[a] Excluding South Africa.

10 per cent of the 37 countries in Africa for which data are available met 100 per cent or more of their dietary/energy supply requirements per capita.[13] This pattern of nutritional deficiency is the result of the decline in production of the basic foods, such as cereals, pulses, meat and fish. As shown by the food self-sufficiency ratios (table 82), the pattern varies among the different subregions of Africa.

Northern Africa managed to meet its large food deficits, mainly through imports.[14] In the other subregions, however, energy supplies remain far below requirements; they are critically so in the Sahel.[15] Differences in nutritional levels are also found within coun-

TABLE 81. TOTAL POPULATION, AGRICULTURAL POPULATION, TOTAL LABOUR FORCE AND AGRICULTURAL LABOUR FORCE, 1981; ANNUAL RATES OF CHANGE IN TOTAL POPULATION AND CEREAL PRODUCTION, 1976-1980; AND VALUE OF IMPORTS OF CEREALS, 1980, MEMBER STATES OF ECONOMIC COMMISSION FOR AFRICA

Country	*Total population, 1981 (thousands)*	*Agricultural population, 1981 (thousands)*	*Total labour force, 1981 (thousands)*	*Agricultural labour force, 1981 (thousands)*	*Annual rate of change in total population, 1976-1980 (percentage)*	*Annual rate of change in total cereal production 1976-1980 (percentage)*	*Value of cereals imported, 1980 (millions of dollars)*
Algeria	19 259	9 502	4 272	2 129	3.5	4.5	668.60
Angola	7 263	4 193	1 914	1 105	2.5	−8.3	63.30
Benin	3 641	1 671	1 673	768	3.0	7.7	19.20
Botswana	845	678	393	315	2.8	−37.1	25.26
Burkina Faso[a]	7 094	5 773	3 768	3 067	2.6	2.0	39.37
Burundi	4 643	3 854	2 216	1 840	2.9	0.1	12.17
Cameroon[b]	8 646	6 978	4 012	3 238	2.3	1.7	57.28
Cape Verde	329	185	104	58	1.7	4.4	7.53
Central African Republic	2 275	1 986	1 228	1 072	2.3	2.5	7.04
Chad	4 636	3 877	1 776	1 485	2.4	1.7	5.35
Comoros	343	218	124	79	2.3	2.8	5.42
Congo	1 577	539	540	185	2.6	−2.0	24.27
Djibouti	122	60	38	19	2.4	-	10.25
Egypt	43 054	21 695	12 120	6 107	2.7	0.7	1 141.12
Equatorial Guinea	372	278	110	82	2.4	2.2	-
Ethiopia	33 467	26 486	13 792	10 915	2.5	−0.1	71.12
Gabon	558	426	266	203	1.2	2.5	16.07
Gambia	619	483	302	235	2.8	−0.7	11.16
Ghana	12 053	6 180	4 466	2 268	3.2	3.5	69.13
Guinea-Bissau	584	480	179	147	1.8	−18.2	5.25
Ivory Coast	8 229	6 529	4 112	3 262	3.4	4.3	136.75
Kenya	17 047	13 223	6 445	5 000	3.9	−10.4	85.85
Lesotho	1 373	1 150	720	603	2.4	10.6	16.58
Liberia	1 926	1 343	706	492	3.4	−0.3	45.16
Libyan Arab Jamahiriya	3 096	485	778	122	4.1	−2.2	199.45
Madagascar	8 983	7 481	4 381	3 649	2.7	1.3	78.90
Malawi	6 370	5 333	2 839	2 377	3.3	0.3	33.61
Mali	6 833	5 942	3 671	3 192	2.8	−4.2	18.09
Mauritania	1 682	1 393	514	425	2.9	−4.6	38.05
Mauritius	1 014	286	366	103	2.0	−17.7	58.93
Morocco	20 970	10 726	5 532	2 830	3.3	−1.4	354.17
Mozambique	10 759	6 931	4 060	2 616	2.6	−10.9	96.33
Niger	5 466	4 804	1 698	1 493	3.0	6.8	20.05
Nigeria	79 682	42 341	30 040	15 996	3.3	3.0	606.03
Rwanda	4 951	4 433	2 583	2 313	3.1	2.3	7.93
Sao Tome and Principe	86	46	22	11	1.2	2.7	2.77
Senegal	5 811	4 323	2 405	1 789	2.6	0.3	112.27
Sierra Leone	3 571	2 324	1 333	868	2.7	−3.9	30.62
Somalia	3 752	3 003	1 441	1 153	2.9	−2.1	81.83
Sudan	18 895	14 523	5 857	4 502	2.8	3.8	78.54
Swaziland	572	415	261	189	2.9	−4.2	7.24
Togo	2 784	1 890	1 143	775	3.1	2.9	16.74
Tunisia	6 525	2 647	1 565	635	2.6	5.6	175.50
Uganda	13 623	11 018	5 588	4 520	3.1	−3.4	12.90
United Republic of Tanzania	18 511	14 999	7 551	6 118	3.1	−1.2	110.48
Zaire	29 084	21 598	12 259	9 103	2.8	1.2	117.03
Zambia	5 830	3 885	2 116	1 410	3.3	−9.0	107.53
Zimbabwe	7 650	4 487	2 511	1 473	3.5	−3.0	25.86

Source: Food and Agriculture Organization of the United Nations, "Basic data on the agricultural sector: country tables", Rome, 1982.

[a] Formerly called the Upper Volta.

[b] Formerly called the United Republic of Cameroon.

tries. For example, consumption per capita of animal protein is usually greater in large urban areas than in rural areas: the relatively higher incomes in large towns generate relatively high demand for foods rich in animal protein.[16] On the whole, urbanization stimulates higher demand both for convenience foods, such as bread and other flour products, and animal protein foods that is beyond the level of aggregate domestic supply, thus necessitating imports. In countries lacking foreign exchange, higher demand generates higher prices for these

TABLE 82. LEVELS OF SELF-SUFFICIENCY RATIOS IN BASIC FOODS, AFRICA, BY SUBREGION, 1972-1974, 1985 AND 1990

Subregion	1972-1974		Maximum feasible production and demand, 1985		Maximum feasible production and demand, 1990	
	Balance (thousands of tons)	Self-sufficiency ratio (percentage)	Balance (thousands of tons)	Self-sufficiency ratio (percentage)	Balance (thousands of tons)	Self-sufficiency ratio (percentage)
Central Africa	−506	94	−135	101	−181	99
Eastern and Southern Africa	−597	98	−415	99	−277	100
Northern Africa	−5 798	78	−5 698	85	−5 775	88
Western Africa	−1 921	94	−2 190	95	−4 252	92
Sahel	−1 000	83	−495	95	−545	95
Total Africa	−9 822	90	−8 663	94	−11 030	94

Source: Food and Agriculture Organization of the United Nations, *Regional Food Plan for Africa* (Rome, 1980), p. 16.

NOTES: Basic foods are cereals, roots and tubers, pulses, meat and fish.

Self-sufficiency ratio is in wheat equivalent calculated on the basis of calorie aggregate demand and supply.

For composition of subregions, see table 78.

foods, thereby making them unavailable to the poorer classes, particularly the rural-dwellers, the young, the weak and the most vulnerable — the aged.

Furthermore, rapid urbanization has also created a poverty-stricken urban class which is particularly vulnerable to malnutrition and undernourishment.[17] If there is not a substantial increase in food production to meet the demand, rapid population growth and urbanization will perpetuate malnutrition, poor health, low productivity, low income and little hope of savings and economic development in the near future.

Better nutrition will contribute to improved health and reduced morbidity and mortality. Nutrition should be integrated into the overall development programme for increased food production, increased employment and increased incomes for the rural population. Education on nutrition, health and family planning, disseminated through the mass media, would also contribute greatly to resolving some of the nutritional problems in Africa.

Rural labour and agricultural productivity

In all countries of Africa, the rural population provides over 90 per cent of the labour force engaged in agriculture and food production. In 1981, the agricultural labour force was more than 70 per cent of the total labour force in many countries (see table 81). In general, Africa currently has a favourable man/land ratio, which is an advantage in expanding food production. For example, in 1979, the number of persons per square kilometre of arable land in Africa was 278; in some of the other regions, figures for the same period were: 348 for Latin America; 592 for Asia; and 380 for Europe.[18] Although efforts have recently been made to expand cultivable land in some African countries, those efforts have been constrained by increased growth of the agricultural population, underutilization of the labour force and reduced productivity. For instance, between the period from 1961-1965 to 1970 and the period 1970-1976, the average annual growth of agricultural production in Africa fell from 2.7 to 1.1 per cent, agricultural production per agricultural person fell from 1.0 to −0.5 per cent and agricultural production per agricultural worker declined from 1.4 to −0.2 per cent.[19]

Productivity in food production is very low. According to the FAO *Production Yearbook* for 1970, a hectare yielded 2,460 kilograms of wheat in Europe and 760 kilograms in Africa, one third of the European productivity level. Another example illustrates the same point: in 1974, rice yields per acre in Nigeria averaged only one third those in Japan.[20] Continued rapid population growth is likely to reduce productivity in the short run if no action is taken to expand food production and increase yields; to improve the quality of rural life through provision of gainful employment in agriculture, health facilities, transport, incentives for food production and improved technology.

B. PROJECTIONS OF FOOD PRODUCTION AND DEMAND

Among the factors that determine the demand for food are population size, structure and growth, income and urbanization. During the period 1952-1972, population growth was estimated to have accounted for up to 70 per cent of the increased demand for food in all less developed regions.[21] For the period 1962-1985, only 23 per cent of increased food demand is estimated to be due to income increases; 77 per cent is due to population growth.[22] Population structure — age distribution and sex ratios — also affects the aggregate demand for food, as do the locational distribution and nature of jobs.

The nature of food demand can also become a critical factor. For instance, a change in the child population may lead to a demand for special food for children if this is popular enough with working mothers. In fact, studies have estimated that changes in sex and age structure can bring about changes of about 10 per cent in calorie requirements and protein demand.[23] Similarly, rural-urban migration movements also may contribute to a reduction in food output in rural areas, particularly in Africa.

The FAO projections on food production and demand towards the year 2000 use two variants: (*a*) the trend variant; and (*b*) the better performance or maximum feasible production and demand variant. Each of these projections is linked to a growth assumption for private consumption expenditures, which was derived from the GDP growth assumptions on the basis of past relationships between such expenditures and GDP; and the medium-variant population growth projections as assessed by the United Nations.[24]

The trend projections assume that recent trends will continue in the future. Thus, the annual growth rates in demand for cereals, pulses, vegetables, bananas, other fruit, vegetable oils, milk and fish will continue to exceed production during the period from 1974-1976 to 1985. The annual growth rate of production, except of meat, is expected to exceed demand; while for sugar and root crops, annual growth rate is expected only to meet demand (see table 83). The trend projections for the period 1985-1990 show that food production growth rates will lag behind the demand for each food commodity mentioned above.

The trend in self-sufficiency ratios for the period from 1974-1976 to 1990 is rather alarming (see table 83). Up to 1990, there are declines in these ratios for every food commodity. No government should allow this situation to prevail.

Projections using the maximum feasible production and demand variant assume that there will be significant changes in development activities to stimulate increased food production. Some of the measures to improve food production would include policies on prices of farm produce and input to motivate farmers to produce more, better marketing infrastructure, improvements in the transport network, storage facilities and a general improvement of rural life and facilities. Data on the annual growth rates in food production and demand for the periods from 1974-1976 to 1985 and from 1985 to 1990 under these projections are shown in table 84, together with the corresponding self-sufficiency ratios. The figures reveal that for the same corresponding periods:

(*a*) Both production and demand growth rates will rise to levels higher than the trend projections and the gap between production and demand will be narrower;

(*b*) During the period from 1974-1976 to 1985, demand growth rates for fish, milk, meat, vegetable oils, bananas and other fruit, pulses and cereals will be higher than production growth rates;

(*c*) During the period 1985-1990, annual growth rates for the production of cereals, pulses, vegetable oils, bananas, citrus fruit, sugar, meat and milk are expected to be greater than demand;

(*d*) Self-sufficiency ratios in cereals will fall in 1985 but rise slightly in 1990;

(*e*) For the period 1985-1990, self-sufficiency ratios of 100 per cent or more are expected in root crops, pulses, vegetables, vegetable oils and fruit;

(*f*) Self-sufficiency ratios in sugar are expected to increase from 81 per cent during 1974-1976 to 87 per cent in 1985 and 96 per cent in 1990;

(*g*) Self-sufficiency ratios in meat, milk and fish show a decline from 1974-1976 to 1990.

C. Recommendations and conclusion

A number of factors contribute to the unsatisfactory food situation in Africa. Some of the measures and policies that national Governments need to adopt and implement, which are consistent with those recommended in the Regional Food Plan for Africa and the Lagos Plan of Action, are presented below:

(a) *Weather and climatic conditions.* These factors are generally beyond human control. However, human activities do contribute to the worsening of climatic conditions through mismanagement of the environment: indiscriminate cutting of trees; overgrazing; and poor husbandry and farming methods. The worst situation is that presented by perennial drought conditions in the Sahel region, which results in extended desertification. The deserts in Africa are encroaching on useful agricultural land at a rate of 60,000-70,000 square kilometres per annum, thereby affecting the livelihood of about 60 million people.[25] The Lagos Plan of Action indicates

TABLE 83. ANNUAL GROWTH RATES OF PRODUCTION AND DEMAND, AND SELF-SUFFICIENCY RATIOS, BY COMMODITY, BASED ON THE TREND SCENARIO, AFRICA, 1974-1990

	Annual growth rate (percentage)						
	1974-1976 — 1985		*1985-1990*		*Self-sufficiency ratio*		
Commodity	*Production*	*Demand*	*Production*	*Demand*	*1974-1976*	*1985*	*1990*
Cereals	1.8	2.9	1.8	3.2	83	75	70
Root crops	2.7	2.7	2.5	2.6	100	100	99
Pulses	2.4	2.8	2.9	3.2	104	99	98
Vegetables	3.8	3.9	3.6	3.8	101	101	100
Bananas	1.7	2.5	2.2	2.7	102	95	93
Other fruit	3.4	3.5	3.2	3.5	103	103	102
Citrus fruit	3.7	3.3	2.9	3.6	133	135	131
Vegetable oils	2.3	3.5	3.5	3.9	112	99	98
Sugar	4.0	4.0	3.0	3.7	81	80	78
Meat	7.0	6.0	2.6	4.5	98	81	74
Milk	2.8	4.2	2.8	4.2	82	72	67
Fish	1.7	3.0	2.1	4.0	101	87	85

Source: Food and Agriculture Organization of the United Nations, *Regional Food Plan for Africa* (Rome 1980), p. 24.

TABLE 84. ANNUAL GROWTH RATES OF PRODUCTION AND DEMAND, AND SELF-SUFFICIENCY RATIOS, BY COMMODITY, BASED ON MAXIMUM FEASIBLE PRODUCTION AND DEMAND SCENARIO, AFRICA, 1974-1990

	Annual growth rate (percentage)						
	1974-1976 — 1985		*1985-1990*		*Self-sufficiency ratio*		
Commodity	*Production*	*Demand*	*Production*	*Demand*	*1974-1976*	*1985*	*1990*
Cereals	2.9	3.4	4.1	4.0	83	80	81
Root crops	2.8	2.8	2.7	2.7	100	100	100
Pulses	3.0	3.1	3.9	3.7	104	103	104
Vegetables	4.2	4.1	4.6	4.3	101	103	105
Bananas	2.3	2.5	3.1	2.8	102	100	101
Other fruit	3.4	3.5	3.9	4.0	103	103	103
Citrus fruit	4.5	3.5	5.5	4.3	133	143	151
Vegetable oils	3.3	3.7	4.3	4.4	112	108	108
Sugar	5.0	4.2	6.4	4.3	81	87	96
Meat	3.6	4.3	5.4	5.1	98	93	95
Milk	3.3	3.8	4.9	4.4	82	78	80
Fish	2.6	4.1	1.5	2.0	101	84	82

Source: Food and Agriculture Organization of the United Nations, *Regional Food Plan for Africa* (Rome, 1980), p. 25.

clearly the need for policies to control erosion and desertification in order to improve food production;

(b) *Prices*. For many years, farmers in Africa have been deprived of adequate prices for their agricultural produce. On the other hand, most Governments in Africa have encouraged subsidized prices for food for urban consumers. Inevitably, such pricing policies have led to: (*a*) a disincentive to increase food production; (*b*) higher urbanization rates; (*c*) further depressed farm-gate prices; (*d*) increased food imports; (*e*) changing food habits in favour of imported commodities; (*f*) balance-of-payment problems; (*g*) depressed rural economy and out-migration; (*h*) depressed, unproductive and unremunerative food and agriculture sectors; and (*i*) increased food aid. Furthermore, farm input items, such as fertilizers, are too expensive for most of the rural population who are engaged in food production. The Lagos Plan of Action clearly calls for policies to improve prices in order to create incentives for increased food production;

(c) *Insufficient expansion of cultivable land*. The potential for expansion of cultivable land for food production is very great in a number of countries, e.g., in Ethiopia, where the labour force and land are available. There is need for government policies to motivate the population to expand cultivable land in order to increase food production. In other countries where the man/land ratio is high, such as Rwanda, there is need for a policy to encourage an intensive cropping system with adequate and appropriate research work in order to generate the essential skill and adaptive technology;

(d) *Cash versus food crops*. Some Governments have been more interested in cash crops than food production. Governments should adopt policies to bring about a balance between food production for domestic use and cash-crop production so as to meet rising food demand;

(e) *Post-harvest food losses*. Food losses both before and after harvest contribute significantly to the food problems in Africa. Post-harvest losses are estimated at 10-30 per cent of the total grain harvest and as much as 50 per cent of the harvest of perishable products.[26] The Lagos Plan of Action, which also reiterates a target to reduce food losses by 50 per cent by 1985 as was agreed to by the United Nations General Assembly, calls for policies to reduce such losses;

(f) *Institutional arrangements for extension services*. Extension services in agriculture are inadequate; and the extension workers are generally too ill-equipped and poorly paid, and thus are unable to spread technological innovations among farmers. Most countries of Africa spend comparatively little on agricultural training and extension services.[27] Improved and comprehensive policies on agricultural extension services as one means of improving the food situation are emphasized in the Lagos Plan of Action. The training and remuneration of extension agents are also to be accorded high priority at the national level. The farming practices generally followed in Africa are not conducive to increased production. For example, the majority of farmers still use the simple hoe, unimproved seeds, little fertilizer and little or no irrigation. Consequently, the yield is stagnant and output is low. Despite their arduous toil, they cannot really improve their condition. There is need for policies concerning the design of simple implements to enhance production. This effort calls for research for improved technology and improved farming systems that would be suited for African conditions and that would not displace too many farm labourers too soon or cause widespread unemployment;

(g) *Land tenure systems*. The World Conference on Agrarian Reform and Rural Development, held in Rome in 1978, confirmed unequivocally that some land tenure systems in Africa are not conducive to increased food production. In some cases, only a few rich people, some of whom are absentee landlords, have benefited from these systems. Traditional land tenure systems in some countries, e.g., Zaire, have made it difficult for farmers to move outside the tribal land-holding systems. All Governments should pursue policies for reform of

land tenure systems to benefit the majority of the population, as set forth in the Conference plan of action and follow-up. Some countries, such as Ethiopia, have begun land tenure reform programmes to benefit the majority of the farming population. In Burundi and Comoros, efforts to change traditional land practices have met with little success because of certain traditional practices and organizational complexities, as well as resistance from farmers;[28]

(h) *Inadequate infrastructure in rural areas.* Increased food production cannot be achieved without improved infrastructure. Rural road networks and transport to facilitate delivery of input items and marketing of farm produce, improved housing and health services, education and so forth are essential investment projects without which most countries of Africa cannot improve food production and agriculture nor develop their human resources. The need to improve the health status of Africans in rural areas cannot be over-emphasized. These goals can only be achieved, however, if there is greater concern for rural development;

(i) *Promotion of substitutes for imported foods and dietary education.* Some imported foods, e.g., wheat, are those for which Africa has little or no comparative advantage in their production. Hence Governments need to educate consumers and adopt policies that would enable the population to eat more locally produced commodities. In the case of bread and other flour products, for example, composite flours have been developed incorporating millet, sorghum and cassava flours. In Senegal, the production and marketing of a bread made with 30 per cent millet and 70 per cent wheat flour has been carried out with some success.[29] It has also been suggested that the evolution of a technology package to convert more of locally produced food into convenience foods, in well-packaged, storable and easily cooked forms, would encourage this substitution effort, thereby reducing reliance on food imports and food aid;

(j) *Improvements in livestock and fisheries production.* Governments should assist and encourage farmers to improve their animal husbandry techniques. The rearing of livestock, such as goats, pigs, sheep, cattle and poultry, through improved extension services and control of diseases would surely improve the output of meat, milk and eggs to meet the growing demand. Many countries in Africa have the potential for fish production. To increase domestic fish production, Governments should implement effective fishery projects by making available facilities for improved and better fishing; and through the provision of modern fishing vessels, better processing facilities, improved storage facilities and marketing network and a pricing policy;

(k) *Demographic measures.* Africa is facing very serious and complicated demographic problems involving several interrelated social, economic and political parameters. Food shortages, unemployment, and inadequate rural facilities for education, health and housing are only some of the many socio-economic problems requiring urgent solutions. Rapid population growth compounds these problems and highlights the fact that time is running out. Nearly all African countries currently import foodstuffs, especially cereals. One of the several policy measures emphasized in the Lagos Plan of Action for tackling the economic problems is the need for co-operation, both technical and economic, among member States, through joint programming, harmonized policies and increased trading among themselves at regional and subregional levels.

With a strong political will and a sense of self-determination, the countries of Africa can resolve these problems, provided they adopt and implement realistic economic development policies as spelt out in the Regional Food Plan for Africa and the Lagos Plan of Action. Population policies, which will in the long run complement food, agriculture and economic development strategies, should be included. In this context, resolution IX of the World Food Conference, on the achievement of a desirable balance between population and food supply, is pertinent. This resolution calls on:

> "All Governments and people everywhere not only to make every possible effort to grow and equitably distribute sufficient food and income so that all human beings may have an adequate diet ... but also to support ... rational population policies ensuring to couples the right to determine the number and spacing of births, freely and responsibly, in accordance with national needs within the context of an overall development strategy".[30]

Policies to monitor rural-urban migration should also be adopted and implemented in an effort to boost food production. Lastly, although it is acceptable that African Governments must accept responsibility for solving their own problems, it should be pointed out that Africa will still need external assistance from developed countries.

Conclusion

This Chapter has, in broad terms, identified, analysed and discussed the food problem in Africa, calling attention to the critical gap between supply and demand and warning that the situation is getting worse. The consequences of inadequate food production on dietary and nutritional requirements also were discussed. In identifying the factors that determine food supply and demand, population growth was found to contribute more than 70 per cent to food demand. It is apparent, therefore, that continued population growth without a substantial increase in food production makes the task of improving the food situation in Africa very difficult indeed. Rural-urban migration also contributes to the problem by attracting able-bodied people away from rural areas where they are seriously needed in food production. Instead, they go to the cities where they add to the urban demand for food.

Population growth should not be viewed only from the negative side. It should also be considered from the positive aspect of contributing to food production and economic development in general. However, in many African countries where the majority of the population

depend upon agriculture, the increase in the agricultural labour force has not necessarily increased food and agricultural production. Instead, it has created underemployment or serious unemployment problems. In this situation, the most feasible strategy is that the food production problems should be solved through progress in overall food and agricultural development, which will simultaneously generate increased employment opportunities and lower rates of population growth. Although lowering population growth *per se* is not a sufficient or essential condition for improving the food and nutrition problems, rapid population growth makes the task more difficult and, in some cases, intractable.

Specific policies and measures needed to improve the food situation in Africa also were presented. These relate to pricing of farm produce and input, expansion of cultivated land, policy priority to food crops instead of cash crops only, reduction of post-harvest food losses, improvement in institutional arrangements for extension services, improvement of animal husbandry, technology and skill, reform of land tenure systems, promotion of substitutes for food imports, improvement in livestock and fisheries production, regional and subregional co-operation and trade in food and agricultural products among African countries and control of population growth and urbanization. If Governments do not take any realistic and pragmatic actions as suggested, the situation given in the trend projections for production and demand for food by 1990 is likely to happen, which implies a worsening of the food situation in Africa.

Lastly, the relationship between population and food production is far from being static; it is a dynamic element and an inevitable key factor in both the human and the economic development of any country. For Africa, the task is tremendous; but given the perceived strong political will and courage manifested in the Lagos Plan of Action, appropriate policy measures can be evolved in all the countries of Africa, to produce significant results, implemented through the process of effective investment strategies for food and human development.

NOTES

[1] Food and Agriculture Organization of the United Nations, *Report of the Twelfth Regional Conference for Africa,* Algeria, 22 September - 2 October 1982 (Rome, 1983).

[2] *Report of the World Food Conference, Rome, 5-16 November 1974* (United Nations publication, Sales No. E.75.II.A.3), p. 11.

[3] Food and Agriculture Organization of the United Nations, *Report of the Ninth Regional Conference for Africa,* Freetown, Sierra Leone, 2-12 November 1976 (Rome, 1976).

[4] Food and Agriculture Organization of the United Nations, *Regional Food Plan for Africa,* adopted at the Tenth Regional Conference for Africa, Arusha, United Republic of Tanzania, 18-29 September 1978 (Rome, 1980).

[5] Organization of African Unity, *Lagos Plan of Action for the Economic Development of Africa, 1980-2000* (1981), p. 11.

[6] Food and Agriculture Organization of the United Nations, *Regional Food Plan for Africa.*

[7] Economic Commission for Africa, "Survey of economic and social conditions in Africa, 1980-1981" (E/ECA/CM.8/21/Rev.1), April 1982, p. 1.

[8] Organization of African Unity and Food and Agriculture Organization of the United Nations, *Famine in Africa: Situation, Cause, Prevention, Control* (Rome, 1982).

[9] The countries included in the subregions of Africa used in this chapter do not in all cases conform to the subregional groups used by the Population Division of the Department of International Economic and Social Affairs of the United Nations Secretariat. The countries included in the groups referred to in this chapter are given in notes to the relevant tables.

[10] Organization of African Unity, *Lagos Plan of Action...*, p. 11.

[11] Economic Commission for Africa, "Survey of economic and social conditions in Africa, 1977-1978", part 1.

[12] Food and Agriculture Organization of the United Nations, "Population, food supply and agricultural development", *The Population Debate: Dimensions and Perspectives, Papers of the World Population Conference, Bucharest 1974* (United Nations publication, Sales No. E/F/S.75.XIII.4), vol. I, p. 487, table 2 (hereinafter referred to as *The Population Debate*).

[13] Food and Agriculture Organization of the United Nations, *The State of Food and Agriculture 1980,* FAO Agriculture Series, No. 12 (Rome, 1981), p. 172, table 13.

[14] For the dollar values of cereal imports for 48 countries of Africa, see table 81.

[15] Food and Agriculture Organization of the United Nations, *Regional Food Plan for Africa,* p. 18.

[16] *Ibid.*, p. 19.

[17] *Ibid.*

[18] Economic Commission for Africa, *Demographic Handbook for Africa* (Addis Ababa, December 1980).

[19] Food and Agriculture Organization of the United Nations, "Population, food and nutrition", in *World Population Trends and Policies — 1979 Monitoring Report,* vol. I, *Population Trends* (United Nations publication, Sales No. E.79.XIII.4), p. 204, tables 96 and 97.

[20] Lester R. Brown, "World population and food supplies: looking ahead", in *The Population Debate,* vol. II (United Nations publication, Sales No. E/F/S.75.XIII.5), p. 23.

[21] Food and Agriculture Organization of the United Nations, "Population, food supply and agricultural development", p. 485.

[22] Food and Agriculture Organization of the United Nations, *Provisional Indicative World Plan for Agricultural Development: A Synthesis and Analysis of Factors Relevant to World, Regional and Agricultural Development* (Rome, 1970), vol. I, p. 15.

[23] *The Determinants and Consequences of Population Trends,* vol. I, *New Summary of Findings on Interaction of Demographic, Economic and Social Factors* (United Nations publication, Sales No. E.71.XIII.5), p. 412.

[24] Food and Agriculture Organization of the United Nations, *Regional Food Plan for Africa.*

[25] Economic Commission for Africa, "Survey of economic and social conditions in Africa, 1980-1981".

[26] Economic Commission for Africa, "Implementation of the Regional Food Plan for Africa: progress, problems and progress" (E/ECA/CM.8/12), 1 April 1982, p. 2.

[27] Economic Commission for Africa, "Survey of economic and social conditions in Africa, 1980-1981", p. 102.

[28] *Ibid.*, p. 108.

[29] Food and Agriculture Organization of the United Nations, *Regional Food Plan for Africa,* p. 49.

[30] United Nations, *Report of the World Food Conference,* p. 11.

Part Three

POPULATION POLICIES

INTRODUCTION

During the years since the World Population Conference, there has been a general trend away from the view that the rate of population growth is too low and an increase in the number of countries where the rate is seen as too high. At this time, about 14 per cent of all countries consider their rate of population growth to be too low, some 29 per cent see it as satisfactory and 32 per cent as too high; the remaining 24 per cent indicated that the Government had not expressed a view on the matter.[1]

Among the more important changes that have taken place during recent years, a significant number of countries in Africa have moved away from the view that their rate of growth was too low towards the view that the rate is satisfactory or too high. In Latin America, most Governments have maintained their appraisals of their rates of population growth, although again the net change tended to be away from the view that the growth was too low.

In Asia, experience with policies in reference to population growth has been extensive and concern over the issue has been widely felt. A substantial number of countries, including many of the largest, consider their rates to be too high and have intervened actively and effectively to lower them. Among the Arab countries of Western Asia, the tendency has quite consistently been to view population growth as satisfactory or, in a small number of countries, as too low.

The European countries and other developed countries,[2] where actual rates of population growth have reached unprecedentedly low levels, in most cases view their rates either as satisfactory or as too low. A substantial number of these countries indicated that the Government had not expressed a view on the matter.

During the 1970s, rising aspirations for better health care led to critical reappraisals of the entire health care systems in many developing countries. These reappraisals brought into question the underlying concepts and strategies of existing health systems, which had generally been imported along with sophisticated health technology. At the world level, the concern for an adequate health strategy to better meet the needs of the majority of the world's population culminated in the Declaration of Alma-Ata in 1978. It provided a basic outline of primary health care as a means to more effectively attain health for all within a reasonable time-frame.

With the increasing concern in recent years for better integration of health-related policies into overall development plans, greater emphasis has been given to the primary health care approach in many developing countries. There is also evidence that some Governments have changed their patterns of spending on health care, with very dramatic shifts in some cases. Primary health care has encouraged greater local self-reliance in some developing countries, using local taxes and local resources; and an increasing number of people have been brought within reach of either ambulatory clinics or village health workers.

Moreover, the primary health care approach is coming to be considered equally applicable in the developed countries. In some developed countries, the emphasis has been more on a reappraisal of institutional care, on new approaches to prevention and the promotion of health life-styles, on the expanding role of health education and on better co-ordination between health services and the other sectors bearing on health.

Appraisals and policies concerned with fertility continued to draw substantial governmental attention. It must be recognized, however, that in addition to demographic considerations as such, Governments are often concerned with fertility in its relation to family well-being and maternal and child health and as a basic human right.

Whatever the primary basis of their concern, as of 1983 the countries of the world are roughly divided into two groups of the same size with regard to their perception of fertility levels: 50 per cent of them (85 countries) view the level as satisfactory and the other 50 per cent appraise it as unsatisfactory. Among the latter 50 per cent, 24 countries view the level as unsatisfactory because it is too low and the other 61 countries because it is too high. Comparatively few changes in the appraisals of fertility levels have been observed during recent years.

Implementation of policies and programmes to influence fertility is, in general, closely related to countries' appraisals of the levels: 58 per cent of all countries currently implement policies intended to maintain or to change the prevailing levels of fertility. This percentage has been steadily increasing over the past decade (from 45 per cent in 1974). Not surprisingly, the countries that view their level of fertility as unsatisfactory are most prone to implement policies to change it. Of those countries, 83 per cent intervene to decrease it; 74 per cent of those which consider it too high attempt to decrease; just 39 per cent of the countries that view their fertility as satisfactory implement policies to maintain it at the prevailing level.

One of the most important components of governmental actions related to fertility is the nature of control

exercised over access to modern methods of contraception. As of 1983, just nine countries prohibit access — a number that has continued to slowly diminish since 1974. In 28 countries, the Governments permit access but only as a private matter; no governmental support is provided. In the remaining 131 countries, the Government provided either direct or indirect support for access to contraception. Direct support is made available in 103 countries and indirect support in 28.

Countries have been concerned with population distribution in relation to socio-economic development for many years, but systematic policies to influence distribution in relation to broader development goals have emerged only in the most recent decades. In the developed countries, population distribution policies have not been pursued vigorously in recent years, reflecting a preoccupation with national macro-economic and sectoral issues. In the developing countries, on the other hand, concern with spatial-distribution policies has intensified in recent years.

In Africa, most Governments desire to reduce migration to the metropolitan centre (even in cases where it is small by absolute standards) and many desire to reduce migration to intermediate urban centres, whereas virtually every Government in the region wants to reduce out-migration from rural areas. Very few African Governments have formulated comprehensive population distribution strategies, however; and most have tackled spatial problems indirectly, relying upon the gradual impacts of rural development and the provision of basic infrastructure to retain population in rural areas.

A majority of Governments in the Latin American region continue to consider patterns of population distribution to be largely unacceptable, a perception related to the significant number of absolutely large primate cities in the region. Although the growth of a number of these cities has slowed considerably, largely as a result of spontaneous forces, controlling primate-city growth continues to be a major policy objective throughout the region. In attempting to control metropolitan growth, most Governments in the Latin American region have sought to retain potential migrants in rural areas (or to induce colonists to settle in rural areas), mainly by means of rural development (including land reform), regional development and colonization programmes, although there has been growing emphasis in recent years on channelling migrants to small towns and intermediate cities.

Many countries in the Asian region — both centrally planned and market economies — also desire to control primate-city growth, whereas most Asian Governments have given major priority to the promotion of small towns and intermediate cities. Rural development programmes have been undertaken in nearly every country, and several countries have implemented relatively successful land resettlement projects. Many of the Arab countries of Western Asia have undertaken large-scale urban construction projects and new town development, which is not comparable to strategies adopted in other Asian countries, since there have been fewer capital constraints.

There have been important changes in the volume, direction and characteristics of international migration flows since the World Population Plan of Action was drafted in 1974, and a number of policy trends that were beginning to emerge at the time the Plan was issued are now firmly established. First, the number of places for permanent immigrants has more or less stabilized, and there is a clear and growing preference in all regions of the world for temporary rather than permanent workers. Secondly, in a context of a slowdown in world economic growth, a limited number of places for permanent immigrants, the ending of the recruitment of foreign manpower in Western Europe and growing restrictions on foreign workers in Western Asia and other regions, there has been a rise in illegal/undocumented migration in nearly all world regions; and this matter has become an active area of policy concern. Thirdly, refugee movements have been larger in recent years than at any time since the Second World War; and a number of developing countries — including some of the poorest countries — have been most severely affected. It now appears that a majority of refugees will remain in the less developed regions from which they come and that durable solutions must be found to assist them.

NOTES

[1] The tables giving Governments' perceptions and/or policies are organized according to level of development, area of responsibility of the regional commissions and geographical region.

[2] The developed countries include all countries, except Cyprus, Israel and Turkey, in the area of responsibility of the Economic Commission for Europe; and Australia, Japan and New Zealand in the area of responsibility of the Economic and Social Commission for Asia and the Pacific.

XIX. POPULATION GROWTH*

The size and rate of change of a country's population is one of the most important demographic variables with which Governments concern themselves. Indeed, Governments or other organizations to which they may delegate the authority to act on their behalf are the leading and, in many situations, the only institutions with the capability to take actions that can influence trends in population size. For although it is generally accepted that the size and rate of change of population can have a major impact on the lives of individuals in the society in which they live, there is normally little that an individual can do to influence the size or trends.

The population growth policies adopted by a Government will reflect the interaction of a variety of factors: basic political values and goals of the society; social and moral values; the structure of the Government; the nature of some of the key social institutions, such as the family; and the levels and trends of demographic variables themselves. At the same time, any active policy response by a Government to population growth or decline requires that the changes be brought about through another demographic variable — mortality, fertility or migration — each of which brings with it its own distinctive set of goals, values, laws, policies and specific linkages to social and economic conditions. This complex of factors affecting a Government's views and policies on population growth help explain both the similarities and the diversity in growth perceptions and policies.

In this chapter, attention is first given to a complete update on Governments' overall perceptions and interventions in reference to population growth as of 1983 and of recent changes. In the second section, changes in Governments' positions since 1974 are analysed.

A. Perceptions and intervention, 1983

Governments' perceptions and intervention in reference to population growth as of 1983 are summarized for all countries in table 85. Along with level of development and region[1], countries are classified by reference to two variables. The first is their overall appraisal of their rate of population growth — whether they view it as too low, satisfactory or too high, or whether the Government has not expressed a formal view on the matter. The second is the nature of any action they have taken in reference to the size and rate of change of the population — whether they have intervened to influence the rate, and, if so, whether to raise, maintain or lower the rates. A glance at table 85 reveals the somewhat sobering finding that, in response to the inquiry about Governments' views on their current rate of population growth, in just over one fourth of all countries, the Government has not expressed a view on the matter.

In a good deal of the research that has been carried out on population policy and, in particular, in previous rounds of monitoring, the practice has been to infer a Government's appraisal of its population trends from the country's relevant programmes — if there was no clear-cut official statement of that appraisal. Thus, for example, in a country where there is no official statement to the effect that the rate of population growth is viewed as being either too low, satisfactory or too high, but where policies are implemented that would have the effect of either raising, maintaining or reducing the rate of growth, and where there were other statements that would support — or at least not contradict this interpretation — it was considered reasonable to infer the Government's perception as being that one that would elicit the policies. In many ways, that is a reasonable and useful procedure. What is generally of greater importance is the implementation of a policy, not whether it is accompanied by a formal statement of the perceptions that led to its formulation. On the other hand, the inferential process is not infallible. Moreover, if a Government explicitly states that it has not expressed a view on an issue, such as population growth, something of the nature of its concern and commitment to the issue may be revealed. Hence, it was decided to carry out the experiment, in this monitoring round, of using as one of the analytical categories for governmental perception an explicit indication by the Government that it had not expressed a view on some given aspect of population.

The result was noteworthy. In particular, it suggests that the salience of population concerns may not be as universal or as great as might be hoped. It may be that the consensus arrived at by the World Population Conference in 1974 on the importance of population trends for socio-economic development is no longer quite as firm as it was.

In attempting to better evaluate these findings, it should be observed that the developed countries[2] were somewhat more likely to report not having a view on population growth than were the developing countries; the position was taken by just over one third of the developed and by just over one fifth of the developing countries. Among the latter group, the absence of an expressed view on population growth was most frequently observed in Africa, except in the Northern and

*Prepared by the Population Division of the Department of International Economic and Social Affairs of the United Nations Secretariat.

TABLE 85. GOVERNMENTS' PERCEPTIONS OF RATES OF POPULATION GROWTH AND INTERVENTION TO INFLUENCE RATES, BY LEVEL OF DEVELOPMENT, AREA OF RESPONSIBILITY OF REGIONAL COMMISSIONS AND REGION, 1983

Level of development, area of responsibility and region	Governments' perceptions and intervention to influence rates									
	Rates too low: higher rates desirable		Rates satisfactory: neither higher nor lower rates desirable				Rates too high: lower rates desirable			
	No direct intervention reported (1)	Intervention to raise rates (2)	(3)	Intervention to maintain rates (4)	No direct intervention reported (5)	Intervention to lower rates (6)	(7)	No direct intervention reported (8)	No goverment view or missing datum (9)	Total number of countries (10)
World	3	22	5	11	30	1	40	13	43	168
Developing countries	3	12	4	5	23	1	40	13	28	129
Developed countries	—	10	1	6	7	—	—	—	15	39
Economic Commission for Europe										
Eastern Europe	—	3	1	1	1	—	—	—	—	6
Northern Europe	—	—	—	1	2	—	—	—	4	7
Southern Europe	—	1	—	2	3	—	—	—	3	9
Western Europe	—	4	—	1	1	—	—	—	3	9
Western Asia (part)[a]	—	2	—	—	—	—	1	—	—	3
Northern America	—	—	—	—	—	—	—	—	2	2
Union of Soviet Socialist Republics	—	2	—	—	—	—	—	—	1	3
TOTAL	—	12	1	5	7	—	1	—	13	39
Economic and Social Commission for Asia and the Pacific										
China	—	—	—	—	—	—	1	—	—	1
Japan	—	—	—	—	—	—	—	—	1	1
Other East Asia	—	2	—	—	—	—	1	—	—	3
South-eastern Asia	—	2	—	1	1	1	4	—	—	9
Southern Asia	1	—	—	—	1	—	5	1	1	9
Australia-New Zealand	—	—	—	1	—	—	—	—	1	2
Melanesia	—	—	—	—	1	—	1	1	1	4
Micronesia-Polynesia	—	1	—	—	—	—	3	1	—	5
TOTAL	1	5	—	2	3	1	15	3	4	34
Economic Commission for Latin America										
Caribbean	—	—	—	—	1	—	6	4	1	12
Central America	—	—	—	—	2	—	3	—	3	8
Temperate South America	1	—	1	—	—	—	—	—	1	3
Tropical South America	—	—	—	1	4	—	1	—	3	9
TOTAL	1	—	1	1	7	—	10	4	8	32
Economic Commission for Africa										
Eastern Africa	—	—	—	—	2	—	6	2	6	16
Middle Africa	—	2	—	1	2	—	—	—	4	9
Northern Africa	—	—	—	—	2	—	4	—	—	6
Southern Africa	—	—	—	—	—	—	2	1	1	4
Western Africa	—	1	2	1	2	—	2	3	5	16
TOTAL	—	3	2	2	8	—	14	6	16	51
Economic Commission for Western Asia										
Western Asia[b]										
TOTAL	1	2	1	1	5	—	—	—	2	12

Sources: Compiled from replies to "Fifth Population Inquiry among Governments: monitoring of government perceptions and policies on demographic trends and levels in relation to development as of 1982".

[a] Cyprus, Israel and Turkey.
[b] Excluding Cyprus, Israel and Turkey.

Southern subregions, and by far least likely to be found in Asia, where population concerns have long been widely expressed and policies intended to influence population growth rates have been vigorously implemented in most of the countries.

To carry out the analysis a bit further, the perceptions previously reported for Governments that indicated that they had not expressed a view in reference to population growth were investigated. It was found that 66 per cent had been classified, as of 1980, as being satisfied with their rate of growth, although only 45 per cent of all countries were so classified. Thus, countries that were classified as not having expressed a view on the issue of population growth in 1983 were disproportionately drawn from those which were classified as satisfied with their rate in 1980. Correspondingly, it was among the countries that had viewed their rates as either too high or too low in 1980 — and, in particular, among those who had viewed the rate as too high and had intervened to reduce it — that the smaller number that reported no view in 1983 were found.

An examination was also made to see if countries that did not indicate an official view had changed their positions more or less frequently during the years between 1974, just prior to the World Population Conference, and the time of preparation of the *1981 Monitoring Report*.[3] It was found that the countries that did not express a view in 1983 had changed their perceptions and policies of intervention more frequently, although very slightly; and the difference cannot be considered significant.

The evidence suggests that the absence of an official view on the matter of population growth is mainly due to two quite different conditions. In the developed countries, the prevalence of low and in some cases negative rates may have led some countries to feel less need to formulate official views on the matter. It may also reflect, in some countries, some uncertainty with respect to the proper role of the Government in a situation of rates of growth near zero. On the other hand, in the developing countries where no view has been expressed, the rates of growth are typically quite high. Here the absence of an expressed view, as suggested by comments made by some of the Governments, is more likely to be a preoccupation with other political or economic issues of a more immediate nature, compounded in some cases by a lack of demographic data or of personnel with the level of training needed to analyse the data.

Turning then to the examination of the situation as of 1983, it can be readily observed that the largest proportion view their rate of growth as too high (53 countries). Forty-seven Governments indicated that they were satisfied with their rate and 25 that they viewed it as too low. Forty-seven per cent of all countries reported that they intervened to influence their rate of growth — 27 countries to raise their rate, 11 to maintain it at its current level and 41 to lower it. The largest single group of countries is that where the rate is viewed as too high and the country intervenes to lower it (40 countries, 24 per cent of the total).

As table 85 makes clear, however, examination of perceptions and policies of intervention at the global level masks important differences in perceptions and policies on intervention. To better understand the process of policy formulation in reference to population growth, it is necessary to carry the analysis to the regional level.

To begin by comparing the developing countries with the developed countries, a striking and not at all surprising difference is readily apparent. No developed country perceives its rate of growth as too high; and, of course, none intervenes to lower the rates. This situation reflects the low rates that actually prevail among these countries. On the other hand, 53 of the developing countries — 41 per cent — now view their rates as too high, and 40 of them intervene to lower them.

The developed countries are most likely to view their rates of growth as satisfactory; indeed, 14 of them do so. Among the developing countries, 33 countries (26 per cent) hold that view. A somewhat smaller number of Governments indicated that they considered the rates to be too low: 10 developed and 15 developing countries (26 and 12 per cent, respectively). These findings again reflect, above all else, the lower actual rates of population growth among countries at the two levels of development (about 0.7 per cent per annum among developed countries and 2.1 per cent among the developing).

A less readily anticipated finding is that the developed countries are slightly more likely to have policies of intervention to change or maintain population growth rates: 51 per cent of the developed countries and 48 per cent of the developing indicated that they had such policies. The strength of this finding is understated since it is among the developed countries that a higher proportion reported that the Government had not expressed a view on population growth; thus, they do not implement policies intended to influence the rates. This finding does not provide support for the common impression that population growth is a matter of concern primarily to the developing countries; the specific concerns may differ in substance but are manifested in policy interventions at both levels of development.

Turning now to an examination of perceptions and policies on growth at the regional level, some further marked divergences appear (for details, see tables 87-89 at end of chapter).[4] The orientation towards population growth in the area of responsibility of the Economic Commission for Europe (ECE) differs markedly from that of the other regions. Only one country in the ECE area — Turkey — considers the rate of growth too high; 12 countries (including two countries in the region of the Union of Soviet Socialist Republics), view their rate as too low (see table 85)[5] and 13 view it as satisfactory. Eighteen countries (again including two in the Soviet Union region) intervene either to raise or to maintain their rate of growth. As noted above, these perceptions substantially reflect the actual decline in the rate of growth to very low levels. What is also noteworthy is that the countries of Europe are substantially more internally homogeneous than those of any other regions with an equivalent number of countries. Nor is there any very marked difference between subregions. Changes of perceptions and policies between 1980 and 1983 were slight. Two countries, Greece and Hungary, that had viewed their population growth rates as satisfactory and had not intervened to influence them in 1980 reported that they considered them too low and were attempting to raise them in 1983. Canada and the United States of America indicated that they had not expressed a view of the matter of population.

In the area of responsibility of the Economic and Social Commission for Asia and the Pacific (ESCAP), experience with policies in reference to population growth has been particularly extensive among the countries of Asia and concern over the issue very widely felt. This may explain why it is in Asia that the smallest proportion of countries indicated that they had not expressed a view on the matter — just four in 34. The largest class of countries in Asia is composed of those

which consider their rates too high and intervene to lower them. Moreover, this group of 15 countries includes many of the world's largest — Bangladesh, China, India, Indonesia and Pakistan — to mention only those with a population over 100 million. On the other hand, a second major class of countries in Asia includes those where the rates are considered to be too low and the Governments intervene to raise them. This group is geographically heterogeneous, including Bhutan, Democratic Kampuchea, the Democratic People's Republic of Korea, the Lao People's Democratic Republic and Mongolia. A third class consists of the countries where the rate is viewed as satisfactory without intervention.

Four countries of Asia modified their perceptions and policies of intervention between 1980 and 1983. Malaysia and Afghanistan, which had previously considered the rate satisfactory without intervention, changed their perception to "too high". The former country intervenes to lower it and the latter does not. Two other countries that had intervened to lower the rate in 1980 shifted their assessment from too high to satisfactory. One of them, Thailand, continued its policy of intervention to reduce the rate while viewing it as satisfactory (perhaps taking into account the downward trend in the rate as well as the level itself). The other, the Islamic Republic of Iran, moved to the view that the rate was satisfactory without intervention.

The predominant view reported by the countries of Oceania was that their rate was too high and that intervention was called for (Fiji, Kiribati, Samoa and Tonga). One country, Australia, stated that it viewed the rate as satisfactory and intervened to maintain it, while Nauru considered the rate too low. There were no significant changes during the years from 1980 to 1983.

In the area of responsibility of the Economic Commission for Latin America (ECLA),[6] eight Governments indicated that they had not expressed a view on the matter of population. Another 10 countries, all but one located in the Caribbean subregion and Central America, view their growth as too high and intervene to reduce it. In almost every case, these countries have maintained their positions in reference to growth with little or no change throughout the past decade. Another four countries of the Caribbean, each a comparatively new Member State, consider their rate of growth too high but do not intervene. The countries of temperate and tropical South America are more likely to assess their rates as satisfactory. Only one country, Chile, considers its rate too low but does not intervene to raise it; one other country of South America, Peru, considers the rate too high and intervenes to reduce it.

There were comparatively few changes in countries' positions on growth during the years 1980-1983. Honduras modified its view from satisfactory without intervention to a policy of intervening to reduce the rate, which it considers too high. The policy of Argentina in 1980 and earlier had been one of intervening to raise its rate of population growth, which was viewed as too low. In 1983, the policy of intervention to raise the rate was continued but the rate was reported to be satisfactory. On the other hand, Paraguay continued to see its rate as satisfactory without intervention.

In the area of responsibility of the Economic Commission for Africa (ECA), the countries fall predominantly into the categories of those where the Government views the rate of population growth as too high (20 countries, 14 of which intervene to reduce the rate), those where no view has been expressed (16 countries) and those where the rate is viewed as satisfactory (12 countries, of which eight indicated that they did not intervene). The countries that view their rate of increase as too high and intervene are found chiefly in Eastern and Northern Africa (Burundi, Kenya, Mauritius, Rwanda, Seychelles and Uganda; and Algeria, Egypt, Morocco and Tunisia, respectively). The countries of Middle Africa are more likely to view the rates as too low or as satisfactory and to intervene to raise them (Equatorial Guinea and Gabon). This situation presumably reflects to a considerable degree the actual rates of this subregion, which are comparatively low for Africa, although still high in comparison with all developing countries. Western Africa is most notably characterized by the diversity among the Governments in their position concerning population growth.

A number of countries in Africa modified their positions between 1980 and 1983. In virtually all cases, the shifts reflected a tendency to move away from a more pro-growth view towards one that considers the rate to be satisfactory or too high. For example, Burundi and the Gambia changed from a position of perceiving the rate of growth as satisfactory with intervention to one of viewing it as too high and intervening to reduce it. Ethiopia, Sierra Leone and the United Republic of Tanzania modified their position from viewing their rates as satisfactory without intervention to one of too high but without intervention. Algeria and Rwanda shifted from having appraised their rates as too high but with no intervention, by more recently adopting a policy of intervention. Two countries that had taken the position in 1980 that their rates were too low and intervened to raise them, the Ivory Coast and the Libyan Arab Jamahiriya, assess them as being satisfactory in 1983. The former country, however, continued to report intervention to raise its growth rate. One country, Swaziland, shifted in the other direction, from a policy of attempting to reduce population growth, which was viewed as too rapid, to a position where, although the rate of growth continued to be considered too high, intervention to reduce the rate was no longer reported.

The predominant view reported by the countries in the area of responsibility of the Economic Commission for Western Asia (ECWA) was satisfaction with the rate of growth and no intervention. Three countries reported intervention intended to raise their rate of growth and no country indicated an attempt to lower it.

B. Changes in population growth policy, 1974-1983

There is a variety of measures that might be used to review changes in policies concerned with population

growth. No one of them is ideally suited to all purposes. The measure adopted for this discussion is simply the Government's perception of the rate of growth: too high; satisfactory; too low (or, for 1983 only, no Government view). The data used are drawn from the succession of earlier monitoring reports on population policy and refer to the situation in every country as of 1974, 1976, 1978, 1980 and 1983.

The major weakness of the measure used is that a Government may arrive at a given view of its rate of population growth but then, for a variety of reasons, not implement any corresponding programme of action, as demonstrated in the preceding section. Perceptions are not perfectly correlated with policies of implementation. On the other hand, a governmental announcement of a change of perception (and it is the changes that are at issue here) would normally occur in the event of a change in policy. This measure thus should have greater validity and clarity than an alternative based on some aspect of implementation. In addition, for an analysis using multiple comparisons at several points in time, the simple measure used here has advantages over use of a composite index constructed of two or more variables. The latter method is particularly effective for describing the full range of policy positions at a single time. However, it may tend to inflate the apparent extent of change by recording comparatively small shifts in the operational elements of a programme as well as major changes of orientation in government policy. The measure used in the following discussion successfully reveals an unambiguous trend in population policy.

Of the 156 countries that were Member States of the United Nations or members of an associated international organization in 1974, 39 Governments viewed their rate of population growth as too low, 74 as acceptable and the remaining 43 as too high (thus, 25, 47 and 28 per cent, respectively). For all 168 countries in 1983, as observed in the preceding section (see table 85), 25 countries view the rate as too low, 47 as satisfactory and 53 as too high; the remaining 43 countries reported that the Government had not expressed a view. The respective percentages are 15, 28, 32 and 25. Thus, even with the addition of the "no view expressed" category, there has been a clear change in policy over the nine years between July 1974 and July 1980: a substantial decline in the number of countries where the rate of population growth was seen as too low, and an increase in the number where it was considered too high. The importance of this finding is sharpened if it is recalled that the change in perception has taken place at a time when actual rates of population growth have been declining in most regions of the world. It should also be recognized that the shift, although clearly marked, was not overwhelming; countries that view their rate of population growth as satisfactory and those which have not expressed a view on the matter continue to be about half of the total number.

The comparison is not completely straightforward because the "no view expressed" category was introduced in 1983 but was not used in 1974. To obtain some idea of what the 1983 distribution would have been had the category not been used, an estimate was made of what the countries' positions would have been, based on their position in 1980 plus other information on file. Under these assumptions, the results would have been 20 per cent too low, 45 per cent satisfactory and 36 per cent too high. Thus, the same clear trend would be shown: a decline among those which viewed their rate as too low and an increase among those which considered it too high.

The changes observed reflected two processes: changes in perception by countries over time and the addition of new countries. Over the period 1974-1983, 12 countries became new Member States (three in Africa, four in the Americas and five in Oceania). Among these countries, seven indicated that they viewed their rate of population growth as too high, three as acceptable and one as too low, and one did not indicate a view at the time of its entry into the United Nations. From the time of entry (for the nine countries that entered before 1980) to 1983, only one Government changed its perception. Zimbabwe, for which the indications were that it viewed its rate of growth as too high in 1980, reported in 1983 that it had not expressed a view on the matter. All of the other new countries continued to hold the same perception from the time of their entry to 1983.

The larger contribution to the aggregate change comes from the 156 countries that were Member States throughout the period 1974-1983. Since perceptions were assessed at five different points in time, there were 624 intervals (156×4) over which these Governments' changes of perception might have been recorded. Of course, for most countries during most of the intervals, the reported perceptions did not change. In fact, only 102 changes of perception were recorded. Of these, 63 were a change between any two of the perception categories: too low, satisfactory, too high. The other 39 were changes into the category "no view expressed". A particularly important observation is that, of the total number of changes, there was a greater tendency for Governments to move away from the view that their rate of population growth was too low and towards the view that it was too high. These findings are detailed in table 86.

In this table, changes or continuity without change are shown for all countries that were Member States in 1974. For each interval in time, each Government was assigned to one of three (or, for the final interval, four) categories. The first category, symbolized in the table by a plus sign (+), indicates the number of countries that moved from the view that their rate of growth was too high to the view that it was either satisfactory or was too low, along with countries that moved from the view that the rate was satisfactory to a perception of too low. Countries that reported the same perception at the beginning and at the end of the interval are symbolized by an equal sign (=). Lastly, countries that moved from the perception that the rate was too low to the view that it was satisfactory or was too high, and those which changed from viewing it as satisfactory to too high were grouped together in the class symbolized by a minus

sign (−). Thus, if governmental perceptions are visualized as falling along a three-point scale that ranges from too low through satisfactory to too high, any shift from right to left is symbolized by a + and any shift from left to right by a −. A country that did not modify its view from the beginning to the end of the interval — that is, whose view was reported as too low at both times, or satisfactory at both times, or too high at both times — is symbolized as =.

Table 86 shows, in column (5), that there were 23 shifts in direction away from viewing the rate as too high and 40 shifts away from viewing it as too low. Thus, the predominant overall shift was away from the view that the rate of population growth was too low. Moreover, this general tendency was observed among both the developed and the developing countries; over the period 1974-1983, at both levels of development, there were more changes of perception away from the view that the rate of population growth was too low than in the opposite direction. Indeed, the overall direction of change was the same in all areas of responsibility except the ESCAP area. (In Asia, however, many of the countries had taken the position that the rate of population growth was too high prior to 1974; in general, there was comparatively little change of view over the years from 1974 to 1983.)

The same general conclusion emerges, even more sharply, if one considers not the total number of changes of perception from interval to interval, but rather the net number of changes by direction of the change over the entire period 1974-1983. In effect, this procedure eliminates any circular changes, such as, for example, a country that at one time reports that it views its rate of population growth as satisfactory, the next time as too high and then the third time reverts back to the view that it is satisfactory. (This example would be counted as two changes if the total number of changes is being considered but as no change if the net number is being considered). These results are shown in column (6) of table 86. Here, it can be observed that not only does the same overall pattern prevail as for total changes but changes in the direction of viewing the rate as too high were more "efficient" than those in the opposite direction. Thus, moves in the direction of viewing the rates as too low were more frequently part of a circular series of changes. This observation is also true for countries at both levels of development and for all areas, again excluding Asia in the ESCAP area. It is particularly noteworthy that there was no net movement of developed countries in the direction of considering growth to be too low, despite the fact that actual rates of population growth reached unprecedented low levels in many of these countries during this period.

Essentially the same conclusion emerges if the substantive responses are inferred for those countries where the Government reported that it had not expressed a view concerning its rate of population growth. These results are shown in column (7).

The tempo and predominant directions of change were not at all uniform over the entire period. During the first biennium, from July 1974 to July 1976, 20 of the 156 Governments (some 13 per cent) reported changes in their perception of their rate of population growth. Three out of four of the changes were in the direction of viewing the rate as too high. The pattern was the same for both developed and developing countries, although there were proportionately more changes among the developed countries. It is likely that to some extent the changes during this period were stimulated by the increased attention drawn to population matters in general by the World Population Conference. However, it is of interest to note that one third of all of the changes were reported by developed countries, despite the fact that it is generally agreed that the Conference and the World Population Plan of Action tended to treat population as mostly a matter of concern to developing countries.

There was a rather marked change during the following biennium, 1976-1978; the predominant direction of change was away from the view that the rate of population growth was too high. It would appear that some of the countries that had shifted their appraisal in the direction of viewing the rate as too high around the time of the World Population Conference, shifted back to their earlier position a few years later. And indeed, six of the 15 countries that changed towards a judgement of too high from 1974 to 1976, subsequently changed back in the opposite direction during the biennium 1976-1978. However, it is also worth noting that the overall reversal of direction was found only among the developing countries. Among the developed countries, there was simply a marked diminution of change in general. This observation is important not only in so far as it reveals the different dynamics of change in perception of population growth between developing and developed countries but in that it offers some reassurance that the observed changes from one time period to the next were not merely an artifact of some slight change in the system of measurement used.

Over the next biennium, 1978-1980, the pattern again changed perceptibly. Among the developing countries, the predominance of moves away from viewing their rates of population growth as too low was resumed. However, the major trend over this biennium was one of stability of perception. No developed country and only seven developing countries (6 per cent) reported any change. The biennium thus marked something of a low point in the process of change in perception across the entire nine-year period.

The tempo of change was resumed during the next triennium, from July 1980 to July 1983. The estimate of the extent of change that took place depends upon how the responses to the effect that the Government has not expressed a view on the matter are interpreted. Since the category was not used in the earlier assessments of governmental perceptions, it may be plausible to assume that a similar number of countries would have been so classified had the category been used. If that assumption is made, then it may be observed that the resumption of the tempo of change was only partial, given that the interval was one and a half times as long as each of

TABLE 86. CHANGES IN GOVERNMENTS' PERCEPTIONS OF POPULATION GROWTH RATES, FOR MEMBER STATES AS OF 1974, BY LEVEL OF DEVELOPMENT AND AREA OF RESPONSIBILITY OF REGIONAL COMMISSIONS, 1974-1983

Level of development, area of responsibility and perceptions	*1974-1976* (1)	*1976-1978* (2)	*1978-1980* (3)	*1980-1983* (4)	*1974-1983* Total (5)	*1974-1983* Net (6)	*Net*[a] *1974-1983* (7)
World							
+	5	12	1	5	23	8	12
=	136	138	149	99	522	83	115
−	15	6	6	13	40	26	29
NV	—	—	—	39	39	39	—
Developing countries							
+	3	11	1	3	18	8	11
=	104	103	110	76	393	62	81
−	10	3	6	13	34	22	25
NV	—	—	—	25	25	25	—
Developed countries							
+	2	1	—	2	5	—	1
=	32	35	39	23	129	21	34
−	5	3	—	—	8	4	4
NV	—	—	—	14	14	14	—
Economic Commission for Europe							
+	2	1	—	2	5	1	2
=	33	35	39	25	132	22	33
−	4	3	—	—	7	4	4
NV	—	—	—	12	12	12	—
Economic and Social Commission for Asia and the Pacific							
+	1	2	—	2	5	3	4
=	27	28	30	22	107	22	24
−	2	—	—	2	4	1	2
NV	—	—	—	4	4	4	—
Economic Commission for Latin America							
+	1	3	1	1	6	2	4
=	23	23	26	16	87	12	16
−	3	2	—	3	8	6	7
NV	—	—	—	7	7	7	—
Economic Commission for Africa							
+	1	6	—	—	7	2	2
=	41	41	42	27	151	18	31
−	6	1	6	7	20	14	15
NV	—	—	—	14	14	14	—
Economic Commission for Western Asia							
+	—	—	—	—	—	—	—
=	12	12	12	9	45	9	11
−	—	—	—	1	1	1	1
NV	—	—	—	2	2	2	—

Sources: Compiled from replies to "Fifth Population Inquiry among Governments: monitoring of government perceptions and policies on demographic trends and levels in relation to development as of 1982"; and information from the Population Data Bank maintained by the Population Division of the Department of International Economic and Social Affairs of the United Nations Secretariat.

NOTE: +: countries that changed their perception of their population growth rate from "too high" to "satisfactory" or "too low" or from "satisfactory" to "too low"; =: countries that did not change their perception of their population growth rate; −: countries that changed their perception of their population growth rate from "satisfactory" to "too high"; NV: the Government has not expressed a view on the matter.

[a] Appraisals inferred for countries reporting no view on population growth.

the preceding periods. In other words, there was, in general, a tendency for the tempo of change in the perception of the population growth to decelerate over the nine years from July 1974 to July 1983.

However, the deceleration was observed most clearly among the developed countries. Among the developing countries, the tempo of change returned almost to the level it had reached during the first biennium. Furthermore, among the developing countries during the final period, the predominance of changes away from the view that the rate of growth was too low was also resumed.

There were also considerable differences between regions in the level and direction of changes observed. There were comparatively few net changes in the ECE area, all of them being reported during the first four years of the nine-year period; and all of them away from the view that the rate of population growth was too low. In every case, the shift was from too low to satisfactory. The countries were Czechoslovakia, Ireland, Portugal and Romania.

In proportion to the number of countries in the ESCAP area, changes were by far least frequent, which almost certainly reflects the fact that the countries of Asia in general had fully formulated their population policies well before the time of the World Population Conference. In this region, just nine of the 34 countries changed their position, five of them in the direction of viewing it as too low. This latter shift is, of course, markedly different from the predominant direction of change observed in any other region. It is also noteworthy that four of the changes took place during the final triennium.

In Asia, Afghanistan shifted its view from satisfactory to too high. Changes in the other direction were reported by the Lao People's Democratic Republic, which moved from too high to too low; and by the Islamic Republic of Iran, Singapore and Thailand, which shifted from too high to satisfactory. Among the last four countries, the first two would appear to have shifted in connection with a major political change in the country, whereas the second two modified their appraisal of their rate of growth in response to actual declines in the rate along the lines intended by their earlier policies.

Fewer net changes were recorded among the countries of the ECLA area, although here, too, the predominant direction was away from the view that population growth rates were too low. The changes were somewhat more concentrated in the first two bienniums. Two countries, Argentina and Suriname, moved from the view that their rate of population growth was too low to considering it satisfactory. Honduras shifted from viewing it as satisfactory to too high, and the Bahamas changed from assessing it as too low to too high. In the opposite direction, Costa Rica shifted from too high to satisfactory, while Chile changed from too high to too low.

The largest number of changes, both in absolute terms and in relation to the number of countries in the region, was observed in the ECA area. Moreover, this generalization holds both for total and for net changes. In Africa, there was a notable shift in the process of change over the entire period. During the first two bienniums over half of the changes were circular. That is, four of the six countries that had moved in the direction of viewing their rate of population growth as too high during the first biennium shifted back to their earlier position during the second biennium. On the other hand, during the third and fourth periods, all of the changes of direction reported, apart from the indication that the Government had not expressed a view on the matter, were in the direction of viewing population growth as too rapid. Indeed, a major component of the change in perception of population growth during the past five years has been the tendency for a growing number of African countries to move in the direction of viewing their rate as too high.

Over the years 1974-1983, the following countries shifted their appraisal of their rate of population growth from satisfactory to too high: Algeria, Burundi, Ethiopia, the Gambia, Liberia, Rwanda, Senegal, Seychelles, Sierra Leone, Uganda, and the United Republic of Tanzania. The Ivory Coast, the Libyan Arab Jamahiriya and Mozambique shifted their view from too low to satisfactory. In the opposite direction, Cape Verde shifted its assessment from too high to satisfactory (quite possibly in response to a comparatively large decline in the actual rate), and Guinea changed its view from satisfactory to too low.

To summarize the discussion of changes of perception during the years since the World Population Conference, five points emerge: (*a*) there was a clear trend away from the view that the rate of population growth was too low and an increase in the number of countries where the rate is seen as too high; (*b*) just about half of all countries viewed the rate as satisfactory or had not expressed a view on the matter throughout the period since the Conference at Bucharest; (*c*) just over half of the newly entered Member States consider their rate of population growth too high; (*d*) during the years since the World Population Conference, the tempo of changes in perception was most rapid just around the time of the Conference and for a few years thereafter; it slowed markedly during the late 1970s and then was resumed in the developing countries during the early 1980s; (*e*) a major shift that has taken place during the past five years has been the change of view among African countries, from satisfactory to too high.

In the ECWA area, the United Arab Emirates changed its view from too low to satisfactory.

NOTES

[1] In the tables in part three of the *1983 Monitoring Report*, countries are grouped according to their membership in a regional economic commission, as was done in previous monitoring reports. The number of countries reported in the tables consists of all States Members of the United Nations and/or States members of a specialized agency in the United Nations system.

[2] The developed countries include all the countries, except Cyprus, Israel and Turkey, in the area of responsibility of the Economic Commission for Europe (ECE), and Australia, Japan and New Zealand in the area of responsibility of the Economic and Social Commission for Asia and the Pacific.

[3] *World Population Trends and Policies: 1981 Monitoring Report*, vol. II, *Population Policies* (United Nations publication, Sales No. E.82.XIII.3).

[4] Countries are mentioned in the text merely to highlight major trends or changes. Views of individual Governments concerning their population growth perceptions and policies are given in tables 87-89 at the end of this chapter. Table 87 was prepared on the basis of Governments' appraisals inferred following procedures used in previous monitoring reports in order to facilitate comparisons. Table 88 lists the Governments that specified that no view had been expressed concerning overall appraisal of rates of population growth. Lastly,

table 89 shows the absolute and relative sizes of the population in each category.

[5] The category "no view expressed" was derived from the replies to the "Fifth Population Inquiry among Governments: monitoring of government perceptions and policies on demographic trends and levels in relation to development as of 1982".

[6] This regional commission is currently called the Economic Commission for Latin America and the Caribbean (ECLAC).

TABLE 87. GOVERNMENTS' OVERALL APPRAISAL OF RATES OF POPULATION GROWTH AND INTERVENTION TO INFLUENCE RATES, BY LEVEL OF DEVELOPMENT, AREA OF RESPONSIBILITY OF REGIONAL COMMISSIONS AND GEOGRAPHICAL REGION, 1983

Rates too low		*Rates satisfactory*			*Rates too high*			
No direct intervention reported (1)	*Intervention to raise rates* (2)	(3)	*Intervention to maintain rates* (4)	*No direct intervention reported* (5)	(6)	*Intervention to lower rates* (7)	*No direct intervention reported* (8)	*Total number of countries* (9)
				World				
4	27	5	23	47	1	42	19	168
				Developing countries				
3	16	4	12	32	1	42	19	129
				Developed countries				
1	11	1	11	15	—	—	—	39
			A. AREA OF RESPONSIBILITY OF ECONOMIC COMMISSION FOR EUROPE					
				Eastern Europe				
—	Bulgaria German Democratic Republic Hungary	Romania	Czechoslovakia	Poland	—	—	—	6
				Northern Europe				
—	—	—	Finland Ireland Sweden	Denmark Iceland Norway United Kingdom	—	—	—	7
				Southern Europe				
—	Greece	—	Albania Italy San Marino	Holy See Malta Portugal Spain Yugoslavia	—	—	—	9
				Western Europe				
Germany, Federal Republic of	France Liechtenstein Luxembourg Monaco	—	Belgium Switzerland	Austria Netherlands	—	—	—	9
				Western Asia (part)				
—	Cyprus Israel	—	—	—	—	Turkey	—	3
				Northern America				
—	—	—	Canada	United States of America	—	—	—	2
				Union of Soviet Socialist Republics				
—	Byelorussian SSR Ukrainian SSR USSR	—	—	—	—	—	—	3
				TOTAL				
1	13	1	10	13	—	1	—	39
			B. AREA OF RESPONSIBILITY OF ECONOMIC AND SOCIAL COMMISSION FOR ASIA AND THE PACIFIC					
				China				
—	—	—	—	—	—	China	—	1
				Japan				
—	—	—	—	Japan	—	—	—	1

TABLE 87 *(continued)*

Rates too low			*Rates satisfactory*			*Rates too high*		
No direct intervention reported (1)	*Intervention to raise rates* (2)	(3)	*Intervention to maintain rates* (4)	*No direct intervention reported* (5)	(6)	*Intervention to lower rates* (7)	*No direct intervention reported* (8)	*Total number of countries* (9)
B. AREA OF RESPONSIBILITY OF ECONOMIC AND SOCIAL COMMISSION FOR ASIA AND THE PACIFIC *(continued)*								
				Other East Asia				
—	Democratic People's Republic of Korea Mongolia	—	—	—	—	Republic of Korea	—	3
				South-eastern Asia				
—	Democratic Kampuchea Lao People's Democratic Republic	—	Singapore	Burma	Thailand	Indonesia Malaysia Philippines Viet Nam	—	9
				Southern Asia				
Bhutan	—	—	Maldives	Iran (Islamic Republic of)	—	Bangladesh India Nepal Pakistan Sri Lanka	Afghanistan	9
				Australia-New Zealand				
—	—	—	Australia	New Zealand	—	—	—	2
				Melanesia				
—	—	—	—	Vanuatu	—	Fiji Papua New Guinea	Solomon Islands	4
				Micronesia-Polynesia				
—	Nauru	—	—	—	—	Kiribati Samoa Tonga	Tuvalu	5
				TOTAL				
1	5	—	3	5	1	16	3	34
C. AREA OF RESPONSIBILITY OF ECONOMIC COMMISSION FOR LATIN AMERICA								
				Caribbean				
—	—	—	—	Cuba	—	Barbados Dominican Republic Grenada Haiti Jamaica Trinidad and Tobago	Antigua and Barbuda Bahamas Dominica Saint Lucia Saint Vincent and the Grenadines	12
				Central America				
—	—	—	—	Belize Costa Rica Panama	—	El Salvador Honduras Mexico	Guatemala Nicaragua	8
				Temperate South America				
Chile	Uruguay	Argentina	—	—	—	—	—	3
				Tropical South America				
—	Bolivia	—	Colombia Suriname	Brazil Ecuador Guyana Paraguay Venezuela	—	Peru	—	9
				TOTAL				
1	2	1	2	9	—	10	7	32

TABLE 87 *(continued)*

Rates too low		*Rates satisfactory*				*Rates too high*		
No direct intervention reported (1)	*Intervention to raise rates* (2)	(3)	*Intervention to maintain rates* (4)	*No direct intervention reported* (5)	(6)	*Intervention to lower rates* (7)	*No direct intervention reported* (8)	*Total number of countries* (9)
D. AREA OF RESPONSIBILITY OF ECONOMIC COMMISSION FOR AFRICA								
				Eastern Africa				
—	—	—	—	Djibouti Madagascar Malawi Mozambique Somalia Zambia	—	Burundi Kenya Mauritius Rwanda Seychelles Uganda	Comoros Ethiopia United Republic of Tanzania Zimbabwe	16
				Middle Africa				
—	Central African Republic Equatorial Guinea Gabon	—	Congo Sao Tome and Principe Zaire	Angola Chad	—	—	Cameroon[a]	9
				Northern Africa				
—	—	—	—	Libyan Arab Jamahiriya Sudan	—	Algeria Egypt Morocco Tunisia	—	6
				Southern Africa				
—	—	—	—	—	—	Botswana Lesotho South Africa	Swaziland	4
				Western Africa				
—	Guinea	Ivory Coast Mauritania	Buskina Faso[b] Mali Niger Togo	Benin Cape Verde Guinea-Bissau Nigeria	—	Gambia Ghana	Liberia Senegal Sierra Leone	16
				TOTAL				
—	4	2	7	14	—	15	9	51
E. AREA OF RESPONSIBILITY OF ECONOMIC COMMISSION FOR WESTERN ASIA								
				Western Asia[c]				
Kuwait	Oman Saudi Arabia Qatar	United Arab Emirates	Iraq	Bahrain Democratic Yemen Jordan Lebanon Syrian Arab Republic Yemen	—	—	—	12
				TOTAL				
1	3	1	1	6	—	—	—	12

Sources: Compiled from replies to "Fifth Population Inquiry among Governments: monitoring of government perceptions and policies on demographic trends and levels in relation to development as of 1982"; and from information from the Population Policy Data Bank maintained by the Population Division of the Department of International Economic and Social Affairs of the United Nations Secretariat.

[a] Formerly called the United Republic of Cameroon.
[b] Formerly called the Upper Volta.
[c] Excluding Cyprus, Israel and Turkey.

TABLE 88. GOVERNMENTS THAT SPECIFIED THAT NO VIEW HAD BEEN EXPRESSED CONCERNING OVERALL APPRAISAL OF RATES OF POPULATION GROWTH AND INTERVENTION TO INFLUENCE RATES, BY AREA OF RESPONSIBILITY OF REGIONAL COMMISSIONS, 1983

Area of responsibility of				
Economic Commission for Europe	*Economic and Social Commission for Asia and the Pacific*	*Economic Commission for Latin America*	*Economic Commission for Africa*	*Economic Commission for Western Asia*
Austria	Japan	Bahamas	Benin	Qatar
Byelorussian SSR	Maldives	Bolivia	Botswana	Syrian Arab Republic
Canada	New Zealand	Colombia	Burkina Faso[a]	
Finland	Papua New Guinea	Ecuador	Cameroon[b]	
Italy		Guatemala	Central African Republic	
Germany, Federal Republic of		Nicaragua	Comoros	
Holy See		Panama	Congo	
Norway		Uruguay	Djibouti	
Spain			Guinea-Bissau	
Sweden			Madagascar	
Switzerland			Mali	
United Kingdom			Sao Tome and Principe	
United States of America			Somalia	
			Togo	
			Zambia	
			Zimbabwe	

Source: Replies to "Fifth Population Inquiry among Governments: monitoring of government perceptions and policies on demographic trends and levels in relation to development as of 1982".

[a] Formerly called the Upper Volta.

[b] Formerly called the United Republic of Cameroon.

TABLE 89. GOVERNMENTS' OVERALL APPRAISAL OF RATES OF POPULATION GROWTH AND INTERVENTION TO INFLUENCE RATES: NUMBER OF COUNTRIES AND POPULATION SIZE IN ABSOLUTE NUMBERS AND PERCENTAGE, BY LEVEL OF DEVELOPMENT AND AREA OF RESPONSIBILITY OF REGIONAL COMMISSIONS, 1983

	Rates too low		*Rates satisfactory*			*Rates too high*			
	No direct intervention reported (1)	*Intervention to raise rates* (2)	(3)	*Intervention to maintain rates* (4)	*No direct intervention reported* (5)	(6)	*Intervention to lower rates* (7)	*No direct intervention reported* (8)	*Total* (9)
World									
Number of countries	4	27	5	23	47	1	42	19	168
Population size (absolute numbers in millions)	75 989	441 137	64 490	249 011	1 002 678	49 568	2 675 179	111 545	4 669 597
Population size (percentage)	1.6	9.5	1.4	5.3	21.5	1.1	57.3	2.4	100
Developing countries									
Number of countries	3	16	4	12	32	1	42	19	129
Population size (absolute numbers in millions)	14 661	66 833	41 761	100 819	451 336	49 568	2 675 179	111 545	3 511 702
Population size (percentage)	0.4	1.9	1.2	2.9	12.9	1.4	76.2	3.2	100
Developed countries									
Number of countries	1	11	1	11	15	—	—	—	39
Population size (absolute numbers in millions)	61 328	374 304	22 729	148 192	551 342	—	—	—	1 157 895
Population size (percentage)	5.3	32.3	2.0	12.8	47.6	—	—	—	100
Economic Commission for Europe									
Number of countries	1	13	1	10	13	—	1	—	39
Population size (absolute numbers in millions)	61 328	379 087	22 729	132 868	429 227	—	47 666	—	1 072 905
Population size (percentage)	5.7	35.3	2.1	12.4	40.0	—	4.4	—	100
Economic and Social Commission for Asia and the Pacific									
Number of countries	1	5	—	3	5	1	16	3	34
Population size (absolute numbers in millions)	1 360	32 085	—	17 992	202 301	49 568	2 323 112	14 478	2 640 896
Population size (percentage)	0.1	1.2	—	0.7	7.7	1.9	88.0	0.6	100

TABLE 89 *(continued)*

	Rates too low		*Rates satisfactory*			*Rates too high*			
	No direct intervention reported (1)	*Intervention to raise rates* (2)	(3)	*Intervention to maintain rates* (4)	*No direct intervention reported* (5)	(6)	*Intervention to lower rates* (7)	*No direct intervention reported* (8)	*Total* (9)
Economic Commission for Latin America									
Number of countries	1	2	1	2	9	—	10	7	32
Population size (absolute numbers in millions)	11 682	9 003	29 625	27 866	174 825	—	119 072	11 498	383 571
Population size (percentage) ...	3.0	2.4	7.7	7.3	45.6	—	31.0	3.0	100
Economic Commission for Africa									
Number of countries	—	4	2	7	14	—	15	9	51
Population size (absolute numbers in millions)	—	9 129	10 940	55 631	171 990	—	185 329	85 569	518 588
Population size (percentage) ...	—	1.8	2.1	10.7	33.2	—	35.7	16.5	100
Economic Commission for Western Asia									
Number of countries	1	3	1	1	6	—	—	—	12
Population size (absolute numbers in millions)	1 619	11 833	1 196	14 654	24 335	—	—	—	53 637
Population size (percentage) ...	3.0	22.1	2.2	27.3	45.4	—	—	—	100

Sources: Compiled from replies to "Fifth Population Inquiry among Governments: monitoring of government perceptions and policies on demographic trends and levels in relation to development as of 1982"; and information from the Population Policy Data Bank maintained by the Population Division of the Department of International Economic and Social Affairs of the United Nations Secretariat.

XX. POLICIES AND PROGRAMMES AFFECTING MORTALITY AND HEALTH*

A. Background

All countries have policies or programmes to improve the health and well-being of their citizens. Health protection and promotion, and disease treatment and prevention, are in one form or another incorporated into the development plans of national Governments. Most developing countries originally structured their health services along the model that had been gradually developed in the Western industrialized countries, with an emphasis on curative services that are hospital-based and largely located in urban areas. Preventive activities and such public health programmes as were available were designed to check the spread of endemic diseases and to prevent outbreaks of major epidemics. In addition, among the preventive activities directed specifically towards improving the health of infants, young children and mothers, there are many pre-natal and family planning services and activities organized either within the health system or as a separate activity through governmental or non-governmental organizations.

With the introduction of modern drugs and pesticides in the late 1940s and early 1950s, the further developments of health services and infrastructure, the increase in the number of health personnel and the launching of major disease control programmes, a rapid reduction of mortality was achieved in many developing countries. In addition, in some, rapid economic progress and the institution of social welfare policies have led to a general improvement of the health status of the population.

These developments were not witnessed in all developing countries. Moreover, the pace of mortality decline has not always been sustained, which has led to greater disparities in levels of mortality among the major regions of the world as well as among individual countries within these regions. Even within countries, wide disparities in survival chances continue to prevail among various subgroups of most populations. Such disparities are generally considerably larger in high-mortality than in low-mortality countries. In India, for instance, the range of life expectancy at birth for females among the major states is estimated to be in excess of 20 years; in the Philippines, the interprovincial range is even higher.

At the beginning of the 1950s, it was estimated that of the three major less developed regions of the world, Latin America had the highest life expectancy at birth (about 52 years) and Africa the lowest (about 37 years), with the level in the Asian region falling in between (life expectancy at birth of 43 years). By the mid-1970s, mortality levels in the three major regions had improved and life expectancy at birth was estimated at 62, 47 and 57 years, respectively. The overall figures, however, mask the existence of wide disparities within regions. In Asia, for example, they ranged between 69 years (Sri Lanka), the highest national level of life expectancy, and 42 years (Afghanistan and Bhutan). The variations in mortality levels within countries — among administrative or geographical regions or between rural and urban areas — are associated not only with variations in the availability of and access to health services but with variations in socio-economic status reflected in income, housing conditions, education, water-supply and sanitation. In high-mortality regions, the deaths of infants and young children account for a large proportion — often as much as 50 or 60 per cent of all deaths. Differentials in infant mortality also arise from factors associated with uncontrolled fertility, especially short birth intervals, and childbearing at the extremes of the reproductive span.

Marked differentials in mortality are also evident among population subgroups in the developed countries where mortality levels are much lower. The gap in life expectancy at birth between the sexes is currently about five or six years in favour of females in many European countries and considerably higher, about 8-10 years, in Northern America, the Union of Soviet Socialist Republics, Finland, Poland and France. The socio-economic circumstances of individuals are closely related to survival prospects. In the United Kingdom of Great Britain and Northern Ireland, for example, where socio-class differentials in mortality have been demonstrated for over 100 years, it is estimated that males belonging to the wealthier social class (I) can expect to live about seven years longer than males born into the lowest social class (V). This differential is of the same order as the gap in life expectancy at birth for males in, for example, Portugal and Sweden, countries that are representative of the lowest and highest levels of life expectancy in Europe. More importantly, the differentials in mortality between social classes appear to have widened in the face of mortality decline in some countries.

Recent trends of mortality in the developed countries also point to the widespread failure of adult males to register further substantial increments in life expectancy. Indeed, life expectancy for adult males in several Northern European countries has scarcely changed since the early 1950s, when the rapid decline in death rates from the communicable diseases effectively ceased. Moreover, life expectancy for men has been declining in several Eastern European countries during the past decade or so. In general, females have continued to

* Prepared by the World Health Organization.

register further gains in life expectancy, with the level approaching 80 years in many countries, predominantly in Northern Europe.

Against this background, some of the policy options that could be expected to ameliorate these differentials and unfavourable trends of mortality are discussed in this chapter. It is recognized, however, that mortality levels, trends and differentials are to a very large extent determined by policies and programmes not directly the responsibility of the health sector. Food availability, women's status and role, education, income levels and distribution, and alleviation of poverty are the most obvious examples. This sensitivity of mortality levels and differentials to the impact of broader social, economic and cultural influences has been found to apply in low-mortality countries as well. However, the most significant impact on mortality — and also on morbidity — is often achieved through policies and programmes in the health sector. These efforts can be specific, such as a malaria eradication programme or a vaccination campaign, in which case the impact tends to be easily identified; or they can be more general, such as water and sanitation programmes or a health education drive, where the health impact on the population will be more gradual and difficult to measure. No attempt is made here to explore specific policy options for reducing many differentials in ill health that exist among human populations, either within or between countries.

A historical turn in health development occurred in 1977, when it was decided unanimously by the Thirtieth World Health Assembly, in resolution WHA30.43, that by the year 2000, all people in all countries should have a level of health that would permit them to lead a socially and economically productive life. This implies that the level of health of all people should be at least such that they are capable of working productively and of participating actively in the social life of the community in which they live. Health for all does not mean that in the year 2000 physicians and nurses will provide medical services, nor does it mean that in the year 2000 no one will be sick or disabled. It does mean that health begins at home, in schools and in factories. It is there, where people live and work, that health is made or broken. It does mean that people will use better approaches than they do now for preventing disease and alleviating unavoidable diseases and disabilities, and have better ways of growing up, growing old and dying gracefully. It does mean that there will be an even distribution among the population of whatever resources for health are available. It does mean that essential health care will be accessible to all individuals and families in an acceptable and affordable way and with their full involvement. And it does mean that people will realize that they themselves have the power to shape their lives and the lives of their families, free from the avoidable burden of disease and aware that ill health is not inevitable.

In conformity with the recognition by the United Nations General Assembly of health as an integral part of development, the human energy generated by improved health should be channelled into sustaining economic and social development, and economic and social development should be harnessed to improve the health of people. Health for all by the year 2000 cannot be achieved by the health sector alone. It will require the co-ordinated efforts of other social and economic sectors concerned with national and community development, in particular, agriculture, animal husbandry, food, industry, education, housing, public works and communications. Ministries of health or analogous authorities have an important role in stimulating and co-ordinating such action for health.

Evaluation of the impact of the 1974 World Population Plan of Action and of the new World Health Organization (WHO) Strategy for Health for All by the Year 2000 will be greatly facilitated by the agreed procedures for monitoring of progress and evaluation of efficiency of the strategy. These procedures, which involve individual country reports being reviewed by the WHO regional committees and regional reports being reviewed by the World Health Assembly at regular intervals beginning in 1983/84, are likely to lead to dramatic improvements in the quantity and quality of available health data. This would include information on national health policies and strategies, and managerial measures to develop and implement them; on health systems based on primary health care, including health manpower, community involvement, co-ordination within the health sector and with other sectors and the delivery of health care; health research, co-operation among countries and between them and WHO, mobilization of resources and an assessment of the world health status and related socio-economic situation. Some of this information will be based on the 12 global indicators that were decided upon by the World Health Assembly. Such an assessment will also be facilitated by the results from the 1980 round of censuses as soon as these become available in sufficient detail to permit a comprehensive evaluation.

Developing countries constitute a very heterogeneous group, with regard to not only the level of health development but many other sectors, such as political systems, economic development and the organization of health care, all of which interact with, and hence influence, health status. The focus in this paper is largely confined to East and South Asia, from whence most of the examples are drawn, although it may be expected that the same type of considerations would apply in other regions of the world at similar stages of mortality transition.

B. Health policies, economic development and mortality

Major health problems

The overall mortality level is largely determined by the age structure of mortality, which in turn depends upon the prevailing cause-of-death patterns. Deaths among infants and young children in the developing countries are over-represented when compared with the situation in the developed countries. Further, for the latter group of countries, the modal ages of deaths have

moved more and more to the extremes of the life span. This shift is a consequence of the progress in maternity and child care, which has ensured the survival of infants who previously would have succumbed to various congenital disorders and injuries at birth. At the other extreme, technological advances in medical care for adults and the elderly have led to an increasing "rectangularization" of the survival curve at the higher ages.

At the risk of over-simplification, the reduction of mortality may result from either or both of the following processes:

(*a*) Reduction of the exposure to risk of illness through such methods as improved sanitation and immunization, but also through improving nutritional status, personal hygiene, the provision of potable water etc.;

(*b*) Introduction of more effective treatment resulting in reduced case-fatality, such as, for example, through the use of oral rehydration for acute diarrhoeal cases.

Past experience has shown that the effective control of "preventable deaths", that is, those due to infections and parasitic diseases, diarrhoeal diseases, most respiratory diseases and maternal mortality, represents the path of mortality change that brought about the current longevity levels in the low-mortality countries. In contrast, the persistence of these broad groups of causes of death in developing countries is largely responsible for the low levels of life expectancy. One study of regional differentials in mortality in the Philippines has shown a close inverse association between the estimated level of life expectancy at birth (both sexes) and the percentage of registered deaths attributed to the most frequent types of infections and parasitic diseases, and a positive association with cancer deaths.[1] In general, deaths resulting from causes of the first type have a tendency to decline with increasing life expectancy, while deaths attributed to cancer display the opposite trend. For most countries, however, information on causes of death is either not available at all or is limited only to deaths that occurred in hospitals, which are known to be highly selective. Some insights into the health problems facing the developing countries may be gleaned from the reports submitted by national Governments to WHO. Summary data presented in table 90 indicate that in most low-income, high-mortality countries, the general pattern of major health problems did not change markedly during the period 1955-1975. Smallpox and plague, and, in some instances, tuberculosis, are no longer mentioned; but, by and large, infectious, particularly respiratory and gastro-intestinal, diseases, still pose the major health problems. An item more often mentioned in the 1975 list is malnutrition — indirect evidence of the increasing proportion of the population living in conditions below the "poverty line" in many developing countries. The World Bank has estimated that about 1 billion people lived in absolute poverty in 1980, the majority (as much as 90 per cent of the absolute poor) living in rural areas and working on farms or doing non-farm work that depends in part upon agriculture. More than half of these people are small farmers owning some land and/or leasing land. Large pockets of absolute poverty are often found in relatively remote areas, which are underserved with regard to education and health infrastructure and services. This is not to suggest that malnutrition is a problem confined to the poor living in rural districts; malnutrition also affects urban-dwellers and their children. Urban living conditions — notably the squalor of the slums in which most new migrants tend to cluster — often appear to

TABLE 90. MAJOR HEALTH PROBLEMS, SELECTED DEVELOPING COUNTRIES, BY REGION, AROUND 1955 AND 1975

Region and country	*Major health problems*	
	Around 1955	*Around 1975*
Africa		
Morocco	Tuberculosis Eye diseases Venereal diseases Occupational health Drug addiction	Malaria Tuberculosis Eye diseases
Latin America		
Bolivia	Malaria Tuberculosis Yellow fever Smallpox Typhus	Respiratory diseases Gastro-intestinal diseases Tuberculosis Undernutrition Sanitation
Colombia	Malaria Typhoid and paratyphoid fever Syphilis Smallpox	Malaria Meningococcal meningitis Acute poliomyelitis Heart and cerebro-vascular diseases Malignant tumours
Costa Rica	Malaria Leprosy Poliomyelitis Tuberculosis	Venereal diseases Measles Pertussis Tuberculosis Viral hepatitis
Mexico	Malaria Yellow fever Syphilis Tuberculosis Leprosy	Gonorrhoea Leprosy Cancer Accidents
Asia		
Saudi Arabia	Malaria Tuberculosis Venereal diseases Schistosomiasis Ankylostomiasis	Tuberculosis Ophthalmia Malaria Schistosomiasis
Oceania		
Fiji	Filariasis Tuberculosis Leprosy	Respiratory diseases Gastro-intestinal diseases Skin infections Diabetes Hypertension
Papua New Guinea	Malaria Tuberculosis Dysentery	Acute respiratory diseases Malaria Gastro-intestinal diseases Malnutrition Tuberculosis

Source: World Health Organization, *World Health Situation Reports*, various issues.

challenge the notion that rural-urban migration reduces poverty. A study of differential child mortality in Bangladesh found that the families of immigrants from rural to urban areas have higher child mortality than comparable (in terms of education) urban-born families. The lack of a family support system in the new urban environment contributes to this differential, as does the lower disposable income of recent arrivals.[2]

In contrast, the leading causes of death in the developed countries are the so-called "diseases of civilization", for which the aetiology is closely related to individual life-style. Ischaemic heart disease, the leading cause of death in the developed countries, accounting for about one fifth of all deaths on average, is much more common in persons who smoke heavily, exercise little, are obese and have high blood pressure and abnormal blood lipid distribution, all of which, except for cigarette smoking, are to a considerable extent influenced by poor dietary habits. An unhealthy diet has also been implicated as an aetiological agent in cancers of certain sites of the digestive tract. A further 4 per cent of deaths in the developed countries are due to cancer of the lung, for which cigarette smoking is the major causal factor.

Cigarette smoking has also been implicated as a major risk factor for chronic bronchitis and emphysema. Alcohol abuse is another underlying cause of premature death, acting in part to increase death rates from cirrhosis of the liver and certain nutritional deficiencies, but more importantly through its association with road traffic accidents. Indeed, up to 50 per cent of fatalities from motor-vehicle accidents in some countries are believed to be due to alcohol abuse, with the proportion rising to as high as 80 per cent for males aged 15-24 years in some countries.[3]

Development and health policies

Despite the successful control of many infectious diseases through public health measures and the expansion of health services, the recorded decline in national mortality levels has not always been accompanied by a reduction of the inequality in survival chances among various subgroups of national populations. On the contrary, the admittedly very limited data available indicate that the gap may in fact have been widening. Because of the inequitable distribution of, and access to, the benefits of development and to health services, the privileged groups — be they privileged in terms of education, socio-economic status and income, caste or political power, or a combination of all these characteristics — have generally benefited disproportionately.[4]

An important feature of development efforts over the past 25 years concerns the priority assigned to the health sector in the national strategies. Some developing countries, such as China, Cuba and Sri Lanka, have placed great importance on the improvement of social conditions of their population, in particular with regard to education and to health promotion and protection, and on an equal access to them. Education and health promotion, two critical aspects of the development of human resources — and hence of social and economic development — were accorded a priority equivalent to that given to expansion of the economy, to increasing productivity and to industrial growth. The emphasis on education and the development of human resources has in turn led to better health. (For details, see tables 92 and 93 at the end of this chapter.)

At the other extreme of developmental concepts are such countries as Japan and the Republic of Korea, which, although equally committed to the same ultimate goals, have acted on the assumption that the best strategy for raising levels of living and meeting basic needs was economic growth, the benefits of which would, with some time-lag, "trickle down". In both groups of countries, as well as in other countries whose developmental strategies would place them between the two ideological extremes, there are examples of improvements in health as reflected by steep declines of mortality. The estimates shown in table 91 are those made so far by some countries of Asia and Oceania, indicating their stage of mortality transition. In at least half of the countries covered, the level of life expectancy at birth exceeded 60 years in 1980. Only four countries had achieved this level two decades earlier. It should be noted, however, that in four major countries of the region (Afghanistan, Bangladesh, Nepal and Pakistan), which together comprised a population of over 200 million, life expectancy at birth was estimated to be no higher than 50 years.

The "success stories" of mortality decline in Costa Rica, Cuba, Kerala State in India, and Sri Lanka have not yet provided a full explanation of the processes that brought about the rapid mortality transition. There are, however, strong indications that much of the decline in death rates is attributable to a strong political commit-

TABLE 91. LIFE EXPECTANCY AT BIRTH, SELECTED COUNTRIES OF ASIA AND OCEANIA, 1960-1965 AND 1980-1985
(Years)

Region and country or area	*Life expectancy at birth*	
	1960-1965	*1980-1985*
Asia		
Afghanistan	34.1	37.0
Bangladesh	43.9	47.6
Burma	45.0	55.0
Hong Kong	66.1	73.9
India	43.7	52.5
Indonesia	42.5	52.5
Malaysia	55.7	66.9
Nepal	39.1	45.9
Pakistan	44.4	50.0
Philippines	54.5	64.5
Republic of Korea	55.2	67.5
Sri Lanka	63.5	67.5
Thailand	53.9	62.7
Oceania		
Australia	71.2	74.3
Fiji	65.7	71.3
New Zealand	71.8	72.9
Papua New Guinea	42.7	53.3

Source: World Population Prospects: Estimates and Projections as Assessed in 1982 (United Nations publication, Sales No. E.83.XIII.5).

ment to improve the health and general welfare of the populations, including an emphasis on comparatively simple preventive measures, health education and delivery of services to the doorstep of households in rural areas. However, whether and to what extent the lessons learned can be transferred to more populous countries, and to countries with different socio-political structures, remains to be seen.

Stagnation of mortality decline

In the late 1960s and during the 1970s, a slowing down of the rate of mortality decline was observed in some developing countries. In some instances, the deceleration of mortality decline occurred only after substantial progress in reducing death rates had been made. This slow-down was to be expected in countries where major gains in reducing mortality had already been achieved. In other countries, however, the deceleration of mortality decline and, in a few instances, even a period of stagnation, has taken place at levels that are still sufficiently high to be amenable to further rapid reductions. The reasons for this retardation of mortality decline appear to be associated with slower social and economic development, as well as the inadequacies of public health measures and health care services. The specific causes undoubtedly vary from country to country, as does the relative importance of each of the individual factors mentioned above. It is worth nothing, however, that this slowing down of mortality reduction has often occurred in parallel with a general retardation of economic growth. For many developing countries, the factors underlying this economic slow-down are often beyond their control; for instance: increasing cost of imported energy; a crushing debt burden; impact of world-wide inflation and unemployment; decreasing flow of foreign aid; and rising barriers to international trade in manufactured goods and commodities. Increasing population size will add an additional dimension to the already pressing need to provide adequate services — health care and education, in particular — to improve housing, environmental sanitation and transportation; and to generate job opportunities. This all serves to underline the urgent need to control population growth through every appropriate means, including more widespread and efficient family planning services. At least two studies of mortality trends in Latin America have attributed the stagnation of mortality decline to a deterioration in living conditions among major sections of the population.[5] Furthermore, reports and studies on the health situation in other developing countries suggest that most of the major health concerns in existence in the 1950s still represent the major health challenges of the 1970s (see table 90).

It is clearly an important and urgent matter to identify and document the underlying causes of this retardation in progress towards reducing preventable mortality. In this context, the rate of economic development and the equity of this development have attracted considerable interest, without any clear consensus emerging. The past decades do not appear to show any examples of substantial progress in the health status of a population in the absence of economic growth. The Indian State of Kerala and Sri Lanka have been cited as cases where the principal factors underlying mortality declines and general gains in health have been social development — as reflected by improved education and literacy — and increased political participation. However, this development occurred under conditions of relatively equitable distributions of land and income and during periods of higher economic productivity. In addition, a better distribution of health care outlets in rural Kerala and a high level of accessibility to and utilization of health services have undoubtedly contributed to the improvement in mortality, as well as to the comparatively high acceptance of family planning services.

The choice of development policies focused on economic growth and policies giving priority to social equity is not, of course, an either/or proposition. Rather, the issue is more whether a policy that accords priority to social equity is likely to be more effective in inducing economic growth. The premise underlying the social-equity approach stresses the importance of utilizing the creative talents and political involvement of the population at large, political reforms and redistribution of wealth, including the benefits of economic growth itself. In East and South Asia, at least, it would appear that where policies of social equality have been pursued, their impact on the health sector has been more efficient or, at worst, not less efficient than the alternatives.

During the 1970s, increasing expectations for better health care and widespread frustrations among the underserved, especially the rural poor, led to critical reappraisals of the entire health care system in many developing countries. These reappraisals brought into question the underlying concepts and strategies of existing health systems, generally imported unquestioningly along with sophisticated health technology, often with an élitist approach to the organization of the health care delivery system and neglect of the needs of the vast majority of the poor. The general contention that Western health care models are inapplicable for most developing countries has come to be widely accepted.

The concern for an adequate health strategy to better meet the needs of the majority of the world population culminated in the Declaration of Alma-Ata in 1978,[6] which stated that primary health care is the key to attaining health for all. At Alma-Ata and in recent World Health Assemblies, the countries of the world have committed themselves to attaining an acceptable level of health for all by the year 2000, so that all of their respective populations can live socially and economically productive lives. The principles and approaches of primary health care were endorsed as providing the key for achieving this goal. Underlying primary health care is the conviction that health and development are closely related.

At the Conference at Alma-Ata, primary health care was defined as:

"essential health care based on practical, scientifically sound and socially acceptable methods and tech-

nology made universally accessible to individuals and families in the community through their full participation and at a cost that the community and country can afford to maintain at every stage of their development in the spirit of self-reliance and self-determination. It forms an integral part of the country's health system, of which it is the central function and main focus, and of the overall social and economic development of the community. It is the first level of contact of individuals, the family and community with the national health system bringing health care as close as possible to where people live and work, and constitutes the first element of a continuing health process."[7]

The Declaration of Alma-Ata also defined the essential elements of primary health care as:

"education concerning prevailing health problems and the methods of preventing and controlling them; promotion of food supply and proper nutrition; an adequate supply of safe water and basic sanitation; maternal and child health care, including family planning; immunization against the major infectious diseases; prevention and control of locally endemic diseases; appropriate treatment of common diseases and injuries; and provision of essential drugs."[8]

In November 1979, the United Nations General Assembly adopted resolution 34/58 concerning health as an integral part of development. In that resolution, the General Assembly endorsed the Declaration of Alma-Ata, welcomed the efforts of WHO and the United Nations Children's Fund (UNICEF) to attain health for all by the year 2000 and called upon the relevant bodies of the United Nations system to co-ordinate with and support the efforts of WHO by appropriate actions within their respective spheres of competence. In connection with the preparation of a new International Development Strategy, which was considered during the special session of the General Assembly in 1980, the General Assembly called for careful attention to be given to the WHO contribution, which reflects the Global Strategy for Health for All.

The Global Strategy, which was based on national and regional strategies and was adopted by the World Health Assembly in 1981 (resolution WHA34.36), indicates the broad lines of action to be taken in the health sector and in related social and economic sectors, nationally and internationally, with respect to all the essential issues mentioned in the Board's document. In so doing, the strategy makes full use of the Declaration of Alma-Ata and indicates ways by which countries can develop their health systems on the basis of primary health care as described in the report of the Conference at Alma-Ata, as well as ways by which international action can support these national endeavours. The strategy also responds to General Assembly resolution 34/58 by specifying joint activities in the health and related social and economic sectors that reinforce one another and contribute to human development in general and to health development in particular. General Assembly resolution 36/43, adopted in the same year:

"Endorses the Global Strategy for Health for All by the Year 2000 as a major contribution of Member States to the attainment of the world-wide social goal of health for all by the year 2000 and to the fulfilment of the International Development Strategy for the Third United Nations Development Decade."

It also:

"Requests all appropriate organizations and bodies of the United Nations system — including the United Nations Children's Fund, the Food and Agriculture Organization of the United Nations, the International Labour Organisation, the United Nations Development Programme, the United Nations Environment Programme, the United Nations Educational, Scientific and Cultural Organization, the United Nations Fund for Population Activities and the World Bank — to collaborate fully with the World Health Organization in carrying out the Global Strategy."

The case of developing countries

Yet perhaps the major thrust of the primary health care approach is to better meet the health needs of vulnerable groups of the population, especially at the village level. In this respect, the significance of maternal and child health care with the Strategy cannot be over-emphasized. The basic principles underlying the concept of primary health care are fundamental to maternal and child health care. In particular, the emphasis of community involvement must address the issues of how women's involvement in health care can be made more equitable and more effective; how women's organizations, including village groups, can be mobilized to promote primary health care; and the type of societal, community and family action necessary to ensure support for women as mothers along with their other roles. Given the significance of the family in the implementation of maternal and child health activities, the emphasis of maternal and child health care within primary health care lies in supporting community and family self-reliance, especially with regard to the family's responsibilities in childbearing, child-rearing and self-care. Furthermore, primary health care is intended to make maximum use of local resources, which, in the case of maternal and child health care, means utilizing traditional birth attendants, village health workers and other personnel with appropriate and realistic training. Other facets of primary health care include supporting families in their self-care role. An example of this is training the women in the use of oral rehydration packets for treatment of diarrhoeal disease or in the preparation of such solutions from locally available ingredients.[9] For primary health care to work effectively, it is also essential that it be adequately supported by the health care infrastructure, especially with regard to transport, facilities and supervision for referral in cases where more specialized care is required.

With the increasing concern in recent years for better integrating health-related policies into overall development plans, greater emphasis is now being given to the primary health care approach in many countries. Bang-

ladesh, for example, has been building up a health care infrastructure in the rural counties (*thanas*) and is training traditional healers, *palli chikitshaks,* as an auxiliary cadre to augment the peripheral health personnel. In India, there has been a very large input into the primary health programme.[10] In addition to extending its network of primary health centres and subcentres, the latter units eventually to serve a population of 5,000 (instead of the current 10,000), India is also retraining what were formerly uni-purpose workers to become multi-purpose workers under the primary health care system. In most states (except Kerala and Tamil Nadu), community health volunteers are being trained with the aim of having one in every village by 1985 (as of the end of 1980, 156,000 had been trained). Similar plans to provide basic health care down to the village level through training village volunteers and traditional birth attendants are also in progress in Indonesia, Nepal, the Philippines and Thailand, among others.[11]

Preliminary evidence concerning the implementation of primary health care would suggest that a conducive socio-political environment is not necessarily a pre-condition for progress with this approach. To begin with, the goal of health for all by the year 2000 forces the health sector to adopt a prospective view of health development and not merely to react to what has happened in the past. There is also evidence that some Governments have changed their patterns of spending on health care, with very dramatic shifts in some cases.[12] In addition, primary health care is encouraging greater local self-reliance in some developing countries, using local taxes and local resources. More and more people have been brought within reach of either ambulatory clinics or village health workers. This is not to suggest that the implementation of primary health care will not encounter obstacles, especially where a highly centralized government policy with regard to such matters as regional autonomy, public finance, rural development and local government is in force. However, the encouraging developments, not only in commitment but in infrastructure, provide grounds for optimism.

The case of developed countries

The primary health care approach is equally applicable in the developed countries although, given the level of health and health infrastructure development, the orientation is somewhat different. In this case, the emphasis will be more on a reappraisal of institutional care, on new approaches to prevention and the promotion of healthy life-styles, on the expanding role of health education and on better co-ordination between health services and the other sectors bearing on health. The factors underlying the need for a new approach are in part economic — motivated by the rising costs of health care — and in part reflect concern about the widespread failure of adult males, in particular, to achieve further substantial mortality reductions.

Health care policies in the developed countries will also need increasingly to take into account the changes in the age structure of death, with an increasing proportion of deaths now occurring among the elderly, particularly among the very old. At the other end of the life-span, improved obstetrical procedures and better pre-natal and post-natal care brought about a shift in the age distribution of deaths in many developed countries, with a greater proportion of infant deaths occurring in the period immediately following birth. The implications of these changes are considerable. The lengthening of life may not always be accompanied by a corresponding postponement of morbidity, which would permit the elderly to enjoy more years of healthy life. The increased burden of ill health arising from the aged population may well require that long-term health care programmes be deinstitutionalized and provide for more independent alternative living arrangements for the individual. Simultaneously, home health care services will need to be better developed, requiring, in many instances, a more supportive role of the family in the care of the aged. Also, the substantial progress in reducing infant and late foetal mortality has increased the need for sophisticated post-natal equipment to sustain those infants who would previously have succumbed to congenital infirmities or birth injuries.

Sex differentials in mortality have also widened considerably in the developed countries over the course of the twentieth century, particularly since the Second World War. Much of this trend has arisen from differential mortality changes for the sexes at ages 45 years and over, although excess male mortality from traffic accidents at ages 15-24 years has contributed significantly to the trend in a number of countries, most notably Australia, Austria and the United States of America. Among adults, increasing male excess mortality from coronary heart disease, lung cancer, chronic bronchitis and emphysema has been largely responsible for this development, although it is interesting to note that the sex ratio of mortality from lung cancer is now actually declining in such countries as Australia, Denmark, Sweden, the United Kingdom and the United States, where female mortality from the disease is now rising faster than that of males. Mortality from coronary heart disease has also declined by up to 25 per cent in some countries since the late 1960s, although the factors underlying this change, principally the role of behaviour modification versus that of more efficacious health care facilities for the management of coronary patients, is still very much a matter of debate.[13]

Certainly, the resolution of this debate and the broader question of the relative merits of preventive and curative health care will be critical for guiding health policy in the developed countries in the next decades. However, the remarks made by Greenwood[14] many years ago concerning the scientific prudence of waiting for nosological data until they are statistically exact could equally well apply today in the context of the underlying causes of the leading chronic diseases. Epidemiological investigation has repeatedly found that various behavioural traits, principal among them being cigarette smoking, are associated with higher levels of morbidity and mortality from such causes as coronary heart disease, lung cancer and chronic respiratory diseases. Irrespective of the contribution of improved

medical and surgical procedures for dealing with these diseases, the preventive role of health education programmes in encouraging behaviour modification to reduce the likelihood of succumbing to these diseases cannot be emphasized enough and must form the corner-stone of national health policy designed to cope with these diseases. In this respect, there is need for a much more effective means for integrating the findings of behavioural science research on the reasons underlying the adoption of detrimental health habits into the formulation of health policy. These factors are undoubtedly complex and interactive, encompassing such facets as emotional need, response to emotional disturbance, role definition, stress alleviation and feelings of individual autonomy arising from task demand at the workplace. The goal of health education programmes must be to provide alternatives to these responses that do not lead to health-impairing practices. The failure of such programmes to prevent cigarette smoking on a massive scale among adolescent females in recent years attests to the urgency for their revision.

At the same time, it has become clear that the demand for health care has no immediate limit and that the cost of such care will continue to rise. Moreover, there is an increasing body of literature suggesting that expenditure on health services in the developed countries is not always rewarded with proportionately favourable changes in health. The medical establishment, and especially medical schools, are coming under increasing criticism for the concentration of clinical science and practice on the mechanism of disease and the technology for dealing with it rather than on the process of disease causation. There is, therefore, an urgent need to ensure that those agencies responsible for primary and community care, as emphasized at the Alma-Ata Conference, shall be given sufficient opportunity effectively to penetrate the traditions that have flourished in medical schools and teaching hospitals. The integration of family planning into the curricula of medical schools is one of the elements required. There is also a need to encourage a more preventive emphasis in the training of physicians. Given the nature of the disease and injury burden in low-mortality countries, the inevitable limitations of technological progress in the medical field to cope with it must be recognized and a greater commitment given to prevention and caring. It is in this sense that health for all in these countries does not primarily constitute a technical or even economic challenge, but rather one for social development, social equity and political will to implement such goals.

Greater responsibility of the individual for his own health protection and self-care are — at the individual and family level — the other important ingredients of the primary health care approach. Underlying these factors is the principle of "demedicalization" of health care. They are, undoubtedly, more difficult to implement through the traditional bureaucratic and institutional channels. There is a great scope for voluntary and other non-governmental organizations to be involved in this type of work, as has been earlier demonstrated in the case of family planning activities.

Some concluding remarks

According to recent United Nations estimates, population structure and distribution in the majority of developing countries in the period up to the year 2000 will be characterized by continuing youthfulness and growing urbanization. These trends have important implications for the organization and orientation of health services during the next 20 years. Maternal and child health care will remain — along with family planning services — an important part of the activities. The currently underserved rural populations will continue to be in need of preventive and curative services, in particular in the countries of Africa and Southern Asia, where the largest gap between rural and urban access to such services prevails. The national health programmes have also to recognize the existence of wide differences in health among various social groups in both rural and urban areas. At the root of these differences are problems of social inequality, reflected in poverty, illiteracy, malnutrition and lack of job opportunities, which are, by their very nature, not amenable to the type of intervention which the health sector can provide. In countries where mortality is still relatively high, the problems faced in their endeavour to provide adequate health services and facilities for all in the foreseeable future call for the creation of social, economic, cultural and politico-institutional pre-conditions to overcome the contradiction between what is technologically possible and the social and economic ability to apply it to all in need. The new strategy in the health sector advocated in the Alma-Ata Declaration can be fully effective only if it becomes an integral component of an overall development strategy that is committed to social equity.

As an example, table 91 shows that in at least seven major countries of South Asia and in Papua New Guinea, life expectancy at birth had not reached 60 years by 1980. It is in these countries that the major health problems associated with the high incidence and prevalence of infectious and parasitic diseases and malnutrition are also concentrated. It is not a pure coincidence that in all of them high fertility contributes to the other health problems. Their rapid population growth, among other things, has made qualitative improvements in the development of human resources, including health, a slow process. In some of these countries, it may be a nearly impossible task to achieve a rapid change and radical improvement in mortality by the year 2000. For those countries where the level of mortality is equivalent to a life expectancy at birth in excess of 60 years, an incipient "modernization" of the cause-of-death pattern can be observed. The management of "modern" diseases, such as neoplasms and cardio-vascular diseases, has in fact already emerged as one of the major health concerns in China and Sri Lanka; it is certain that during the next two decades similar trends will appear in the other countries, as well as in countries of Africa and Latin America, as they advance on the road to lower mortality.

Hence, countries that are currently developing health care systems better suited to serve the needs of their

rural and urban populations within the context of health problems dominated by infectious and parasitic diseases, by inadequate sanitation and by malnutrition will also need to take a long-term perspective. Once full primary health care coverage has been achieved, an adaptation of the health care system will be required to meet the growing needs for curative and especially preventive measures against such illnesses as cardio-vascular diseases and neoplasms, which will gradually move to the forefront of health concerns. There is evidence that in recent years the Chinese[15] have been attempting to develop a system of more sophisticated medical care requiring a complex array of facilities, personnel and equipment without, however, abandoning the health worker system that has functioned so remarkably well to date. The constant upgrading through formal and on-the-job training of the qualifications of these health workers ("barefoot doctors") is a part of the strategy directed towards coping with the new emerging health problems. The crucial point is that the health administrators and planners in the developing countries need to plan not only for their immediate needs but for the future.

The pace of future declines in mortality in the developing countries of Asia and other regions of the world will depend not only upon the development and application of new strategies in national health policy but upon the extent to which other problems, largely social and economic, that individual countries currently face will be alleviated. It has been recognized, among other instances also in the Alma-Ata Declaration, that direct medical interventions, both curative and preventive, have only limited potential to improve health and reduce mortality. The control of morbidity and mortality from a broad array of causes will also depend upon relatively expensive programmes of environmental sanitation — water-supply and sewerage, in particular. Much more important for health level of the people, however, will be the maintenance of adequate nutrition and access to the basic necessities of life, regardless of any possible economic crisis.

At the individual and household levels, living standards and education have played, and continue to play, an important role. Differentials in levels of mortality and morbidity that persist among various population groups in a country, for example, between urban and rural populations and among social groups, are associated not only with the variations in the availability of and access to health services but with variations in social status, education, literacy, income and housing conditions. Even in countries where urban-dwellers enjoy better access to health facilities, considerable differences in mortality exist between the low-income, illiterate, inadequately housed majority and the wealthier families. The long-term impact on morbidity and mortality of development programmes intended to reduce existing inequalities in opportunities for education and employment and to alleviate poverty may well prove to be more important than a direct intervention against some of the health problems through expansion of health services alone.

TABLE 92. AVERAGE LIFE EXPECTANCY AT BIRTH, 1980-1985; AND GOVERNMENTS' PERCEPTIONS OF ITS ACCEPTABILITY IN PREVAILING ECONOMIC AND SOCIAL CIRCUMSTANCES, BY LEVEL OF DEVELOPMENT, AREA OF RESPONSIBILITY OF REGIONAL COMMISSIONS AND GEOGRAPHICAL REGION, 1983

Under 50 years		*50-61 years*		*62[a]-69 years*		*70 years and over*		*All ages*		
Acceptable	*Not acceptable*	*Acceptable*	*Not acceptable*	*Acceptable*	*Not acceptable*	*Acceptable*	*Not acceptable*	*Acceptable*	*Not acceptable*	*Total*
					World					
4	41	2	28	12	29	44	8	62	106	168
					Developing countries					
4	41	2	28	12	29	12	1	30	99	129
					Developed countries					
—	—	—	—	—	—	32	7	32	7	39
					A. AREA OF RESPONSIBILITY OF ECONOMIC COMMISSION FOR EUROPE					
					Eastern Europe					
—	—	—	—	—	—	Bulgaria Czechoslovakia German Democratic Republic Hungary Romania	Poland	5	1	6
					Northern Europe					
—	—	—	—	—	—	Denmark Finland Iceland Ireland Norway Sweden	United Kingdom	6	1	7

TABLE 92 (*continued*)

Under 50 years		*50-61 years*		*62[a]-69 years*		*70 years and over*		*All ages*		
Acceptable	*Not acceptable*	*Acceptable*	*Not acceptable*	*Acceptable*	*Not acceptable*	*Acceptable*	*Not acceptable*	*Acceptable*	*Not acceptable*	*Total*
				A. AREA OF RESPONSIBILITY OF ECONOMIC COMMISSION FOR EUROPE (*continued*)						
				Southern Europe						
—	—	—	—	—	—	Holy See Malta Portugal San Marino Spain	Albania Greece Italy Yugoslavia	5	4	9
				Western Europe						
—	—	—	—	—	—	Austria Belgium France Germany, Federal Republic of Liechtenstein Luxembourg Monaco Netherlands Switzerland	—	9	—	9
				Western Asia (part)						
—	—	—	—	—	Turkey	Cyprus Israel	—	2	1	3
				Northern America						
—	—	—	—	—	—	Canada United States of America	—	2	—	2
				Union of Soviet Socialist Republics						
—	—	—	—	—	—	Ukrainian SSR USSR	Byelorussian SSR	2	1	3
				TOTAL						
—	—	—	—	—	1	31	7	31	8	39
				B. AREA OF RESPONSIBILITY OF ECONOMIC COMMISSION FOR ASIA AND THE PACIFIC						
				China						
—	—	—	—	—	China	—	—	—	1	1
				Japan						
—	—	—	—	—	—	Japan	—	1	—	1
				Other East Asia						
—	—	—	—	—	Democratic People's Republic of Korea Mongolia Republic of Korea	—	—	—	3	3
				South-eastern Asia						
Lao People's Democratic Republic	Democratic Kampuchea	—	Burma Indonesia Viet Nam	Malaysia Philippines Thailand	—	Singapore	—	5	4	9
				Southern Asia						
—	Afghanistan Bangladesh Bhutan Maldives Nepal	—	India Iran Pakistan	—	Sri Lanka	—	—	—	9	9

TABLE 92 (*continued*)

Under 50 years		*50-61 years*		*62[a]-69 years*		*70 years and over*		*All ages*		
Acceptable	*Not acceptable*	*Acceptable*	*Not acceptable*	*Acceptable*	*Not acceptable*	*Acceptable*	*Not acceptable*	*Acceptable*	*Not acceptable*	*Total*
				B. AREA OF RESPONSIBILITY OF ECONOMIC COMMISSION FOR ASIA AND THE PACIFIC (*continued*)						
				Australia-New Zealand						
—	—	—	—	—	—	Australia New Zealand	—	2	—	2
				Melanesia						
—	—	—	Papua New Guinea Solomon Islands	—	Vanuatu	Fiji	—	1	3	4
				Micronesia-Polynesia						
—	—	—	—	—	Kiribati Tonga Samoa Tuvalu	Nauru	—	1	4	5
				TOTAL						
1	6	—	8	3	10	6	—	10	24	34
				C. AREA OF RESPONSIBILITY OF ECONOMIC COMMISSION FOR LATIN AMERICA						
				Caribbean						
—	—	—	Haiti	—	Antigua and Barbuda Bahamas Dominica Dominican Republic Grenada Saint Lucia Saint Vincent and the Grenadines	Barbados Cuba Trinidad and Tobago	Jamaica	3	9	12
				Central America						
—	—	—	Guatemala Honduras Nicaragua	Belize Mexico	El Salvador	Costa Rica Panama	—	4	4	8
				Temperate South America						
—	—	—	—	Argentina Chile	—	Uruguay	—	3	—	3
				Tropical South America						
—	—	—	Bolivia Peru	Guyana Paraguay	Brazil Colombia Ecuador Suriname Venezuela	—	—	2	7	9
				TOTAL						
—	—	—	6	6	13	6	1	12	20	32
				D. AREA OF RESPONSIBILITY OF ECONOMIC COMMISSION FOR AFRICA						
				Eastern Africa						
Rwanda	Burundi Comoros Djibouti Ethiopia Madagascar Malawi Mozambique Somalia	—	Kenya Uganda United Republic of Tanzania Zambia Zimbabwe	Seychelles	Mauritius	—	—	2	14	16

TABLE 92 (*continued*)

Under 50 years		*50-61 years*		*62[a]-69 years*		*70 years and over*		*All ages*		
Acceptable	*Not acceptable*	*Acceptable*	*Not acceptable*	*Acceptable*	*Not acceptable*	*Acceptable*	*Not acceptable*	*Acceptable*	*Not acceptable*	*Total*
				D. AREA OF RESPONSIBILITY OF ECONOMIC COMMISSION FOR AFRICA (*continued*)						
				Middle Africa						
—	Angola Cameroon[b] Central African Republic Chad Congo Equatorial Guinea Gabon Sao Tome and Principe Zaire	—	—	—	—	—	—	—	9	9
				Northern Africa						
—	Sudan	Libyan Arab Jamahiriya	Algeria Egypt Morocco Tunisia	—	—	—	—	1	5	6
				Southern Africa						
—	Swaziland Lesotho	—	Botswana South Africa	—	—	—	—	—	4	4
				Western Africa						
Ivory Coast	Benin Burkina Faso[c] Gambia Guinea Guinea-Bissau Liberia Mali Mauritania Niger Nigeria Senegal Sierra Leone Togo	—	Ghana Cape Verde	—	—	—	—	1	15	16
				TOTAL						
2	33	1	13	1	1	—	—	4	47	51
				E. AREA OF RESPONSIBILITY OF ECONOMIC COMMISSION FOR WESTERN ASIA						
				Western Asia[d]						
Yemen	Democratic Yemen Oman	Iraq	Saudi Arabia	Bahrain Syrian Arab Republic	Jordan Lebanon Qatar United Arab Emirates	Kuwait	—	5	7	12
				TOTAL						
1	2	1	1	2	4	1	—	5	7	12

Sources: Compiled from replies to "Fifth Population Inquiry Among Governments: monitoring of government perceptions and policies on demographic trends and levels in relation to development as of 1982"; information in the Population Policy Data Bank of the Department of International Economic and Social Affairs of the United Nations Secretariat; and *World Population Prospects: Estimates and Projections as Assessed in 1982* (United Nations publication, Sales No. E.83.XIII.5).

[a] A life expectancy at birth of 62 years corresponds to the average world life expectancy by 1985 referred to in paragraph 22 of the World Population Plan of Action. The other categories in this table were chosen in reference to this figure.

[b] Formerly called the United Republic of Cameroon.

[c] Formerly called the Upper Volta.

[d] Excluding Cyprus, Israel and Turkey.

TABLE 93. AVERAGE LIFE EXPECTANCY AT BIRTH, 1980-1985; AND GOVERNMENTS' PERCEPTIONS OF ITS ACCEPTABILITY IN PREVAILING ECONOMIC AND SOCIAL CIRCUMSTANCES: NUMBER OF COUNTRIES AND POPULATION SIZE IN ABSOLUTE NUMBERS AND PERCENTAGE, BY LEVEL OF DEVELOPMENT AND AREA OF RESPONSIBILITY OF REGIONAL COMMISSIONS, 1983

	Under 50 years		*50-61 years*		*62-69 years*		*70 years and over*		*All ages*		
	Acceptable	*Not acceptable*	*Acceptable*	*Not acceptable*	*Acceptable*	*Not acceptable*	*Acceptable*	*Not acceptable*	*Acceptable*	*Not acceptable*	*Total*
World											
Number of countries	4	41	2	28	12	29	44	8	62	106	168
Population size (absolute numbers in millions) ...	25 302	428 873	17 996	1 393 011	247 747	1 368 159	1 001 573	186 936	1 292 618	3 376 979	4 669 597
Population size (percentage)	0.5	9.2	0.4	29.8	5.3	29.3	21.5	4.0	27.7	72.3	100
Developing countries											
Number of countries	4	41	2	28	12	29	12	1	30	99	129
Population size (absolute numbers in millions) ...	25 302	428 873	17 996	1 393 011	247 747	1 368 159	28 356	2 258	319 401	3 192 301	3 511 702
Population size (percentage)	0.7	12.2	0.5	39.7	7.0	39.0	0.8	0.1	9.1	90.9	100
Developed countries											
Number of countries	—	—	—	—	—	—	32	7	32	7	39
Population size (absolute numbers in millions) ...	—	—	—	—	—	—	973 217	184 678	973 217	184 678	1 157 895
Population size (percentage)	—	—	—	—	—	—	84.0	16.0	84.0	16.0	100
Economic Commission for Europe											
Number of countries	—	—	—	—	—	1	31	7	31	8	39
Population size (absolute numbers in millions) ...	—	—	—	—	—	47 666	840 561	184 678	840 561	232 344	1 072 905
Population size (percentage)	—	—	—	—	—	4.4	78.3	17.2	78.3	21.7	100
Economic and Social Commission for Asia and the Pacific											
Number of countries	1	6	—	8	3	10	6	—	10	24	34
Population size (absolute numbers in millions) ...	4 209	134 204	—	1 128 728	116 526	1 116 619	140 610	—	261 345	2 379 551	2 640 896
Population size (percentage)	0.2	5.1	—	42.7	4.4	42.3	5.3	—	9.9	90.1	100
Economic Commission for Latin America											
Number of countries	—	—	—	6	6	13	6	1	12	20	32
Population size (absolute numbers in millions) ...	—	—	—	46 078	120 950	195 502	18 783	2 258	139 733	243 838	383 571
Population size (percentage)	—	—	—	12.0	31.6	51.0	4.9	0.6	36.4	63.6	100
Economic Commission for Africa											
Number of countries	2	33	1	13	1	1	—	—	4	47	51
Population size (absolute numbers in millions) ...	14 861	291 528	3 342	207 784	60	1 013	—	—	18 263	500 325	518 588
Population size (percentage)	2.9	56.2	0.6	40.1	0.0	0.2	—	—	3.5	96.5	100
Economic Commission for Western Asia											
Number of countries	1	2	1	1	2	4	1	—	5	7	12
Population size (absolute numbers in millions) ...	6 232	3 141	14 654	10 421	10 211	7 359	1 619	—	32 716	20 921	53 637
Population size (percentage)	11.6	5.9	27.3	19.4	19.0	13.7	3.0	—	61.0	39.0	100

Sources: Compiled from replies to "Fifth Population Inquiry among Governments: monitoring of government perceptions and policies on demographic trends and levels in relation to development as of 1982"; and from information in the Population Policy Data Bank maintained by the Population Division of the Department of International Economic and Social Affairs of the United Nations Secretariat.

Notes

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[6] *Primary Health Care: Report of the International Conference on Primary Health Care, Alma-Ata, USSR, 6-12 September 1978,* jointly sponsored by the World Health Organization and the United Nations Children's Fund (Geneva, World Health Organization, 1978), pp. 2-6.

[7] *Ibid.*, pp. 3-4.

[8] *Ibid.* p. 4.

[9] Information provided by Lado Ruzicka, Australian National University, Department of Demography.

[10] *Ibid.*

[11] *Ibid.*

[12] "Primary health care: a first assessment", *People,* vol. 10, No. 2 (1983), pp. 6-9; and Hakan Hellberg, "Health for some by the year 2000 — an interview with People Magazine", *People,* vol. 10, No. 2 (1983), pp. 10-12.

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[14] Major Greenwood, *Medical Statistics from Graunt to Farr,* the Fitzpatrick Lectures for the years 1941 and 1943 (Cambridge University Press, 1948), p. 28.

[15] R. J. Blendon, "Public health versus personal medical care", *The New England Journal of Medicine,* vol. 304, No. 16 (1981), pp. 981-982.

XXI. FERTILITY*

A. Governments' perceptions and policies

Fertility over the past few years has been marked by two characteristics of vital interest in the field of population policies. In the developed countries, the decline in fertility has continued to unprecedentedly low levels; net reproduction rates lower than unity have become quite common in those countries. In the developing countries, almost two thirds of the population have entered a process of fairly rapid decline in fertility. Only one third of the population in those countries still have high and stable fertility levels.

The perceptions of Governments in regard to fertility can be examined from two standpoints: first, that of their overall effect on the levels and trends of the rate of natural increase, the demographic view; and secondly, that of their effect on the well-being of families and individuals, which can be termed the "individual" fertility criterion.

The way in which Governments perceive "individual" fertility may be regarded from several angles. Those viewpoints are, first, the health aspect, especially the health of the mother and its repercussions on the general well-being of the family; secondly, the question of personal rights, particularly the right of individuals to decide freely on the spacing and the number of children they wish to have; thirdly, the social and socio-legal aspect, which includes both the rights and the social and socio-legal obligations of the parents, the children and the family in general; and fourthly, the relationship between fertility and the status of women.

The way in which Governments perceive the global aspect of fertility, as in the case of the natural growth rate, is dependent upon the net balance of advantages and disadvantages to be expected from an aggregate fertility level. However, although this perception is fairly similar to that adopted with respect to the rate of natural increase, they do not necessarily coincide, because what is involved in the first view is the evaluation of a process comprising several components. Obviously, there is a close relationship between "individual" fertility and "aggregate" fertility; the progressive polarization of "individual" behaviour around certain reproduction norms can lead to "aggregate" fertility levels that may be regarded as unsatisfactory by Governments. The crystallization of these perceptions determines, in the final analysis, the adoption of a policy and its implementation. In regard to fertility, the degree of importance given to individual well-being, rather than to the demographic aspect, largely determines the type of measures adopted. This section is divided into two parts: first, an analysis of Governments' perceptions, policies and measures in 1983; and secondly, a description of the changes in Governments' perceptions and policies with respect to levels of fertility, by level of development and area of responsibility of the regional commissions, covering the period from 1974 to 1980.

Governments' perceptions and policies in 1983

The results presented in this part have been drawn primarily from the information provided by Governments in their replies to the survey conducted by the United Nations, entitled "Fifth Population Inquiry Among Governments: monitoring of government perceptions and policies on demographic trends and levels in relation to development as of 1982". At the time this report was prepared, almost 55 per cent of the 168 country Member States of the United Nations or members of its specialized agencies had replied to the inquiry. For the remaining countries, information gathered in the Population Policy Data Bank of the Population Division was used. For the few countries for which there has been no indication of new information, their previously expressed views were considered to be still prevalent.

World and developed and developing countries

From table 94, which summarizes information given in tables 99 and 100 at the end of section A, it can be seen that the countries of the world are roughly divided in two groups of the same size as concerns their perceptions with respect to fertility level: 50 per cent view the level as satisfactory; and 50 per cent (84 countries) consider the level to be unsatisfactory. Among the latter group, 14 per cent (22 countries) hold that view because levels are too low and 36 per cent (62 countries) because they are too high. Very few changes have occurred since 1980: one can see a slight increase in the number of countries that perceive the level to be too low and a decrease in the number of countries satisfied with their rate, while the proportion of countries that consider the level to be too high has not

TABLE 94. GOVERNMENTS' PERCEPTIONS WITH RESPECT TO LEVELS OF FERTILITY, BY LEVEL OF DEVELOPMENT, 1983

(Number of countries)

Level of development	*Rates too low*	*Rates neither too low nor too high*	*Rates too high*	*Total*
World	22	84	62	168
Developing countries	12	55	62	129
Developed countries	10	29	—	39

* Prepared by the Population Division of the Department of International Economic and Social Affairs of the United Nations Secretariat.

changed. In fact, the above-mentioned slight increase is essentially due to a reaction of some developed countries that are alarmed by their low level of fertility and consequently by the low or negative growth rate of their population. Ten developed countries out of 39 now consider the level to be too low, against only eight in 1978 and in 1980. The shift was made by countries that formerly perceived the rate to be satisfactory, because not a single developed country views its level as too high.

In the developing countries, one can see some stabilization in the trend recorded since 1974, of an increasing number of countries considering the level to be too high. The relative number of countries in each category of perception did not change in 1983, with 11 per cent of countries still considering the level to be too low, 42 per cent viewing it as satisfactory, and the majority, 47 per cent, considering it to be too high. However, some changes are occurring at the regional level, as is shown below.

Governments continue to be increasingly concerned with the current possibilities of influencing demographic factors that had not been subject to intervention in the past. In 1983, as indicated in table 95, 58 per cent of the countries implement policies to maintain or to change their levels of fertility. This trend seems quite stable, because 52 per cent of the Governments had formulated policies in 1980 and only 45 per cent had done so in 1974. The countries that perceive the level to be unsatisfactory are those which are mainly involved in the implementation of policies: 83 per cent of the countries that consider the level to be too low intervene to increase it; 74 per cent of those considering the level too high intervene to decrease it; but only 39 per cent of the countries that perceive the level to be satisfactory implement policies to maintain it.

In the developed countries, about half of the countries implement policies to maintain or change the level. Among the countries that consider the rate to be too low or satisfactory, 11 have such a policy but only eight out of 29 of those which perceive the level to be satisfactory do so. It can be assumed that many of the Governments holding this view have confidence in the natural evolution of fertility and consequently consider that no intervention is needed. It should be noted, however, that the situation is quite different from 1980, when only one third of the countries perceiving the level to be satisfactory had implemented policies to maintain it. The significance of this increase can be related to a growing uncertainty about the future trends of fertility.

TABLE 95. GOVERNMENTS' POLICIES WITH RESPECT TO LEVELS OF FERTILITY, BY LEVEL OF DEVELOPMENT, 1983

(Number of countries)

Level of development	*Policies on intervention to influence levels of fertility*				
	To increase fertility	*To maintain fertility*	*To decrease fertility*	*No policies*	*Total*
World	23	25	48	72	168
Developing countries	12	17	48	52	129
Developed countries	11	8	—	20	39

In terms of population size, 60 per cent of the world population live in countries where the levels of fertility are considered too high, 35 per cent in those where the levels are considered satisfactory and only 5 per cent in countries that consider the fertility levels to be too low (see table 100 at end of section A).

The difference is more significant when the countries are classified by level of development. Thus, in the less developed regions, 80 per cent of the population live in countries where the Governments perceive the fertility rate as too high, 18 per cent in countries that consider the rate satisfactory and just over 1 per cent in those which view the rate as too low. In the more developed regions, no country considers its level of fertility to be too high. The majority of the population, 85 per cent, live in countries where the fertility levels are viewed as satisfactory and 15 per cent where it is perceived as too low.

In the developing countries, governmental intervention with respect to fertility policy is more frequent, because more countries are dissatisfied with the fertility levels. As of 1983, 60 per cent of the developing countries implement policies, against 54 per cent in 1980 and only 45 per cent in 1974. Among those countries having policies in 1983, the proportion in relation to the perception is the following: 37 per cent of countries that consider the level to be satisfactory implement policies; the corresponding figures for the other perception categories are 86 per cent of those perceiving the level to be too low and 74 per cent of those perceiving the level to be too high.

As far as access to modern methods of contraception is concerned, it is not permitted in just seven countries, compared with 11 in 1980 (see table 101 at end of section A). There was a slight increase in the number of countries where it is permitted but without governmental intervention: 32 countries as compared with 27 in 1980.

It is at the level of governmental intervention that some changes have occurred; the number of countries where the Government directly supports family planning activities fell from 105 countries in 1980 to 101 in 1983, whereas the number of countries where the Government indirectly supports access rose from 22 countries in 1980 to 28 in 1983.

In both the developed and the developing countries, the direct support of the Government is very important, since in both groups it represents 61 per cent of the countries. In contrast, access is neither permitted nor supported by the Government in just 18 per cent of the developed countries, but in 23 per cent in the developing countries. This suggests that some resistance is still prevalent in the latter group, although the trend since 1974 is clear: 33 per cent of the countries in 1974 and 25 per cent in 1980 did not permit or support access.

Regional analysis

This section presents an analysis of the perceptions and policies of Governments, according to the areas of

responsibility of the regional commissions (see also tables 99-101 at end of section A).

Economic Commission for Europe

In the area of responsibility of the Economic Commission for Europe (ECE), 12 countries perceive the level to be too low: Bulgaria, the German Democratic Republic and Hungary in Eastern Europe; Sweden in Northern Europe; Greece in Southern Europe; France, the Federal Republic of Germany, Liechtenstein, Luxembourg and Monaco in Western Europe; and Cyprus and Israel. Except for the Federal Republic of Germany and Sweden, all of these countries implement policies with a view to increasing the fertility rate. Only one country, Turkey, considers the level to be too high and implements policies to decrease it. The other countries of the ECE area consider the level to be satisfactory. Among them, almost one half implement policies to maintain the level — Czechoslovakia, Poland and Romania in Eastern Europe; Finland and Ireland in Northern Europe; Albania and Yugoslavia in Southern Europe; and Belgium in Western Europe; the Byelorussian Soviet Socialist Republic, the Ukrainian Soviet Socialist Republic and the Union of Soviet Socialist Republics implement policies to increase the rate. The remaining countries do not have any policies of intervention. A few countries have changed both their perceptions and policies since 1980. Hungary, where the Government formerly considered the level to be satisfactory and had policies to maintain it, now perceives the level to be too low and implements measures to increase it. In Sweden, whereas the Government formerly perceived the level to be satisfactory, it now considers it to be too low; however, in 1980 as well as in 1978, the Government did not consider it necessary to intervene. Czechoslovakia and Poland still perceive the level to be satisfactory; but in both countries, the Government has now decided to implement measures to maintain the level. Lastly, Cyprus still considers the level of fertility to be too low but has now implemented policies to increase it.

It remains to examine the objectives pursued by the countries that decide to implement fertility policies. Most countries, for instance, those in Eastern Europe, and Cyprus and Turkey, indicate that they want both to modify the effect of fertility on the rate of population growth and to improve maternal and child health and family well-being. However, a few countries, such as France and Luxembourg, want primarily to modify the rate of population growth by modifying fertility levels. A few other countries in the ECE area — Poland, for example — desire mainly to improve maternal and child health and family well-being.

However, even among countries that report that they have no policy, a large number implement measures in order to allow individuals to make a freer choice as concerns family size and to offer social and economic support to couples who decide to have children. This is considered important in terms of social justice (as indicated by Sweden, for instance). Some countries, particularly the pro-natalist countries, are more specific in their objectives and have formulated quantitative targets. For instance, Bulgaria stated that it was necessary to create "social, economic and psychological conditions" that are favourable for the gradual growth and stabilization of the birth rate and for the achievement of the goal of from two to three children in every family. Hungary reported that it had decided to increase fertility "to reach replacement level", as did Luxembourg. The approach is quite different in France: studies have shown that the actual number of births is lower than the number desired. Thus, the objective of the Government's policy is to create the appropriate conditions to permit families to have the number of children they say they want to have. Special assistance will be given to "large families" (three children and more) in order to increase their numbers. In Turkey, the only anti-natalist country in the ECE area, the Fifth Development Plan states that "the fertility rate may drop from 4.33 (1978) to 2.89 within the period 1995-2000". Among countries that perceived the level of fertility to be satisfactory and that have a policy to maintain it, the objective mentioned by Czechoslovakia is typical: to support the creation of a "favourable social climate for family life". In contrast, the statement of the Netherlands reflects the position of a country that does not desire to intervene because it is confident of the spontaneous evolution of the fertility trend, at least for the time being. It stated that the Government endorsed the desirability of attaining a "more or less stationary population", preferably to number somewhat fewer than the current total of 14.3 million. In the short term, fertility should remain below the replacement level; later, it should rise gradually to the replacement level.

In the ECE area of responsibility access to modern methods of contraception, which express both the legal aspects of contraception in a country and the intervention of the Government to limit or extend family planning facilities, is largely integrated in directly supported governmental services (25 countries) or accessible through private organizations encouraged by indirect support from the Government (eight countries). Since 1980, some important changes have occurred. In Malta, access to modern methods of contraception was not permitted until 1980; now, not only is it permitted but the Government provides direct support. In Cyprus, although access was not directly supported in 1980, it was permitted; the Government now provides direct support. In contrast, the Governments of some countries have moved to a narrower position: in Romania, access is now permitted but without any governmental support; in Switzerland, policies are the sole responsibility of local governmental bodies (cantons); in France, the Government directly supports information on contraception but access to contraception only indirectly.

In most of the ECE countries, all contraceptive methods, including abortion and sterilization, are permitted by law, although some countries have imposed such stringent conditions that access is sharply limited (Hungary, for example). Abortion and sterilization are still not permitted in Turkey, but a new law liberalizing them is currently under discussion. Abortion is still

forbidden in Malta, and sterilization is not permitted in Poland and Bulgaria; in Italy, a 1978 law decriminalized sterilization.

The types of measures most frequently employed in the ECE area of responsibility are economic incentives, such as family allowances and paternity/maternity benefits; but mainly other special family benefits to help women reconcile maternity and employment, namely, optional half-time employment, flexible time schedules during pregnancy, maternity leave, education leave, guarantee of full or partial salary, job security and an increasing number of day nurseries and kindergartens. Housing facilities, mortgages and loans at low interest rates for young couples or families are other incentives of the same type. More and more countries are also implementing measures to modify the socio-economic environment, such as: revenue distribution through the tax system; integration of women in all sectors of economic activity (France, Italy, Luxembourg, Poland, Romania, Sweden and Turkey); and measures for the care and protection of the aged (Austria, Bulgaria, Cyprus, Czechoslovakia, France, Hungary, Italy, Poland, Romania and Turkey).

To complete this overview of the situation in the ECE area, the view of the Swedish Government appears fully to reflect the deep concern of most of these countries with regard to fertility trends. It stated that fertility had never been as low as it is today. This trend can cause concern, but the question is whether these low figures mean that Sweden is now in the midst of a "population crisis", that it is entering a period with a reduced population. This question is not easy to answer, "nor is the answer an unequivocal 'yes' despite the apparently dramatically low birth rate". Demographic change takes a very long time to run its course, and the Government considered a trend over a decade a fragile basis for such a far-reaching conclusion as to speak of a crisis. It noted that the low birth rates had once again highlighted the question how one could create, politically and in other contexts, the best possible conditions for children and their parents.

Economic and Social Commission for Asia and the Pacific

Only two countries in the area of responsibility of the Economic and Social Commission for Asia and the Pacific (ESCAP), Democratic Kampuchea and the Lao People's Democratic Republic, consider fertility levels to be too low. The level is considered to be satisfactory in 12 countries; and the Democratic People's Republic of Korea, Maldives, Mongolia, Nauru and Singapore intervene to maintain the level. The Governments of the three developed countries, Japan, Australia and New Zealand, as well as those of Bhutan, Burma, the Islamic Republic of Iran and Vanuatu, all have confidence in the natural evolution of fertility and do not implement a policy. All the other countries in the region perceive the rate to be too high and, except in Afghanistan, Papua New Guinea, Solomon Islands and Tuvalu, implement policies to decrease it. (Although Kiribati and Malaysia shared this view in 1980, they now consider the level to be satisfactory.) One can readily see the continuity of both perceptions and policies among countries in the ESCAP area. This continuity can largely be explained by the fact that, for many years, a majority of these countries were confronted with levels of fertility and rates of population growth that they considered unacceptable; and they made special efforts to decrease them.

A large number of the countries in the ESCAP area have quantified their fertility objectives. For example, the target in Bangladesh is to decrease the total fertility rate from 5.81 in 1980 to 4.10 in 1985 and to 2.3 by 1990, and to maintain it at that level until the year 2000. In Indonesia, the Government's target is to decrease the crude birth rate from a currently estimated 36 per 1,000 to 23 per 1,000 by 1990; and in Kiribati, to decrease the fertility rate from 4.5 to 2.0 by the year 2000 and subsequently to reach zero population growth. Fiji wants to decrease the crude birth rate to 20 per 1,000 by 1985; and Malaysia, to attain a crude birth rate of 20 per 1,000 by 1985, in order to attain a rate of population growth of 1.5 per cent. In Nepal, the goal is to decrease the fertility rate to 5.4 by 1985, to 4.0 by 1990 and to 2.5 by the year 2000; in the Philippines, to attain a net reproduction rate of one by the year 2000; in the Republic of Korea, to achieve a total fertility rate of 2.3 by 1986 and 2.1 by 1988; in Singapore, to maintain fertility at a rate below replacement level, so as to attain zero population growth by around 2030; and in Thailand, to reach a rate of population growth of 1.5 per cent by 1986.

With respect to legal provisions and access to modern methods of contraception, all methods are legally permitted in most countries in the ESCAP area. However, abortion as a contraceptive method remains illegal in certain countries, such as the Islamic Republic of Iran, Kiribati, Papua New Guinea, the Philippines and Thailand. Access to contraceptive methods is not permitted in Democratic Kampuchea and in the Lao People's Democratic Republic; it is authorized but lacks governmental support in Bhutan, Burma and Japan. The Government of the Islamic Republic of Iran now indirectly supports family planning activities, whereas it previously provided direct support. It is also the policy of Australia and New Zealand. In all other countries in the ESCAP area of responsibility, Governments provide direct support.

Most countries that have identified targets for fertility have also identified family planning targets. For example, in Bangladesh, it is hoped to raise the proportion of continuous users of contraceptives (an estimated 14 per cent of eligible couples in 1980) to 27 per cent by 1985, the end of the plan period (in absolute terms, this represents an increase from 2.3 million to 7.5 million couples). In Indonesia, the Government's targets are to have one health centre for every subdistrict with an average of 30,000-40,000 inhabitants, one physician for every subdistrict and one centre for the distribution of contraceptives in every village or hamlet. The target in Kiribati is to attain 85 per cent coverage by 1986 of women of childbearing ages, concentrating mainly on

the younger age groups; in Fiji, to increase the family planning protection rate to 35 per cent by 1985; and in Malaysia, to recruit 732,000 new acceptors during the fourth Malaysian plan period (1981-1985), with special attention given to high-risk groups, that is, high-parity women and those at the beginning and/or end of their reproductive cycles. In Nepal, a "contraceptive mix" has been specified in order to attain replacement-level fertility by the year 2000, mainly in the densely populated Terai districts and among young couples. In Papua New Guinea, the 1974-1979 health plan specified that 100 per cent of hospitals, 90 per cent of the rural health centres and 50 per cent of rural aid posts were to provide family planning services; and in the Republic of Korea, the target of the Fifth Five-Year Plan is to increase acceptance to 67 per cent by 1986 (nation-wide and for all reproductive ages). The emphasis in Thailand is on expansion of family planning infrastructure in the public and private sectors, particularly in disadvantaged areas and in high-fertility areas where there are low acceptance rates, with the aim of reducing the growth rate to 1.5 per cent by 1986, which will require 4.6 million new acceptors and 4.1 million continuing acceptors. Lastly, in Vanuatu, the Government's target is to provide access in all areas of the country, with special attention given to women with large families and those at risk.

Another legal measure taken by several countries is changing the age at marriage. For example, the minimum legal age at marriage in Indonesia was changed to 16 years of age for females and 19 years for males; in Thailand, it was raised from 15 to 17 years for females and maintained at 17 for males. In contrast, in the Islamic Republic of Iran, the minimum legal age at marriage for females was recently reduced from 18 to 15 years.

As previously noted, the countries in the ESCAP area of responsibility have implemented a wide variety of measures, notably voluntary governmental programmes usually integrated with health care programmes, information and education campaigns, socio-economic measures directed both to individuals and to communities, changes in the socio-economic environment, particularly extension of the educational system, improvement of the status of women and measures of psycho-social pressure designed to facilitate the implementation of governmental reproductive norms.

To cite some examples, the Government of Bangladesh, which emphasized the concept of the small family and improvement of the status of women, was inclined "to reduce maternal and infant mortality rates by providing adequate services", not only for the health and welfare of the people but to improve the chances of child survival so that the small family-size norm would become widely acceptable. The Government recognizes that a high status of women is favourable for planned parenthood and therefore encourages "women's education, training, employment and participation in public affairs.

In Fiji, where the Government's strategy is based on the integration of family planning services and community-level participation, all matters relating to fertility are the responsibility of the Ministry of Health and all programmes relating to it are in the Ministry's overall programme. Family planning is to receive the "highest priority" during the development plan period — as the new strategy for making basic health services available "through community participation and self-reliance".

In Indonesia, family planning and contraceptive systems are under the responsibility of the village heads, and services are integrated within other programmes. In its efforts to curb the level of fertility, the Government gives high priority to the national family planning programme, which has gained popularity in the rural areas of Indonesia, particularly in the high-density areas of Bali and Java. To attain a high continuation rate among rural acceptors, the establishment of acceptor groups is encouraged. These groups are under the leadership of the village heads and staff, who are responsible for the supply of oral contraceptives (pills) at the village level. The programme is being integrated with nutrition programmes, in which the acceptor groups are also becoming active. Additional programmes have been introduced, such as income-generating programmes to improve the ability of acceptors to buy nutritious food for their children and infants. A small family norm (two children) is being introduced through motivational and educational programmes, and the participation of women in development activities is being expanded.

The Malaysian Government has defined a new and wider concept of family planning which encompasses the entire field of population and family development. It includes integrating parasite control with family planning service delivery; incorporating population education curricula in institutions of higher learning and creating a Population Study Centre at the University of Malaya; integrating population and family health education into community development programmes; improving the status of women through the KARYANEKA project, which seeks to improve the quality of life of the lower income groups by enabling women to engage in income-generating handicrafts activities; mobilizing religious leaders for population and family development activities; and exchanging experience, knowledge and technologies with other countries in the area of the Association of South-East Asian Nations (ASEAN).

In Maldives, as a means of improving the status of women, the Government has set up the National Women's Committee.

In Nepal, high priority is to be given to fulfilling the unmet demand for family planning services. In view of the interrelations between population and development, "population components will be integrated into socio-economic development programmes", especially those related to agriculture, forestry, the environment and rural development. The Government considers that improving the social status of women, both in the family and in society, through education and non-agricultural employment, will have a favourable effect on fertility levels; therefore, programmes directed to the social and

economic development of women are to be given due emphasis. The work of local communities in the dissemination, at the grass-roots level, of information on the adverse effects of high population growth, both at the household level and on national socio-economic development, should help to bridge the gap between individual objectives and national goals. The Government stated that such efforts should be directed towards "increasing the acceptability of family planning methods" in Nepal and "mobilizing local people in population-related activities". The local panchayat, class organizations and other non-governmental organizations are to be extensively involved in various population-related programmes.

In the Republic of Korea, the Government's strategy includes the use of incentives to persuade people to have smaller families and improvement of the status of women. The Government stated that it was continuing its efforts to provide various incentives and to improve legal and institutional systems in order to accommodate the social norm of a small family size, in line with integrated measures to control population. Various incentives, such as preferential treatment in the allocation of public housing and tax exemptions, are provided to persons practising family planning. Since June 1982, low-income couples who are sterilized after having two or fewer children have been given a special allowance. Pre-school children of these small-size families will be provided with free primary health care centres throughout the country. Beginning in 1983, heavier residential taxes will be levied on families having three or more children. The family law is also carefully reviewed for amendments to provide equal rights to women.

In Thailand, where the country's population programme is fully integrated into the Fifth Plan, the Government has stressed the implementation of measures to reduce the size of the family to no more than two children. It stated that co-ordination in family planning by the public and private sectors would be accelerated in order to reduce the rate of population growth to a level compatible with the pattern of population distribution and with local resources. The extension of these services to remote areas in the southern and the north-eastern areas of the country, particularly in areas with low acceptance rates, is to be emphasized. In support of other population activities, intensified efforts will be made: (*a*) to expand population education; (*b*) to revise laws and regulations that are in conflict with population activities; and (*c*) to develop social norms and provide appropriate incentives so that people with economic problems will have no more than two children.

In conclusion, a statement made by the Philippines and also expressed by a number of other Governments is of particular interest, because it extends the concept of family planning: the concept of family planning should be redefined as family planning and welfare, that is, the "ultimate goal of the family planning programme is not simply the reduction of fertility but the overall welfare of the family and society".

Economic Commission for Latin America

In 1983, three countries in the area of responsibility of the Economic Commission for Latin America (ECLA),[1] Bolivia, Chile and Uruguay, still perceive fertility levels to be too low. (Although the Governments of Bolivia and Uruguay did not express a view on this matter in replying to the Fifth Inquiry, one may assume that their previous position is still valid.) Almost the same number of countries in the ECLA area consider fertility levels to be satisfactory (15 countries) as consider them to be unsatisfactory because they are too high (14 countries). Very few changes in perceptions have occurred since 1980: Guatemala and Nicaragua in Central America now consider the level to be satisfactory, whereas they previously considered them to be too high. In contrast, Peru made a shift in the opposite direction. It is worth noting that a smaller proportion of countries in the ECLA area — only 50 per cent, compared with much higher proportions in other regions — are currently implementing fertility policies. In fact, there has been no change in this proportion since 1980. Only two countries (Panama and Colombia) out of 15 that consider the level to be satisfactory are currently implementing measures. Except for the smallest countries in the Caribbean subregion (such as Saint Lucia and Saint Vincent and the Grenadines), most Governments that perceive the rate to be too high implement policies to decrease it (12 countries out of 14); this is also the case in two out of the three countries where the rate is perceived to be too low. The only change that has occurred since 1980 took place in the Dominican Republic, where the Government now implements measures to decrease the rate.

As is the case in Africa, no country in the ECLA area has as its main objective the modification of the fertility rate alone; most Governments that have formulated policies desire both to modify the effect of fertility on the rate of population growth and to improve maternal and child health and family well-being. Indeed, some countries, such as Colombia and Ecuador, give priority only to the improvement of maternal and child health and family well-being.

Several countries have specified quantitative targets for their fertility policies. For instance, Haiti desires to reach a crude birth rate of 20 per 1,000 and from two to three children per family by the year 2000; Jamaica, to achieve replacement levels of fertility by the year 2000; and Mexico, to decrease the crude birth rate from 33 per 1,000 in 1982 to 25 per 1,000 by 1988.

The strategies and types of measures implemented in countries in the ECLA area bear some similarity to those implemented in Africa; for example, the "cultural model" of the small family espoused by certain Governments in Africa finds its Latin American counterpart in the concept of "responsible parenthood".

Although some countries — for instance, Belize, the Dominican Republic, Ecuador, El Salvador, Guatemala and Mexico — permit all modern methods of contraception, many do not allow abortion and/or sterilization for contraceptive purposes — for example, Colombia, Ja-

maica, Nicaragua, Paraguay and Peru. In Haiti, although no specific law prohibits abortion, it is not permitted in practice. The same situation exists in Bolivia, where there are no legal provisions governing access to contraception.

In 1982, no country prohibited access to contraceptive methods, making Latin America the only region where this occurs. In five countries — Argentina, Belize, Bolivia, Guyana and Suriname — access is permitted but without governmental support. The Government indirectly supports family planning activities in three countries: the Bahamas; Nicaragua; and Paraguay. For the latter two countries, this represents a change in their position, as their Governments previously provided direct support. In every other country in the ECLA area, the Government directly supports access to modern methods of contraception; this group includes the same countries as in 1980, joined recently by Uruguay and Peru. In the case of Uruguay, the Government has adopted a completely new position, since access was previously not permitted at all. In Peru, the Government directly supports access in 1983, although it has changed its position several times in recent years.

Only a few countries have specified quantitative targets for their family planning programmes. For example, in the Dominican Republic, a country with an anti-natalist policy, the Government would like to decrease the fertility rate through a broader coverage of family planning services; the objective is to increase the number of participants in the programmes by 7 per cent of women of reproductive ages between 1983 and 1986. In Ecuador, where the Government's policy is to maintain the level of fertility, family planning is considered a means of improving overall health; and the Government's objective is to decrease maternal and post-natal mortality. In Haiti, the Government's target is to achieve an acceptance rate of 60 per cent of women of reproductive ages by the year 2000. In Mexico, where the Government has defined the National Plan of Family Planning (1977-1982), it foresees that by the end of the period 12 million women of reproductive ages will be covered by the programme (this includes continuing and new acceptors, with a breakdown of 7 million in the urban areas and 5 million in the rural areas). In Peru, the Government desires progressively to increase the current 10 per cent coverage rate of its family planning services.

In most countries in the ECLA area of responsibility, family planning activities are viewed as a means of social promotion, especially for women. It is one of several measures, including improvement of the status of women, cash maternity benefits and measures for the care and protection of the aged, that are directed towards promoting the concept of "responsible parenthood". Although the family size depends upon the free choice of the couple, many Governments persuade couples to limit their family size and offer the necessary services. For example, Cuba has a well-developed network of family planning facilities and a formal programme of sex education. The Dominican Republic has created several organizations directed towards promoting the status of women and their integration into the development process (for example, the Population and Family Council). In Haiti, within the framework of the Government's programme of "Health for everybody by the year 2000", the Government explained that its concept included child and maternal protection and family planning, with a view to the simultaneous reduction of mortality and natality, in order to avoid too rapid population growth. Measures are directed to procreation, family formation and the status of women. The Government of Haiti has taken steps to establish pre-natal clinics in marginal urban areas and rural communities and has been using the mass media to motivate the population to use pre-natal facilities and family planning services. The Government is also extending its project of selling condoms by automatic vending-machines in the main cities. In Jamaica, efforts have been made to provide family planning training to medical and paramedical personnel. A post-partum programme in 22 Ministry of Health hospitals employs full-time nurse educators, who provide family planning education to large audiences, recruit new acceptors and assist in voluntary sterilization operations. In the capital, a Ministry of Health pilot project entitled "Teen Scene" provides information and necessary services for teenagers. Another project promotes sex education both in the formal educational system and in community groups.

In Mexico, a country that has a strong anti-natalist policy but fully respects individual freedoms, the National Council gives priority to informing and educating the population concerning the Government's objectives in population matters as related to development. The aim of the mass media is to reach individuals, families and organizations in order to demonstrate the importance of family planning, to emphasize the legal equality of men and women, to promote the role of women in the development process and to demonstrate the negative effects of migration on family life and society. Sex education is also disseminated through all possible means. Peru has adopted a similar approach; the Government provides information and education with a view to promoting the concept of responsible parenthood but meanwhile permits couples to decide freely about their family size. In summary, although many countries in the ECLA area would like to decrease fertility levels, the free choice of individuals is fully respected; and it is mainly through methods of persuasion and education that Governments are trying to achieve their objectives.

Economic Commission for Africa

Few countries in the area of responsibility of the Economic Commission for Africa (ECA), still consider the level of fertility to be too low; in fact, there are only five: the Central African Republic, the Congo, Equatorial Guinea, Gabon and Guinea. The remaining countries are almost equally distributed between the category of considering the level to be satisfactory (21 countries) and that of perceiving it to be too high (25 countries). Some countries have completely changed their perception since 1980; Burundi, the Gambia and

Zambia formerly considered the fertility rate to be satisfactory but now consider it to be too high. The Libyan Arab Jamahiriya formerly considered the fertility rate to be too low but now considers it to be satisfactory; the Congo, however, changed its perception from satisfactory to too low.

As concerns the formulation of policies, about 55 per cent of the countries in the ECA area have formulated fertility policies; this group includes most of the countries that perceive the rate to be too low (to which the Ivory Coast may be added, since the Government, although satisfied with the current rate, would like to increase it in the future) and 17 countries out of the 25 that consider the level to be too high. The Algerian Government is currently reconsidering its entire population strategy and it appears that it may adopt some strong policy in the future in order to decrease the fertility rate.

Countries that did not intervene to modify fertility until 1980 but are now taking steps to decrease the level are Burundi, the Gambia, Rwanda, Senegal and Zimbabwe. On the other hand, Swaziland reported that it had decided that no further intervention was needed.

The interventionist countries in Africa are divided with respect to the objectives of their policies: an equal number of Governments give priority to improving maternal and child health and family well-being as desire both modification of the rate of population growth and improvement of individual and family well-being. In addition, few countries in the ECA area have specified targets, these being limited to anti-natalist countries which already have a long experience of integrating population policies within the development process. For instance, Egypt stated that its goal was to reduce the crude birth rate by 20 points, from 40 to 20 per 1,000, and to reduce the total fertility rate from 5.5 to 3.0 per woman during the period 1980-2000. Rwanda specified that its priority during 1982-1986 should be a reduction of the fertility of women in the groups aged 15-24 and 40 or over. Tunisia has used projections as guidelines for the progressive reduction in fertility: in 1981, a fertility rate of 148 (a decrease from the level of 169 estimated in 1971); in 1986, 130; in 1991, 116; in 1996, 96; and in 2001, a fertility rate of 80.

The specific fertility-related measures implemented in Africa are mainly legal measures, such as family planning activities, and changes in the socio-economic environment, such as improvement of the status of women. Three countries still do not permit access to contraception: Chad; the Ivory Coast; and Malawi. In 1980, Gabon, Equatorial Guinea and the Libyan Arab Jamahiriya shared this point of view, but they now permit access to contraception, although without governmental support. The Ivory Coast made the opposite move during the period. The number of countries in which the Government directly supports (24 countries) or indirectly supports (12 countries) access to contraception has slightly increased since 1980. In Burundi, where access alone was permitted in 1980, the Government now also provides direct support; Togo and Zambia provided indirect support in 1980 but provide direct support in 1983. At the same time, such countries as Lesotho, Liberia, Senegal, Zaire, Zambia and Zimbabwe, whose Governments directly supported family planning activities in 1980, provide only indirect support in 1983. The change in Cameroon[2] has been even more important; the Government currently permits access but does not provide direct support, whereas direct support was provided as of 1980. Over a two-year period, one can see an important number of changes in the ECA area of responsibility; these changes perhaps reflect an element of uncertainty felt by African Governments concerning the urgency and appropriateness of governmental intervention. It should be noted that, except in certain countries (for example, Egypt, Rwanda, Tunisia and Zambia), family planning in Africa tends to be considered a means of spacing births, mainly in order to improve maternal and child health; the reduction of fertility levels is viewed more as an indirect consequence or objective.

Although certain African countries permit the use of all modern methods of contraception (for example, Benin, Botswana, Mauritius, Senegal, Togo and Tunisia), most Governments still prohibit abortion and sterilization for contraceptive purposes. Some countries, such as Sao Tome and Principe, and Somalia, have no legal provisions in this regard, although they maintain an ambiguous position. Other countries, such as Zimbabwe, specifically prohibit Depo-Provera. In some countries, such as Madagascar, Swaziland and several former French colonies where a 1920 law prohibiting publicity on methods of contraception is still in force, the sale of contraceptive pills is strictly regulated; they are available only in pharmacies, with the presentation of a medical prescription by an adult. In the Ivory Coast, pills can be prescribed only for medical reasons and their use for contraceptive purposes is not authorized. In contrast, in Burundi, new proposals are under discussion to permit people to have better control of their fertility. In Senegal, the Government is expanding its network of family planning centres; and the law restricting publicity on contraceptive methods has been repealed.

Very few countries have specified family planning targets. Some examples of countries that have done so are Botswana, where the target is for 15 per cent acceptance by women of reproductive ages by 1985 (national average target). In Egypt, the goal is to reach a prevalence level of 60 per cent by the year 2000 among married women of reproductive ages. In Mauritius, family planning services are expected to cover 32 per cent of women of reproductive ages in 1983, compared with 28 per cent in 1978. The Government of Tunisia specified acceptance by 27 per cent of women in 1980 and 40 per cent in 1986, an increase in rural areas from 18 per cent (1980) to 36 per cent (1986), and in urban areas from 35 per cent (1980) to 45 per cent (1986). The Government stated that special efforts should be made in the central and southern areas of the country.

Another aspect of legal measures adopted by Governments to influence fertility levels consists of a change in the legal age at marriage. In the Ivory Coast, the minimum legal age of marriage has been set at 18 years for females and 21 for males; in Mauritius, from 15 to 18 years for females, with the age for males remaining the same at 18 years. In Tunisia, it may be recalled that a measure approved in 1964 changed the age from 15 to 17 years for females and from 18 to 20 years for males.

As previously mentioned, Governments in the ECA area have generally emphasized improvement in the status of women as a means of controlling fertility levels that are considered to be too high. For instance, in Botswana, a "unit" has been formed in the Ministry of Home Affairs to co-ordinate activities concerned with women, with a view to improving their participation in the development process. Lesotho took a similar step by establishing the Bureau for Women's Affairs to oversee women's interests and to promote their participation in development. In general, the promotion of the status of women is usually among the proposed targets of family planning programmes, which are usually integrated into the overall health system. In general, African Governments have preferred a "soft" approach in their fertility policies, using maternal and child health as a means of reducing fertility. At the same time, some Governments promote a "model of reduced family size", which is ethically and culturally acceptable to their populations. This approach was reflected by the Government of Madagascar, which stated that although it had not officially opted to regulate fertility, it had taken into account the direct correlation between the increasing pace of pregnancies, the increasing number of abortions and the increase in infant and maternal morbidity and mortality, on the one hand, and a progressive change in couples' behaviour with regard to family size, on the other hand, and was offering information services on contraception and services at clinics and maternal and child health centres, in order to allow people to decide freely the number and spacing of their children. Moreover, the financial support provided by the Government to the non-governmental family planning organization shows that it is interested in more than the prevention of pregnancies and births and considers that it is contributing to human well-being and social development.

Another illustration of the way in which African countries conceptualize their fertility policy is indicated by the response of the Government of the Gambia, which stated that family planning was needed "to obtain a better balance between family needs and the means to satisfy those needs". More specifically, it noted that family planning could help "to reduce the number of abortions and, consequently, the risk of death; to improve the health of mothers and children, to intensify child and maternal care and to improve child nutrition and education, and the family economy in general". The strategy to reduce the average family size and the dependency ratio, that is, the ratio of dependants to bread-winners, has two goals: (*a*) to make parents understand the value of having only those children for whom they can provide adequate care, nutrition, housing, accommodation, clothing and education; and (*b*) to provide the necessary facilities to enable parents to exercise free choice over the number and spacing of their children. Although the provision of fertility-related facilities remains a specialized function of the Medical and Health Department, the Gambia Family Planning Association and private physicians, educational and motivational work is an interdisciplinary function to which governmental departments and voluntary agencies, as well as religious and community leaders, can make a valuable contribution.

Several countries in Africa have already established demographic units, such as a National Committee on Population, with a view to formulating, implementing and evaluating population policies and with special emphasis on fertility problems. More countries are now creating such organizations: for instance, the Demographic Working Group was established in Rwanda, the Centre national de naissances désirables in Zaire and the National Population Commission in Sierra Leone.

Economic Commission for Western Asia

In the area of responsibility of the Economic Commission for Western Asia (ECWA), there is not a single country that perceives the level of fertility to be too low; conversely, two countries, Bahrain and Yemen, consider fertility to be too high and implement a policy to decrease it. The 10 other countries in the ECWA area consider the fertility level to be satisfactory and four implement a policy to maintain it: Iraq; Oman; Qatar; and Saudi Arabia. The United Arab Emirates, although it perceives the rate to be satisfactory, implements a policy to increase it. Perceptions and policies have changed little. Yemen considered the rate to be satisfactory in 1980 but now considers it to be too high; Jordan now considers the rate to be satisfactory, while in 1980 it was perceived to be too high. The United Arab Emirates is the only country in the ECWA area whose major objective is to modify the rate of population growth by modifying fertility levels. Bahrain is still willing to decrease the level of fertility, as a means of both modifying population growth and improving individual well-being. Yemen, although concerned by a decrease in the fertility rate, considers the improvement of overall well-being to be its primary objective.

Relatively few types of measures have been implemented in the region. Abortion and sterilization are prohibited in all countries except Yemen. Access to modern methods of contraception is directly supported by the Governments of Democratic Yemen and Yemen; it is indirectly supported in Bahrain and Lebanon, and is not permitted in Saudi Arabia. In all other countries of the ECWA area, access is permitted but without any governmental support. For Jordan and the Syrian Arab Republic, this represents a changed position, because both Governments provided direct support until 1980.

As concerns other types of measures, improvement of the status of women is a concern of the Governments of Kuwait, the Syrian Arab Republic and Yemen. Some countries, such as Kuwait, Qatar and the United Arab

Emirates, provide cash benefits for families through child allowances and/or maternity benefits. Generally speaking, Governments in the ECWA area of responsibility maintain a relatively passive attitude towards fertility, allowing couples to make their own choices with respect to family size, without governmental intervention, confident in the natural evolution of fertility in relation to the contemporary socio-cultural context. For example, the Government of the Syrian Arab Republic stated that it had no explicit government policy concerning fertility and family life. Couples are free to choose the number of children they want, and the family as an institution is "protected and encouraged by the law". It noted, however, that many traditional practices within the family had been affected by recent social and economic changes. For instance, the Government reported that women were encouraged to engage in activities outside the home and sex discrimination had generally disappeared. In Yemen, a country with high child and maternal mortality and rapid population growth, the Government still gives priority to the free choice of couples. The Government considers it to be its duty to assist its citizens to the extent possible in determining freely the number and timing of births and considers its policies one way of contributing to achieving the family structure desired by the parents.

Changes in Governments' perceptions and policies, 1974-1980

World and developed and developing countries

The main fact that emerges at the global level is that countries have not greatly changed their perceptions with regard to the level of fertility since 1974 (table 96).

TABLE 96. CHANGES IN GOVERNMENTS' PERCEPTIONS WITH RESPECT TO LEVELS OF FERTILITY, BY LEVEL OF DEVELOPMENT AND AREA OF RESPONSIBILITY OF REGIONAL COMMISSIONS, JULY 1974-JULY 1980

(Number of countries)

Level of development, area of responsibility of regional commission and year	*Rates too low*	*Rates neither too low nor too high*	*Rates too high*	*Total*
World				
1974	23	85	42	150
1976	19	82	56	157
1978	22	84	52	158
1980	22	84	59	165
Developing countries				
1974	10	59	42	111
1976	10	52	56	118
1978	14	53	52	119
1980	14	53	59	126
Developed countries				
1974	13	26	0	39
1976	9	30	0	39
1978	8	31	0	39
1980	8	31	0	39
Economic Commission for Europe				
1974	14	24	1	39
1976	10	28	1	39
1978	10	28	1	39
1980	10	28	1	39
Economic and Social Commission for Asia and the Pacific				
1974	1	11	16	28
1976	1	11	19	31
1978	2	11	17	30
1980	2	12	19	33
Economic Commission for Latin America				
1974	2	12	13	27
1976	2	9	16	27
1978	3	11	13	27
1980	4	11	15	30
Economic Commission for Africa				
1974	5	28	11	44
1976	5	25	18	48
1978	6	25	19	50
1980	5	24	22	51
Economic Commission for Western Asia				
1974	1	10	1	12
1976	1	9	2	12
1978	1	9	2	12
1980	1	9	2	12

Sources: Compiled from *World Population Trends and Policies: 1977 Monitoring Report*, vol. II, *Population Policies* (United Nations publication, Sales No. E.78.XIII.4); *World Population Trends and Policies: 1979 Monitoring Report*, vol. II, *Population Policies* (United Nations publication, Sales No. E.79.XIII.5); *World Population Trends and Policies: 1981 Monitoring Report*, vol. II, *Population Policies* (United Nations publication, Sales No. E.82.XIII.3); and from information in the Population Policy Data Bank of the Population Division of the Department of International Economic and Social Affairs of the United Nations Secretariat.

NOTES: States that became Members of the United Nations or members of its specialized agencies between 1974 and 1980 include:

From 1974 to 1976: Bangladesh; Cape Verde; Comoros; Mozambique; Papua New Guinea; Seychelles; Suriname;

From 1976 to 1978; Angola; Djibouti;

From 1978 to 1980: Dominica; Kiribabi; Saint Lucia; Saint Vincent and the Grenadines; Solomon Islands; Tuvalu; Zimbabwe.

Between 1974 and 1976, the country currently called Viet Nam was represented by the Democratic Republic of Viet-Nam and the Republic of South Viet-nam. Since 1976, it has been represented by the country currently called Viet Nam.

The number of countries considering their levels of fertility to be too low (22 countries in 1980, 23 in 1974) or satisfactory (84 countries in 1980, 85 in 1974) has remained virtually the same. On the other hand, the number of countries that perceived the fertility level as unsatisfactory because it was too high increased from 42 countries to 59 during the period under review. However, this increase represented mainly the additional countries that became Member States of the United Nations during the period 1974-1980 and that hold this view. Between 1974 and 1980, the proportion of countries that were satisfied with the level of fertility fell from 57 to 51 per cent, and those which considered the level unsatisfactory because it was too low declined from 15 to 13 per cent; in contrast, the relative number of countries perceiving the level as too high increased from 28 to 36 per cent.

By level of development, the changes appear more significant, because the new Member States all fall within the category of developing countries.

Among the developed countries, the proportion of countries considering fertility too low decreased from 33 to 21 per cent from 1974 to 1980, while the group of countries satisfied with their rate increased from 67 to 79 per cent. In both 1974 and 1980, not a single country perceived the level of fertility to be too high. There is no simple or obvious explanation of this shift of perception in the current evaluation of the level of fertility in the developed countries. During this period, fertility levels in the region continued the decline that had begun in the 1960s. However, during the most recent years, the decrease stopped almost everywhere and tended to stabilize or show a slight increase. The latter trend has been particularly noticeable in the Eastern European countries, where a slight rise in fertility at younger ages has occurred.

Among the developing countries as a whole, an increasing number of countries have, since the World Population Conference, come to view their fertility levels as being too high. In 1974, 53 per cent of the developing countries (59 countries out of 111) perceived the level of fertility as satisfactory. By 1980, this proportion had fallen to 42 per cent (53 countries out of 126). Most of the countries that changed their position (and the new Member States of the United Nations, as already mentioned) considered their fertility level to be too high. There was also a smaller increase in the number of countries that considered their fertility to be too low, from 9 to 11 per cent (or from 10 to 14 countries). However, in contrast, the proportion of countries that perceived the rate as too high increased much more dramatically, from 38 to 47 per cent (from 42 to 59 countries).

Considering next the evolution of government policies with regard to fertility during the same period of time, it is evident that at the world level, there was an increasing involvement of Governments and an increased consciousness of the necessity to take action to modify or to maintain the levels of fertility (table 97). The proportion of non-intervening countries decreased from 54 per cent in 1974 (82 countries) to 48 per cent (79 countries) in 1980. This change was mostly brought about by a shift of countries towards policies intended to maintain the current level of fertility: their relative number increased from 11 to 19 per cent (from 16 to 31 countries). During the same period, the proportion of those desiring to modify the rate did not change significantly: a decrease from 11 per cent (16 countries) to 10 per cent (17 countries) for those implementing policies with a view to increasing the rate; and a decrease from 24 per cent (36 countries) to 23 per cent (38 countries) for those desiring to decrease the rate.

Among the developed countries, a majority continued to report that they did not intervene as a matter of population policy; and their relative number increased slightly during the period, from 54 to 56 per cent (from 21 to 22 countries). As already mentioned, no country in this group viewed its fertility as too high. On the other hand, the proportion of countries that desired to increase the level of fertility fell from 28 per cent in 1974 (11 countries) to 18 per cent (17 countries) in 1980. There was an almost identical corresponding increase in the number of those where policy was implemented in order to maintain the rate: from 18 per cent in 1974 (7 countries) to 26 per cent in 1980 (10 countries).

In the developing countries, on the other hand, the relative number of non-intervening countries markedly decreased, from 55 to 45 per cent (from 61 to 57 countries), that is, to less than half of the developing countries in 1980. The corresponding increase was observed mainly among countries where intervention is intended to maintain fertility at its current level. The relative number of such countries increased from 8 per cent (nine countries) in 1974 to 17 per cent (21 countries) in 1980. On the other hand, the proportion of countries considering the level unsatisfactory remained almost the same: those intervening to bring about a higher rate accounted for 8 per cent (10 countries) in 1980, compared with 5 per cent in 1974; while those desiring a lower rate shifted from 32 per cent (36 countries) in 1974 to 30 per cent (38 countries) in 1980. Nevertheless, it should be noted that this latter group of countries contained the majority of all those which intervened to influence fertility.

In general, it is of interest to observe that among the developing countries, as concerns both perception and policy with respect to intervention, the trend is towards a more activist position; smaller proportions reported their fertility rates to be satisfactory and larger proportions intervened.

Access to modern methods of contraception reflects a Government's stand with respect to the control of fertility, which is one of the primary means of direct intervention, not only to modify levels of population growth but to extend the possibility of individuals freely and effectively determining the size of their family. Table 98 indicates the changes in the Governments' views between 1974 and 1980.

At the world level, the same absolute and relative number of countries in 1974 and 1980 (11 countries, 7 per cent) continued to limit access to modern methods of contraception. The interesting change, because it implies a governmental involvement, concerns the large decrease in the number of countries where access was permitted but not supported by the Government; the proportion decreased from 24 to 16 per cent (from 35 to 27 countries). The change was mainly in favour of the countries where the Government directly supported access to contraceptive methods: the proportion increased from 56 per cent in 1974 (84 countries) to 64 per cent in 1980 (105 countries). Thus, in 1980, over three fourths of all countries in the world provided direct or indirect support for access to modern methods of contraception, whatever their policy goals or perceptions.

Among the developed countries, just two countries did not permit access to contraception in 1980; there had

TABLE 97. CHANGES IN GOVERNMENTS' POLICIES WITH RESPECT TO LEVELS OF FERTILITY, BY LEVEL OF DEVELOPMENT AND AREA OF RESPONSIBILITY OF REGIONAL COMMISSIONS, JULY 1974-JULY 1980

(Number of countries)

Level of development, area of responsibility of regional commission and year	*Policies on intervention to influence levels of fertility*				*Total*
	To increase fertility	*To maintain fertility*	*To decrease fertility*	*No intervention*	
World					
1974	16	16	36	82	150
1976	15	21	41	80	157
1978	17	21	37	83	158
1980	17	31	38	79	165
Developing countries					
1974	5	9	36	61	111
1976	7	11	41	59	118
1978	10	10	37	62	119
1980	10	21	38	57	126
Developed countries					
1974	11	7	0	21	39
1976	8	10	0	21	39
1978	7	11	0	21	39
1980	7	10	0	22	39
Economic Commission for Europe					
1974	12	7	1	19	39
1976	9	10	1	19	39
1978	8	11	1	19	39
1980	8	10	1	20	39
Economic and Social Commission for Asia and the Pacific					
1974	1	3	15	9	28
1976	1	4	18	8	31
1978	2	3	16	9	30
1980	2	6	16	9	33
Economic Commission for Latin America					
1974	1	0	9	17	27
1976	2	0	10	15	27
1978	3	0	8	16	27
1980	3	2	9	16	30
Economic Commission for Africa					
1974	2	1	11	30	44
1976	2	2	12	32	48
1978	3	2	12	33	50
1980	3	8	12	28	51
Economic Commission for Western Asia					
1974	0	5	0	7	12
1976	1	5	0	6	12
1978	1	5	0	6	12
1980	1	5	0	6	12

Sources: See table 96.

NOTE: For States that became Members of the United Nations or members of its specialized agencies between 1974 and 1980, see notes to table 96.

been five in 1974. In 1980, 21 per cent of the Governments indirectly supported access to modern methods, compared with 15 per cent in 1974, while the proportion of those directly supporting contraceptive activities rose from 62 to 64 per cent (from 24 to 25 countries). In the developed countries, 85 per cent of Governments supported, directly or indirectly, access to contraception, although not a single country had a policy to decrease the level of fertility.

In the developing countries, a sharply marked trend increased the number of Governments directly supporting access to contraception: between 1974 and 1980, the proportion rose from 54 to 64 per cent (from 60 to 80 countries). This shift occurred with decreases in the number of countries where no governmental support was provided: from 28 to 18 per cent (from 31 to 23 countries). On the other hand, there was a slight increase in the number of countries where access was

TABLE 98. CHANGES IN GOVERNMENTS' POLICIES WITH RESPECT TO EFFECTIVE USE OF MODERN METHODS OF FERTILITY REGULATION, BY LEVEL OF DEVELOPMENT AND AREA OF RESPONSIBILITY OF REGIONAL COMMISSIONS, JULY 1974-JULY 1980

(Number of countries)

Level of development, area of responsibility of regional commission and year	*Access limited*	*Access not limited*			*Total*
		No support provided	*Indirect support provided*	*Direct support provided*	
World					
1974	11	35	20	84	150
1976	14	27	17	99	157
1978	13	27	20	98	158
1980	11	27	22	105	165
Developing countries					
1974	6	31	14	60	111
1976	9	25	10	74	118
1978	9	24	13	73	119
1980	9	23	14	80	126
Developed countries					
1974	5	4	6	24	39
1976	5	2	7	25	39
1978	4	3	7	25	39
1980	2	4	8	25	39
Economic Commission for Europe					
1974	5	6	5	23	39
1976	5	3	6	25	39
1978	4	4	6	25	39
1980	2	5	7	25	39
Economic and Social Commission for Asia and the Pacific	0	3	1	24	28
1974	1	3	1	26	31
1976	2	2	1	25	30
1978	2	2	1	28	33
1980					
Economic Commission for Latin America					
1974	1	3	5	18	27
1976	2	2	2	21	27
1978	1	4	1	21	27
1980	1	4	2	23	30
Economic Commission for Africa					
1974	5	18	7	14	44
1976	5	15	6	22	48
1978	5	12	10	23	50
1980	5	11	10	25	51
Economic Commission for Western Asia					
1974	0	5	2	5	12
1976	1	4	2	5	12
1978	1	5	2	4	12
1980	1	5	2	4	12

Sources: See table 96.

NOTE: For States that became Members of the United Nations or members of its specialized agencies between 1974 and 1980, see notes to table 96.

not permitted: from 5 per cent (6 countries) to 7 per cent (9 countries), while the number of Governments providing indirect support did not change (14 countries).

Regional analysis

This section presents an analysis of perception and policies of Governments according to the areas of responsibility of the regional commissions.

Economic Commission for Europe

During the period 1974-1980, the majority of the countries in the ECE area of responsibility maintained a consistent position both in their perceptions and in their policies with regard to fertility. Since 1974, only Turkey has considered the level to be too high and has implemented measures to decrease the rate. By 1980, eight countries (Bulgaria, France, the German Democratic Republic, Greece, Israel, Liechtenstein, Luxem-

bourg and Monaco) considered the level to be too low and implemented policies to increase it. In 1974, Czechoslovakia, Hungary and Poland had shared this position; but by 1976, the Governments of these countries considered the rate to be satisfactory and implemented policies to maintain the level. Then, during the period 1976-1978, Czechoslovakia and Poland discontinued any intervention to maintain the rate. Portugal also had considered the fertility level to be too low in 1974 and supported an increase; but during 1974-1976, the Government changed its perception to one of satisfaction and intervention was no longer considered necessary. Finland considered the level of fertility to be too low in 1974 but had no policy of intervention; during 1974-1976, the Government changed its position and began to implement measures to increase the rate, but during the period 1976-1978, the perception changed to satisfactory and measures were implemented to maintain the rate. During the period 1976-1978, Cyprus reconsidered its previous position of considering the level as satisfactory with no intervention necessary, to a position where it considered the level to be too low but still did not intervene to change it. The Federal Republic of Germany shared this view. During 1978-1980, Belgium considered the level to be satisfactory but decided to take measures to maintain the rate. In 1980, Albania, the Byelorussian SSR, Finland, Hungary, Ireland, Romania, the Ukrainian SSR, the Soviet Union and Yugoslavia shared the same position. The rest of the countries in the ECE area perceived the level to be satisfactory as of 1980 and did not have a policy to change it. This group, the largest in number, essentially maintained the same position between 1974 and 1980.

In 1980, only the Holy See and Malta did not permit access to modern methods of contraception. In 1974, there had been five such countries. Spain not only authorized access during the period 1976-1978 but began to provide indirect support for family planning activities during 1978-1980. Greece and Ireland also did not permit access in 1974; but they authorized it, without direct support, during 1978-1980. In 1980, five countries — Cyprus, Greece, Ireland, Liechtenstein and San Marino — authorized access to modern methods of contraception but without any governmental support. In 1974, Israel, Italy and Portugal also had the same position; but during 1974-1976, the Governments of Israel and Portugal decided to support access directly, while Italy decided to give indirect support. In 1980 (in addition to Italy and Spain), Belgium, the Federal Republic of Germany, Luxembourg, the Netherlands and Switzerland also indirectly supported access to modern methods of contraception. In all the other countries of the ECE area, the Government directly supported such access. Apart from Israel and Portugal, all of these countries had already taken this position in 1974.

Economic and Social Commission for Asia and the Pacific

Most of the countries in the ESCAP area of responsibility have since 1974 considered the level of fertility to be too high and most have implemented policies to decrease it. In 1980, only Democratic Kampuchea and the Lao People's Democratic Republic perceived the level to be too low and implemented policies to increase it. The former country has held this view since 1974 and the latter since 1976-1978 (it had previously considered the rate to be satisfactory and had implemented policies to maintain it). As of 1980, 12 countries viewed their fertility rates as satisfactory. Of these, Australia, Bhutan, Burma, Japan, Maldives and New Zealand did not intervene, while the Democratic People's Republic of Korea, Kiribati, Malaysia, Mongolia, Nauru and Singapore intervened to maintain it. Except for Singapore and Malaysia, these countries had held this view since 1974. These two countries perceived the level to be too high in 1974 and implemented policies to decrease it; however, Singapore, during 1974-1976, and Malaysia, two years later, having experienced quite rapid fertility declines, came to consider the levels to be satisfactory with no more intervention required. Then, during 1978-1980, both countries considered it necessary to take some steps to maintain the level. Afghanistan shared this view in 1974, but during 1974-1976, the Government came to perceive the level to be too high, although it did not consider it necessary to intervene. As of 1980, in addition to this country, Solomon Islands and Tuvalu — both new Member States in 1978-1980 — shared this view. The 16 remaining countries of the ESCAP area have considered, without any change since 1974, that the level was too high and have implemented policies to decrease it.

As far as access to modern methods of contraception is concerned, the same pattern is observed. During the period under review, 28 countries out of 33, which represents the highest proportion compared with the other regions, directly supported family planning activities. The only two countries not permitting access to contraception are the two pro-natalist countries, the Lao People's Democratic Republic and Democratic Kampuchea. While the policy was already in force in 1974 in the former country, the latter has changed its view progressively: in 1974, it directly supported access; in 1976, access was permitted but without any governmental intervention; and in 1978, the Government decided not to permit access. Burma and Maldives permit access to modern methods without any intervention; they have held this view since 1974. Bhutan held this position in 1974, but during 1974-1976, the Government decided to directly support access. Australia was the only country in the ESCAP area to support access indirectly in 1980.

Economic Commission for Latin America

Between 1974 and 1980, both perceptions and policies were very stable in the countries in the ECLA area of responsibility. In 1980, only four countries — Argentina, Bolivia, Uruguay and Chile — perceived the level of fertility to be too low. Among them, the first three countries implemented policies to increase the rate. Argentina has had this position since 1974; between 1974 and 1976, it was joined by Uruguay (which, although it had the same perception, did not have a

policy until 1976); and during 1976-1978, by Bolivia (which had formerly perceived fertility to be satisfactory and did not implement any policy). The shift in Chile was more drastic, because up to 1978, the Government considered the fertility level to be too high but had no policy to change it.

Only Colombia and Panama perceived the level to be satisfactory in 1980 and each of the two Governments implemented policies to maintain it. The position for both countries was the result of a succession of changes since 1974. Panama considered the level to be satisfactory in 1974 but without any supporting policy; in 1976, the perception was that it was too high but there still was no intervention. In 1978, the Government reverted to its previous position and decided to implement measures in 1980, with a view to maintaining the rate. As for Colombia, the Government considered the level to be too high in 1976 and implemented a policy to decrease it. Fertility rates continued to fall rapidly over this period; and during 1976-1978, the evaluation was reached that the level was satisfactory and that no more governmental support was needed. The Bahamas and Nicaragua had also taken this position in 1974 but later shifted their position to considering the level to be too high but without any intervention.

Among the group of countries that considered fertility levels to be too high but did not intervene to change it, there were very few changes during the period. In 1980, six countries held this view: the Bahamas and Nicaragua, as already mentioned; the Dominican Republic, which had the same perception but a policy of intervention until 1978; Guatemala; and two new Member States during 1978-1980, Saint Lucia, and Saint Vincent and the Grenadines. The other countries in the ECLA area perceived the level to be too high and implemented policies to decrease it. Except for the few changes mentioned above, these countries are Barbados, Costa Rica, Dominica (a new member during 1978-1980), El Salvador, Grenada, Haiti, Jamaica, Mexico, and Trinidad and Tobago.

As concerns access to modern methods of contraception, the Governments of countries in the ECLA area have manifested great stability, since only seven countries have changed their view since 1974. In 1980, Uruguay was the only country where access was not permitted. Until the period 1974-1976, the Government not only permitted access but supported it indirectly. Access was also not permitted in Argentina until 1976, when the Government decided to permit access but without any support. At the same time, Bolivia, which directly supported access, decided that no more support was needed. Two other countries, Guyana and Suriname, permitted access in 1980 but without any support since 1974. The Bahamas and Peru indirectly supported family planning activities, in the case of the Bahamas since 1974. In Peru, after several policy changes, access was permitted only during 1974-1976, followed by direct support from the Government during 1976-1978 and lastly by indirect support during 1978-1980. Honduras, Uruguay, Venezuela and Brazil were also among the countries of this group in 1974, but the first three decided to support access directly during 1974-1976, and Brazil did the same during 1976-1978. All other countries of the ECLA area permit access and support it directly; and except for the few cases mentioned above, they have had this view since 1974. This group includes the new Member States during 1978-1980, Dominica, Saint Lucia, and Saint Vincent and the Grenadines.

Economic Commission for Africa

In the ECA area of responsibility, the trend is clearly for an increasing number of countries to consider the level of fertility to be unsatisfactory because it is too high; and an increasing number of Governments have decided to implement measures to maintain or lower the rate. In addition, during the period from 1974 to 1980, seven additional countries in Africa became Member States of the United Nations and most of them considered their fertility rate to be too high.

In 1980, five countries in Africa perceived the rate to be too low. Among them, three countries, Gabon, Guinea and the Libyan Arab Jamahiriya intervened to raise it; while the other two, the Central African Republic and Equatorial Guinea, did not intervene. Guinea moved to this position during 1976-1978; the Government had previously considered the level to be satisfactory and did not intervene.

In 1980, 12 countries of the ECA area — Botswana, Egypt, Ghana, Kenya, Lesotho, Mauritius, Morocco, Seychelles, South Africa, Swaziland, Tunisia and Uganda — considered their fertility levels too high and intervened to decrease them. All had maintained this position since 1974, except Seychelles, which became a Member State of the United Nations during this period. On the other hand, 10 other countries, Algeria, Cameroon, Djibouti, Comoros, Liberia, Madagascar, Rwanda, Senegal, Sierra Leone and Zimbabwe, also considered the rate to be too high in 1980, but their Governments reported no policy to modify it. It is important to note that not a single African country held this position in 1974. Three of the countries took this position at the time that they became Member States: Comoros during 1974-1976; Djibouti and Zimbabwe during 1978-1980. During 1974-1978, Liberia, Madagascar, Rwanda, Senegal and Sierra Leone changed their perception from being satisfied with their level without intervention to the position of considering it too high. Algeria and Cameroon adopted this view during 1976-1978; they had previously considered the rate too low.

In 1980, the level of fertility was considered to be satisfactory but with government intervention to maintain it in eight countries, Benin, Burkina Faso,[3] the Ivory Coast, Mali, Mauritania, Mozambique, the Niger and Togo. Only one country, the Ivory Coast, had maintained this view since 1974. Mozambique took this position when it became a Member State during 1976-1978. The other six countries had perceived the level to be satisfactory but had no policy to maintain it until 1978.

During the period 1974-1980, all other countries in the ECA area considered the level of fertility to be

satisfactory and their Governments did not implement any policies to modify it.

Governmental positions with regard to access to modern methods of contraception are characterized by three trends in the countries of Africa. Just under half of all countries provided direct support for such access in 1980. Most of them had done so already in 1974. Three others held such a policy at the time they became Member States, namely, Cape Verde, Seychelles and Zimbabwe. A number of the countries adopted such a policy during the period 1974-1980: Algeria; the Congo; Liberia; Mozambique; Rwanda; Senegal; and Zambia.

On one hand, Governments that did not permit access maintained this position throughout the period under review. In 1974, five countries — Chad, Equatorial Guinea, Gabon, the Libyan Arab Jamahiriya and Malawi — restricted access to contraception; and the position of these Governments has not changed since then.

In 1980, access to contraception was permitted in 11 countries but without any governmental support: Benin; Burkina Faso; Burundi; the Central African Republic; Guinea; the Ivory Coast; Mauritania; the Niger; Sao Tome and Principe; and Somalia. In 1974, there were 18 countries that held this position; but during 1974-1976, Ethiopia decided to support access indirectly, while the Congo, Liberia and Sierra Leone decided to support it directly (but the latter country changed its position again during 1976-1978 to revert to the position of providing only indirect support). Also during 1976-1978, Comoros, a new Member State, permitted access but without any governmental support. During the same period, Togo, Senegal and Zambia decided to be more involved in family planning activities, the first by indirectly supporting access and the other two by providing direct support. Although previously access had merely been permitted in Rwanda, during 1978-1980, the Government decided to provide direct support.

In 1980, 10 countries indirectly supported family planning activities. Cameroon and Guinea-Bissau had done so since 1974; Nigeria as of 1974 (but the Government of this country supported direct access during 1974-1976 before coming back to its previous position during 1976-1978); and Angola and Djibouti, which, upon becoming Member States of the United Nations during 1976-1978, decided to support access to modern methods indirectly. As previously mentioned, Ethiopia, the Gambia and Togo also appeared in this group of countries, as did Madagascar and Sierra Leone, with these Governments directly supporting access until 1976.

Economic Commission for Western Asia

The countries in the ECWA area of responsibility have most steadily maintained their position with regard to perceptions, policies and access to contraception. Iraq is the only country to consider the level to be too low and has implemented a policy to increase it; the Government already held this perception in 1974 but decided to act only during the period 1974-1976. Although nine countries in the ECWA area perceived the level to be satisfactory in 1980, only five intervened to maintain it. These countries are Kuwait, Oman, Qatar, Saudi Arabia and the United Arab Emirates, all of which have had this position since 1974. Four other countries shared the same perception but reported that they did not intervene to maintain it: Democratic Yemen; Lebanon; the Syrian Arab Republic; and Yemen. Jordan had held this view in 1974, but during 1974-1976, the Government came to consider the level to be too high, although it did not intervene to modify the level. Bahrain also shared this view as of 1980.

Only two countries changed their policy with regard to access to modern methods of contraception. Saudi Arabia permitted access but without any governmental support until 1974-1976; thereafter, the Government decided that access was no longer to be permitted. Iraq directly supported access until 1976-1978; subsequently, the Government decided that no more intervention was needed. During the period 1974-1980, access was permitted but without governmental support in Iraq, Kuwait, Oman, Qatar and the United Arab Emirates; Bahrain and Lebanon supported it indirectly. Democratic Yemen, Jordan, the Syrian Arab Republic and Yemen provided direct governmental support.

TABLE 99. GOVERNMENTS' PERCEPTIONS AND POLICIES WITH RESPECT TO THE CURRENT FERTILITY LEVEL, BY LEVEL OF DEVELOPMENT, AREA OF RESPONSIBILITY OF REGIONAL COMMISSIONS AND GEOGRAPHICAL REGIONS, 1983

(Number of countries)

Governments' perceptions of the acceptability of the current fertility level and the desirability of intervention to change it								
Rates not satisfactory: too low; higher rates desirable		*Rates satisfactory*				*Rates not satisfactory: too high; lower rates desirable*		
Intervention not appropriate (1)	*Intervention to raise rates appropriate* (2)	(3)	*Intervention to maintain rates appropriate* (4)	*Intervention not appropriate* (5)	(6)	*Intervention to lower rates appropriate* (7)	*Intervention not appropriate* (8)	*Total* (9)
				World				
4	18	6	24	54	—	48	14	168
				Developing countries				
2	10	2	17	36	—	48	14	129
				Developed countries				
2	8	4	7	18	—	—	—	39

TABLE 99 (*continued*)

Governments' perceptions of the acceptability of the current fertility level and the desirability of intervention to change it								
Rates not satisfactory: too low; higher rates desirable		*Rates satisfactory*				*Rates not satisfactory: too high; lower rates desirable*		
Intervention not appropriate (1)	*Intervention to raise rates appropriate* (2)	(3)	*Intervention to maintain rates appropriate* (4)	*Intervention not appropriate* (5)	(6)	*Intervention to lower rates appropriate* (7)	*Intervention not appropriate* (8)	*Total* (9)
A. AREA OF RESPONSIBILITY OF ECONOMIC COMMISSION FOR EUROPE								
				Eastern Europe				
—	Bulgaria German Democratic Republic Hungary	Romania	Czechoslovakia Poland	—	—	—	—	6
				Northern Europe				
Sweden	—	—	Finland Ireland	Denmark Iceland Norway United Kingdom	—	—	—	7
				Southern Europe				
—	Greece[a]	—	Albania Yugoslavia[b]	Holy See Italy Malta Portugal San Marino Spain	—	—	—	9
				Western Europe				
Germany, Federal Republic of	France Liechtenstein Luxembourg Monaco	—	Belgium	Austria Netherlands Switzerland	—	—	—	9
				Western Asia (part)				
—	Cyprus Israel	—	—	—	—	Turkey	—	3
				Northern America				
—	—	—	—	Canada United States of America	—	—	—	2
				Union of Soviet Socialist Republics				
—	—	Byelorussian SSR Ukrainian SSR USSR	—	—	—	—	—	3
				TOTAL				
2	10	4	7	15	0	1	—	39
B. AREA OF RESPONSIBILITY OF ECONOMIC COMMISSION FOR ASIA AND THE PACIFIC								
				China				
—	—	—	—	—	—	China	—	1
				Japan				
—	—	—	—	Japan	—	—	—	1
				Other East Asia				
—	—	—	Democratic People's Republic of Korea Mongolia	—	—	Republic of Korea	—	3
				South-eastern Asia				
—	Democratic Kampuchea Lao People's Democratic Republic	—	Singapore	Burma	—	Indonesia Malaysia Philippines Thailand Viet Nam	—	9

TABLE 99 (*continued*)

Governments' perceptions of the acceptability of the current fertility level and the desirability of intervention to change it								
Rates not satisfactory: too low; higher rates desirable		*Rates satisfactory*				*Rates not satisfactory: too high; lower rates desirable*		
Intervention not appropriate (1)	(2)	*Intervention to raise rates appropriate* (3)	*Intervention to maintain rates appropriate* (4)	*Intervention not appropriate* (5)	(6)	*Intervention to lower rates appropriate* (7)	*Intervention not appropriate* (8)	*Total* (9)
			B. AREA OF RESPONSIBILITY OF ECONOMIC COMMISSION FOR ASIA AND THE PACIFIC (*continued*)					
				Southern Asia				
—	—	—	Maldives	Bhutan Iran (Islamic Republic of)	—	Bangladesh India Nepal Pakistan Sri Lanka	Afghanistan	9
				Australia-New Zealand				
—	—	—	—	Australia New Zealand	—	—	—	2
				Melanesia				
—	—	—	—	Vanuatu	—	Fiji	Papua New Guinea Solomon Islands	4
				Micronesia-Polynesia				
—	—	—	Nauru	—	—	Kiribati Samoa Tongo	Tuvalu	5
				TOTAL				
—	2	—	5	7	—	16	4	34
			C. AREA OF RESPONSIBILITY OF ECONOMIC COMMISSION FOR LATIN AMERICA					
				Caribbean				
—	—	—	—	Cuba	—	Antigua and Barbuda Bahamas Barbados Dominica Dominican Republic Grenada Haiti Jamaica Trinidad and Tobago	Saint Lucia Saint Vincent and the Grenadines	12
				Central America				
—	—	—	—	Belize Costa Rica Guatemala Honduras Nicaragua Panama	—	El Salvador Mexico	—	8
				Temperate South America				
Chile	Uruguay	—	Argentina	—	—	—	—	3
				Tropical South America				
—	Bolivia	—	Colombia	Brazil Ecuador Guyana Paraguay Suriname Venezuela	—	Peru	—	9
				TOTAL				
1	2	—	2	13	0	12	2	32

TABLE 99 (*continued*)

Governments' perceptions of the acceptability of the current fertility level and the desirability of intervention to change it								
Rates not satisfactory: too low; higher rates desirable		*Rates satisfactory*				*Rates not satisfactory: too high; lower rates desirable*		
Intervention not appropriate (1)	*Intervention to raise rates appropriate* (2)	(3)	*Intervention to maintain rates appropriate* (4)	*Intervention not appropriate* (5)	*Intervention to lower rates appropriate* (6)	(7)	*Intervention not appropriate* (8)	*Total* (9)
D. AREA OF RESPONSIBILITY OF ECONOMIC COMMISSION FOR AFRICA								
				Eastern Africa				
—	—	—	—	Malawi Mozambique Somalia United Republic of Tanzania Zambia	—	Burundi Kenya Mauritius Rwanda Seychelles Uganda Zimbabwe	Comoros Djibouti Ethiopia Madagascar	16
				Middle Africa				
Central African Republic	Congo Equatorial Guinea Gabon	—	Sao Tome and Principe	Angola Chad Zaire	—	—	Cameroon[c]	9
				Northern Africa				
—	—	—	—	Libyan Arab Jamahiriya Sudan	—	Algeria Egypt Morocco Tunisia	—	6
				Southern Africa				
—	—	—	—	—	—	Botswana Lesotho South Africa	Swaziland	4
				Western Africa				
—	Guinea	Ivory Coast	Burkina Faso[d] Mali Mauritania Niger Togo	Benin Cape Verde Guinea-Bissau Nigeria	—	Gambia Ghana Senegal	Liberia Sierra Leone	16
				TOTAL				
1	4	1	6	14	—	17	8	51
E. AREA OF RESPONSIBILITY OF ECONOMIC COMMISSION FOR WESTERN ASIA								
				Western Asia[e]				
—	—	United Arab Emirates	Iraq Oman Qatar Saudi Arabia	Democratic Yemen Jordan Kuwait Lebanon Syrian Arab Republic	—	Bahrain Yemen Arab Republic	—	12
				TOTAL				
—	—	1	4	5	—	2	—	12

Sources: Compiled from replies to "Fifth Population Inquiry Among Governments: monitoring of government perceptions and policies on demographic trends and levels in relation to development as of 1982"; and from information in the Population Policy Data Bank of the Department of International Economic and Social Affairs of the United Nations Secretariat.

[a] Perception: too low; policy to maintain rate.

[b] Perception: in some republics and provinces, too low; policy to increase rate; and in some others: too high; policy to lower rate.

[c] Formerly called the United Republic of Cameroon.

[d] Formerly called the Upper Volta.

[e] Excluding Cyprus, Israel and Turkey.

TABLE 100. GOVERNMENTS' PERCEPTIONS AND POLICIES WITH RESPECT TO CURRENT FERTILITY LEVEL: NUMBER OF COUNTRIES AND POPULATION SIZE IN ABSOLUTE NUMBERS AND PERCENTAGE, BY LEVEL OF DEVELOPMENT AND AREA OF RESPONSIBILITY OF REGIONAL COMMISSIONS, 1983

	Governments' perceptions of the acceptability of the current fertility level and the desirability of intervention to change it								
	Rates not satisfactory: too low; higher rates desirable		*Rates satisfactory*				*Rates not satisfactory: too high; lower rates desirable*		
	Intervention not appropriate (1)	*Intervention to raise rates appropriate* (2)	*Intervention to maintain rates appropriate* (3)	*Intervention not appropriate* (4)	(5)	(6)	*Intervention to lower rates appropriate* (7)	*Intervention not appropriate* (8)	*Total* (9)
World									
Number of countries	4	18	6	24	54	—	48	14	168
Population size (absolute numbers in millions)	83 746	134 359	306 244	228 319	1 100 242	—	2 738 426	78 261	4 669 597
Population size (percentage)	1.8	2.9	6.6	4.9	23.6	—	58.6	1.7	100
Developing countries									
Number of countries	2	10	2	17	36	—	48	14	129
Population size (absolute numbers in millions)	14 132	33 213	10 357	131 891	505 422	—	2 738 426	78 261	3 511 702
Population size (percentage)	0.4	1.0	0.3	3.8	14.4	—	78.0	2.2	100
Developed countries									
Number of countries	2	8	4	7	18	—	—	—	39
Population size (absolute numbers in millions)	69 614	101 146	295 887	96 428	594 820	—	—	—	1 157 895
Population size (percentage)	6.0	8.7	25.6	8.3	51.4	—	—	—	100
Economic Commission for Europe									
Number of countries	2	10	4	7	15	—	1	—	39
Population size (absolute numbers in millions)	69 614	105 929	295 887	96 428	457 381	—	47 666	—	1 072 905
Population size (percentage)	6.5	9.9	27.6	9.0	42.6	—	4.4	—	100
Economic and Social Commission for Asia and the Pacific									
Number of countries	—	2	—	5	7	—	16	4	34
Population size (absolute numbers in millions)	—	11 097	—	23 656	218 985	—	2 369 172	17 986	2 640 896
Population size (percentage)	—	0.4	—	0.9	8.3	—	89.7	0.7	100
Economic Commission for Latin America									
Number of countries	1	2	—	2	13	—	12	2	32
Population size (absolute numbers in millions)	11 682	9 003	—	57 140	190 257	—	115 269	220	383 571
Population size (percentage)	3.0	2.4	—	14.9	49.6	—	30.0	0.1	100
Economic Commission for Africa									
Number of countries	1	4	1	6	14	—	17	8	51
Population size (absolute numbers in millions)	2 450	8 330	9 161	24 608	214 294	—	199 690	60 055	518 588
Population size (percentage)	0.5	1.6	1.8	4.8	41.3	—	38.5	11.6	100
Economic Commission for Western Asia									
Number of countries	—	—	1	4	5	—	2	—	12
Population size (absolute numbers in millions)	—	—	1 196	26 487	19 325	—	6 629	—	53 637
Population size (percentage)	—	—	0.5	11.8	84.7	—	3.0	—	100

Sources: Replies to "Fifth Population Inquiry Among Governments: monitoring of government perceptions and policies on demographic trends and levels in relation to development as of 1982"; and from information in the Population Policy Data Bank maintained by the Population Division of the Department of International Economic and Social Affairs of the United Nations Secretariat.

TABLE 101. GOVERNMENTS' POLICIES CONCERNING EFFECTIVE USE OF MODERN METHODS OF FERTILITY REGULATION, BY LEVEL OF DEVELOPMENT, AREA OF RESPONSIBILITY OF REGIONAL COMMISSIONS AND GEOGRAPHICAL REGION, 1983

Governments' policies concerning effective use of modern methods of fertility regulation				
	Access not limited			
Access limited	*No support provided*	*Indirect support provided*	*Direct support provided*	*Total*
		World		
7	32	28	101	168
		Developing countries		
6	26	18	79	129
		Developed countries		
1	6	10	22	39
	A. AREA OF RESPONSIBILITY OF ECONOMIC COMMISSION FOR EUROPE			
		Eastern Europe		
—	Romania	—	Bulgaria Czechoslovakia German Democratic Republic Hungary Poland	6
		Northern Europe		
—	Ireland	United Kingdom	Denmark Finland Iceland Norway Sweden	7
		Southern Europe		
Holy See	Greece San Marino	Spain	Albania Italy Malta Portugal Yugoslavia	9
		Western Europe		
—	Liechtenstein	Belgium France Germany, Federal Republic of Luxembourg Netherlands Switzerland	Austria Monaco	9
		Western Asia (part)		
—	—	—	Cyprus Israel Turkey	3
		Northern America		
—	—	—	Canada United States of America	2
		Union of Soviet Socialist Republics		
—	—	—	Byelorussian SSR Ukrainian SSR USSR	
		TOTAL		
1	5	8	25	39
	B. AREA OF RESPONSIBILITY OF ECONOMIC COMMISSION FOR ASIA AND THE PACIFIC			
		China		
—	—	—	China	1
		Japan		
—	Japan	—	—	1

TABLE 101 (*continued*)

Governments' policies concerning effective use of modern methods of fertility regulation				
	Access not limited			
Access limited	*No support provided*	*Indirect support provided*	*Direct support provided*	*Total*
B. AREA OF RESPONSIBILITY OF ECONOMIC COMMISSION FOR ASIA AND THE PACIFIC (*continued*)				
		Other East Asia		
—	—	—	Democratic People's Republic of Korea Mongolia Republic of Korea	3
		South-eastern Asia		
Democratic Kampuchea Lao People's Democratic Republic	Burma	—	Indonesia Malaysia Philippines Singapore Thailand Viet Nam	9
		Southern Asia		
—	Bhutan	Iran (Islamic Republic of)	Afghanistan Bangladesh India Maldives Nepal Pakistan Sri Lanka	9
		Australia-New Zealand		
—	—	Australia New Zealand	—	2
		Melanesia		
—	—	—	Fiji Papua New Guinea Solomon Islands Vanuatu	4
		Micronesia-Polynesia		
—	—	—	Kiribati Nauru Tuvalu Samoa Tonga	5
		TOTAL		
2	3	3	26	34
C. AREA OF RESPONSIBILITY OF ECONOMIC COMMISSION FOR LATIN AMERICA				
		Caribbean		
—	—	Bahamas	Antigua and Barbuda Barbados Cuba Dominica Dominican Republic Grenada Haiti Jamaica Saint Lucia Saint Vincent and the Grenadines Trinidad and Tobago	12
		Central America		
—	Belize	Nicaragua	Costa Rica El Salvador Guatemala Honduras Mexico Panama	8

TABLE 101 *(continued)*

Governments' policies concerning effective use of modern methods of fertility regulation				
	Access not limited			
Access limited	*No support provided*	*Indirect support provided*	*Direct support provided*	*Total*
C. AREA OF RESPONSIBILITY OF ECONOMIC COMMISSION FOR LATIN AMERICA *(continued)*				
		Temperate South America		
—	Argentina	—	Chile Uruguay	3
		Temperate South America		
—	Bolivia Guyana Suriname	Paraguay	Brazil Colombia Ecuador Peru Venezuela	9
		TOTAL		
—	5	3	24	32
D. AREA OF RESPONSIBILITY OF ECONOMIC COMMISSION FOR AFRICA				
		Eastern Africa		
Malawi	Comoros Somalia	Djibouti Zambia Zimbabwe	Burundi Ethiopia Kenya Madagascar Mauritius Mozambique Rwanda Seychelles Uganda United Republic of Tanzania	16
		Middle Africa		
Chad	Cameroon[a] Central African Republic Equatorial Guinea Gabon Sao Tome and Principe	Angola Zaire	Congo	9
		Northern Africa		
—	Libyan Arab Jamahiriya	—	Algeria Egypt Morocco Sudan Tunisia	6
		Southern Africa		
—	—	Lesotho	Botswana South Africa Swaziland	4
		Western Africa		
Ivory Coast	Burkina Faso[b] Guinea Mauritania Niger	Benin Guinea-Bissau Liberia Nigeria Senegal Sierra Leone	Cape Verde Gambia Ghana Mali Togo	16
		TOTAL		
3	12	12	24	51

TABLE 101 *(continued)*

Governments' policies concerning effective use of modern methods of fertility regulation				
	Access not limited			
Access limited	*No support provided*	*Indirect support provided*	*Direct support provided*	*Total*
E. AREA OF RESPONSIBILITY OF ECONOMIC COMMISSION FOR WESTERN ASIA				
		Western Asia [c]		
Saudi Arabia	Iraq Jordan Kuwait Oman Qatar Syrian Arab Republic United Arab Emirates	Bahrain Lebanon	Democratic Yemen Yemen Arab Republic	12
		TOTAL		
1	7	2	2	12

Sources: Compiled from replies to "Fifth Population Inquiry Among Governments: monitoring of government perceptions and policies on demographic trends and levels in relation to development as of 1982"; and from information in the Population Policy Data Bank of the Department of International Economic and Social Affairs of the United Nations Secretariat.

[a] Formerly called the United Republic of Cameroon.

[b] Formerly called the Upper Volta.

[c] Excluding Cyprus, Israel and Turkey.

B. EVALUATION OF POPULATION POLICIES DESIGNED TO AFFECT FERTILITY

Measuring the impact of policies to reduce fertility

The evaluation framework

From both the sociological and demographic standpoints, human reproduction represents one of the most complex forms of social behaviour currently under scrutiny by social scientists. In all societies, throughout history, reproductive behaviour has constituted a crucial component of the human condition and of social welfare. As long as high levels of mortality made high fertility a positive component of the demographic condition, large family-size norms were not only accepted but encouraged through various forms of social pressure. However, as mortality levels began to decline, lower fertility became more and more socially desirable. Not until the mid-1950s, when India formulated the first population policy to curb its birth rate,[4] did governmental authorities consider that intervention in the field of population might be met with some success. The ultimate objective in undertaking such an initiative was to hasten the economic development of the country and thereby to improve the social condition and welfare of the population. At the time, a major component of any new population policy was the organization of a family planning programme. A corollary of the adoption of such a programme is, of course, the evaluation of the impact of measures implemented on fertility.

Where policies to reduce fertility have been established, countries typically attempt to influence fertility through the factors that most directly determine conception and the occurrence of births, namely, through birth regulation by contraceptive methods and, occasionally, also through artificial interruption of pregnancy. From this standpoint, family planning programmes are mainly concerned with making acceptable and efficient birth regulation methods, along with medical supervision and follow-up if needed, accessible on a large scale to couples of reproductive ages. A corollary of the programme approach often consists of simultaneous information, education and communication activities.

Concerning policy evaluation, the most generally encountered approach is: (*a*) to assess the magnitude of the decline in fertility over a given period of time or in a given calendar year; (*b*) to ascertain what portion of the decline in fertility could be attributed to organized family planning programme activities; (*c*) to identify specific programme and non-programme determinants of the observed decline in order to evaluate the role of social and economic change versus the role of population policy measures. While measuring the amount of fertility decline does not require an understanding of causal factors, the need to distinguish between socio-economic determinants and policy measures does. The network of cultural determinants that influence birth control and reproductive behaviour through social norms and family values is complex. The various "causal" factors that affect norms and values must be disentangled and their role in bringing about changes in fertility, in conjunction with policy measures, must be understood.

In order for fertility to decline, there must be a change in family-size norms, i.e., a "demand" for smaller families and, subsequently, a demand for means (birth regulation methods) to achieve the desired reduction in the number of children. Factors defined as "industrialization" and "modernization", and, more generally, factors of "economic development", are seen to be largely responsible for this change in demand. However, a decline in fertility requires not just motivation for fewer children ("demand" factors), but also access to modern means of birth regulation ("supply" factors). Although fertility declined in the currently developed countries without access to modern means of

contraception, much more rapid declines are possible with more efficient methods.

Policy evaluation is fraught with conceptual and methodological difficulties. The problem is to ascertain, under changing socio-cultural and economic conditions, to what extent, if any, demand factors, on the one hand (i.e., a decline in "desired" family size), and the supply factors, on the other hand (i.e., access to modern contraception), have contributed to an observed decline in fertility. The estimated magnitude of the family planning programme impact will depend upon the type of assumptions made concerning "potential" fertility (i.e., the level of fertility that would have prevailed in the absence of the programme).

It is also of interest to identify what components of the family planning programmes, such as personnel, facilities and equipment, have contributed most to the overall fertility reduction credited to the programme alone. In other words, programme managers want to know whether they should increase the number of physicians, family planning field personnel, points of contraceptive services etc. Indeed, if a programme is effective, it is worth trying to improve its positive elements; if it has problems, the problem areas have to be identified and corrected. The answer to such questions requires the selection of proper indicators of programme input and the use of appropriate statistical methodologies.

Most of the evaluation research in the field of family planning has centred on these problems, namely, distinguishing between the effects of programme factors and socio-economic factors on fertility change; assessing births averted by a family planning programme at a given point in time; and estimating the role played by different components (programme input) of a family planning programme.[5] The United Nations, in particular, has acquired great expertise in this crucial field of population policy.[6] Despite these efforts, assessing the role of policy measures and family planning programmes in the absence of rigorously controlled experimental designs remains a difficult task, for the reasons discussed above. Indeed, family planning programme evaluation consists mainly of speculating about what the level of fertility would have been if the programme had not been undertaken. Of course, reasonable assumptions are formulated for such speculations, but there can never be "irrefutable" evidence that a particular programme had a given impact on an observed fertility decline. Before examining the "probable" evidence, it is, however, appropriate to review briefly some of the methodological questions associated with the evaluation of family planning programmes *per se*.

Methodological issues

When an attempt is made to evaluate the impact of a family planning programme, the evaluation procedure adopted determines the nature of the problems encountered. If the objective is simply to measure the decline in fertility and to estimate the part of the decline attributable to the programme, two types of evaluation approaches are usually adopted. The first consists of simply cross-tabulating countries according to amount of fertility decline, level of economic development and assessment of programme effort. This permits the testing of the hypothesis that those countries which rank high in modernization and programme effort will experience greater declines in fertility than those countries which rank low in either or both of these characteristics.[7] This approach is extremely useful for cross-national comparisons of patterns of fertility decline.

The second approach comprises a two-step analysis. The first step consists of assessing simply the decline in fertility observed during a given period or in a given calendar year. Any fertility indicator is appropriate,[8] but when this is undertaken on the basis of the crude birth rate or the general fertility rate, a decomposition of that rate is required in order to determine what part of the decline should be attributed to age structure, marital status distribution and marital fertility *per se*.[9] The second step, which determines the part of the decline in marital fertility that can be attributed solely to the programme measures,[10] is performed on the basis of various procedures,[11] based on estimates of "potential" fertility. The effect of the programme is then obtained by comparing "potential" fertility with observed fertility at the same point in time. The assumptions used to derive estimates of "potential" fertility are crucial for the estimation of programme impact.[12]

The main base data utilized with these procedures are programme data on contraceptive acceptors or contraceptive users; and, for one procedure[13] non-programme contraceptive prevalence also can be used. The use of these data involves two additional sources of bias with respect to the measurement of programme impact. When private contraceptive services are available along with the official programme services, a "substitution" effect may occur if family planners who were practising birth control outside the family planning programme shift to programme services. Births averted by these users, although credited to the programme because they result from programme contraception, should actually be attributed to non-programme activities since, in the absence of the programme, no substitution would have taken place. There is also a substitution effect if some users who entered the programme at first would have resorted to a private contraceptive source, had the programme not existed. The "catalytic" effect, which is the opposite of the "substitution" effect, occurs when couples who obtain services from private family planning centres have been motivated to do so as a result of population policy activities.[14] The direction of the bias depends, of course, upon the balance of these two competing effects; in the absence of reliable data, it is usually implicity assumed that they cancel each other out.

When an attempt is made to go a step further and identify specific determinants of the observed fertility decline, a multivariate analysis procedure becomes imperative.[15] With a proper selection of each type of independent variable, it is possible to estimate and

distinguish between the role played by socio-economic and cultural factors, on the one hand, and family planning programme factors, on the other hand. The statistical value of any inference drawn from such data depends, of course, upon the methodology used but also upon the underlying theoretical model resorted to for the selection of the fertility determinants (both programme and non-programme). However, a great variety of models exist or can be used, and it is not easy to identify the most appropriate model specifications under a particular set of socio-economic conditions.[16]

Lastly, a fundamental problem common to all evaluation methodologies (in fact, to all statistical research endeavours) is that of data deficiencies. A large body of family planning data is available[17] but incompleteness of data and recording errors are common in data on acceptors and users of birth regulation methods and information on non-programme birth control is still limited.[18] In addition, reliability studies have shown that in surveys, respondents who are known from service statistics to have accepted methods, do not always acknowledge their use.[19]

Interpretation of results

In the context of the methodological issues discussed above, two additional remarks need to be borne in mind. First, absence of a fertility decline does not necessarily imply the absence of a policy impact. Indeed, the policy measures may have checked a potential fertility increase. Secondly, policy formulations designed to reduce fertility do not always coincide with immediate fertility reduction. Thus, the span of time between policy implementation and date of evaluation should be taken into account.[20] This lag is even more complex to interpret when economic development is envisaged as an interacting factor. Countries with high fertility often display a longer time for initiating a decline than countries with medium-high fertility, presumably as a result of unfavourable cultural conditions. Similarly, the magnitude of the decline itself remains relative. For instance, a three-point decline in the crude birth rate can presumably be more readily achieved when the starting-point is 38 per 1,000 rather than 21 per 1,000. In fact, reference is made to a "floor effect" whereby further reductions in fertility become less likely when a given low level has been reached.[21]

Policy effects measured in terms of births averted are usually based on data on family planning programme acceptors. However, results based on estimates of acceptors may be difficult to interpret because the accumulation of acceptors is constrained by the proportion of couples eligible for acceptance, which, under both conditions of high fertility and (at the other extreme) conditions of high levels of birth control practice, is necessarily small.[22] Lastly, the part of the fertility decline to be credited to the policy and the part to be attributed to modernization are often ascertained on a cross-sectional basis and only limited attention has been devoted to the cohort approach.[23]

National studies

Evaluation studies have been carried out in various countries both to test different evaluation procedures and to assess the role of family planning activities on the crude birth rate.[24] The studies presented in table 102 follow a two-step approach. First, the crude birth rate is decomposed into four of its main components, namely: (1) the age structure of the population of reproductive ages; (2) the proportion of women of reproductive ages in the total population;[25] (3) the distribution of women by marital status; and (4) the fertility rates of the married women 15-49 years of age. This decomposition is obtained by applying a standardization procedure which allows estimation, for a given calendar year, of the hypothetical number of births which would have occurred in that country had the various components of the crude birth rate remained constant in previous years. The births averted by the marital fertility factors alone reflect the births prevented by the use of a birth regulation method.[26] The second step consists of determining what part of the decline in marital fertility should be attributed to the activities of the official programme.

Column (1) of table 102 presents the contribution of the three major components to a change in the crude birth rate (in terms of births averted), and column (2) presents the same information as a percentage of the total fertility decline. Column (3) describes the proportion in fertility decline resulting from programme and from non-programme activities.

Thailand is an interesting case. For 1975, data show that over 85 per cent of the decline in marital fertility is the result of birth regulation associated with the family planning programme. Such successful results of the policy measures have been recorded in other studies. Another study for the same calendar year found that 82 per cent of the decline in crude birth rate was due to the programme, assuming that 33 per cent of the official programme activity represented a substitution from private efforts.[27] A different evaluation technique found a 62 per cent programme contribution for the same period with the same substitution hypothesis.[28] For 1972, it was estimated that 50.2 per cent of the decline in the total fertility rate could be attributed to programme contraception.[29] The innovative components of the Thai family planning programme have been well acknowledged in the literature.[30]

Likewise, the case of Mauritius finds corroboration for the successful contribution of the family planning programme activities shown in table 102 in other research designs, such as in an early study[31] that found that for the period 1965-1972, fertility decreased rapidly, coinciding with the Government's action to make access to birth regulation easy. For 1972 alone, the programme contribution to marital fertility decline was estimated as over 80 per cent.

The case of Malaysia is exceptional in two aspects. First, from the standpoint of the overall crude birth rate decline for 1976, the effect of the age structure resulted in a net contribution to fertility increase about equiva-

lent to the decline produced by the programme fertility decline. In other words, there would have been no decline in the crude birth rate had the potential for growth inherent to the age structure not been counteracted by the programme activities. The programme contributed over 85 per cent of all birth regulation practice. In the absence of the programme, non-programme family planning might have been somewhat higher than estimated but was not likely to have compensated for all programme activities. In the preceding years, programme impact appears to have been somewhat lower — in the range of from 40.0 to 50.0 per cent, compared with total reduction of births;[32] but in the absence of appropriate programme input data, these differences cannot be properly analysed.

TABLE 102. ESTIMATES OF FERTILITY DECLINE DUE TO FAMILY PLANNING PROGRAMME AND NON-PROGRAMME ACTIVITIES, SELECTED DEVELOPING COUNTRIES OR AREAS, BY REGION, 1970s

Region, country or area, year of evaluation and component of change	*Estimated fertility change (1)*	*Percentage of total fertility change (2)*	*Percentage of marital fertility decline (3)*
Africa			
Mauritius, 1972			
Expected number of births ..	31 395	-	-
Observed number of births ..	20 358	-	-
Change in fertility due to changes in:			
Marital status	−5 337	−48.4	-
Marital fertility, from:	−8 245	-	−100.0
Programme birth regulation[a]	−6 737	−61.0	−81.7
Non-programme birth regulation	−1 508	−13.7	−18.3
Age structure	+3 511	+31.9	-
Joint effects	−966	+8.8	-
Total fertility decline	−11 037	−100.0	-
Tunisia, 1971			
Expected number of births ..	237 255	-	-
Observed number of births ..	192 959	-	-
Change in fertility due to changes in:			
Marital status	−10 621	−24.0	-
Marital fertility, from:	−21 830	-	−100.0
Programme birth regulation[b]	−15 693	−35.4	−71.9
Non-programme birth regulation	−6 137	−13.9	−28.1
Age structure	−11 845	−26.7	-
Total fertility decline	−44 296	−100.0	-
Latin America			
Mexico, 1978			
Expected number of births ..	2 890 800	-	-
Observed number of births ..	2 510 200	-	-
Change in fertility due to changes in:			
Marital status	+99 454	+26.1	-
Marital fertility, from:	−464 120	-	−100.0
Programme birth regulation[c]	−195 700	−51.4	−42.2
Non-programme birth regulation	−268 420	−70.5	−57.8
Age structure	+4 641	+1.2	-
Joint effects	−20 575	−5.4	-
Total fertility decline	−380 600	−100.0	-
Asia			
Hong Kong, 1976			
Expected number of births ..	136 425	-	-
Observed number of births ..	78 486	-	-
Change in fertility due to changes in:			
Marital status	−13 776	−23.8	-
Marital fertility, from:	−58 271	-	−100.0
Programme birth regulation	−29 136	−50.3	−50.0
Non-programme birth regulation	−29 135	−50.3	−50.0
Age structure	+18 664	+32.3	-
Joint effects	−4 556	−7.9	-
Total fertility decline	−57 939	−100.0	-
Malaysia, 1976			
Expected number of births ..	374 372	-	-
Observed number of births ..	324 130	-	-
Change in fertility due to changes in:			
Marital status	−30 464	−60.6	-
Marital fertility, from:	−60 163	-	−100.0
Programme birth regulation[d]	−51 414	−102.3	−85.5
Non-programme birth regulation	−8 749	−17.4	−14.5
Age structure	+50 737	+100.9	-
Joint effects	−10 352	−20.6	-
Total fertility decline	−50 242	−100.0	-
Singapore, 1975			
Expected total fertility rate ..	4 460	-	-
Observed total fertility rate ..	2 100	-	-
Change in fertility due to changes in:			
Marital status	−610	−25.8	-
Marital fertility, from:	−1 760	-	−100.0
Programme birth regulation[e]	−1 540	−65.3	−87.5
Non-programme birth regulation	−220	−9.3	−12.5
Age structure	-	-	-
Joint effects	+10	+0.4	-
Total fertility decline	−2 360	−100.0	-
Thailand, 1975			
Expected number of births ..	1 695 695	-	-
Observed number of births ..	1 469 602	-	-
Change in fertility due to changes in:			
Marital status	−73 271	−32.4	-
Marital fertility, from:	−199 715	-	−100.0
Programme birth regulation	−170 272	−75.3	−85.3
Non-programme birth regulation	−29 443	−13.1	−14.7
Age structure	+48 568	+21.5	-
Joint effects	−1 675	−0.7	-
Total fertility decline	−226 093	−100.0	-

Sources: For expected and observed births, marital status, marital fertility and age structure:

Mauritius: Esther Hanomanjee, "Application of methods of measuring the impact of family planning programmes on fertility: the case of Mauritius", in *Evaluation of the Impact of Family Planning Programmes on Fertility; Sources of Variance* (United Nations publication, Sales No. E.81.XIII.9), p. 94; and table 155, p. 95;

Tunisia: Yolande Jemai and Hedi Jemai, "Application of methods of measuring the impact of family planning programmes on fertility; the case of Tunisia", in Methods of Measuring the Impact of Family Planning Programmes on Fertility: Problems and Issues (United Nations publication, Sales No. E.78.XIII.2), pp. 70-72;

Mexico: Yolanda Palma Cabrera and Lorenzo Moreno Navarro, "Application of methods of measuring the impact of family planning programmes on fertility: the case of Mexico", in *Evaluation of the Impact of Family Planning Programmes . . .*, p. 127, tables 193 and 194;

Hong Kong: K. C. Chan, "Application of methods of measuring the impact of family planning programmes on fertility: the case of Hong Kong", in *Evaluation of the Impact of Family Planning Programmes . . .*, p. 44, table 16; and p. 47, table 20;

Malaysia: Nor Laily Aziz and Tan Boon Ann, "Application of methods of measuring the impact of family planning programmes on fertility: the case of Malaysia", in *Evaluation of the Impact of Family Planning Programmes . . .*, p. 69, table 58; and p. 72, table 63;

Singapore: Siew-Ean Khoo, *Effects of Program Contraception on Fertility: A Comparison of Three Asian Countries,* Papers of the East-West Population Institute, No. 54 (Honolulu, Hawaii, East-West Center, 1978), table 8;

Thailand: Boonlert Leoprapai and Sauvaluck Piampiti, "Application of methods of measuring the impact of family planning programmes on fertility: the case of Thailand", in *Evaluation of the Impact of Family Planning Programmes . . .*, p. 190, table 319.

For marital fertility from programme birth regulation:

Mauritius: Hanoomanjee, *loc. cit.*, p. 112, table 158;

Tunisia: Jemai and Jemai, *loc. cit.*, p. 94.

Mexico: Cabrera and Navarro, *loc. cit.*, p. 127, table 195.

Hong Kong: Chan, *loc. cit.*, p. 47. Approximation based on data of acceptors from the Hong Kong Family Planning Association and rough estimates of acceptors from the Maternal and Child Health Programmes, as discussed in *ibid.*, pp. 47, 55 and 59, both managed with government participation since 1973;

Malaysia: Aziz and Tan, *loc. cit.*, p. 73, table 68;

Singapore: Khoo, *op. cit.*, pp. 18 and 25;

Thailand: Leoprapai and Piampiti, *loc. cit.*, p. 192, table 323.

NOTES: A minus sign (−) indicates a decline; a plus sign (+), an increase.

The non-programme effect is obtained as the difference between changes due to marital fertility and changes due to the family planning programme.

Joint effects are obtained as the difference between total fertility decline and changes accounted for by the various components of change.

The total fertility decline is obtained as the difference between the expected fertility and the observed fertility.

[a] Revised (provisional) estimates. Potential fertility = 1962 marital fertility.

[b] Potential fertility = fertility of acceptors in the five years preceding acceptance. Including 1,817 births averted by legal abortions.

[c] Potential fertility = 1974 general fertility.

[d] Potential fertility = 1967 marital fertility.

[e] Including post-partum contraception and abortions considered to be part of the family planning programme.

In Mauritius, Thailand and Hong Kong, the age structure played a similar although less significant role in raising the crude birth rate: about 30-20 per cent (see table 102). In Mexico, an increase in marital unions produced an increase in the crude birth rate of about 26 per cent of the estimated decline (see table 102). In this country, birth regulation contributed significantly to decreasing the crude birth rate; and in 1978, the contribution of the family planning programme alone to the total decline in marital fertility was estimated to be a little less than 50 per cent.[33]

In Hong Kong, about 50 per cent of the decline is attributed to the programme, but the widespread availability of modern contraception through the private sector and the lack of accurate data on the different sources of birth regulation methods does not allow a reliable estimate of programme impact. In Singapore, on the other hand, programme birth regulation is credited with almost 90 per cent of all births averted in 1975. The favourable socio-economic conditions, as well as a long-standing family planning programme and a well-organized network of distribution of acceptable birth regulation methods, have largely contributed to this successful programme implementation.

Among the other countries in Asia, China and Indonesia are representative of two different policy approaches. The crude birth rate declined in Indonesia from over 40 per 1,000 in the 1960s to about 36 per 1,000 for the period 1976-79.[34] In China, the crude birth rate declined from 29.9 per 1,000 in 1972 to 20.9 per 1,000 by 1981 (see table 103). In both cases, the socio-economic and cultural context was strongly enmeshed in the fertility experience and the distinctive role of the family planning programme is exceptionally difficult to identify. However, several observations can be made with respect to each country. In Indonesia, the Government's involvment consists of an effective contraceptive distribution system, extensive information and motivation activities and efforts to pressure eligible couples to practise contraception.[35] Although the Indonesian fertility decline cannot be readily accounted for in quantitative terms, it is reported that programme activities undoubtedly contributed to the decline and primarily hastened a decline that under social and economic pressures alone would have taken much more time.[36] In China, the policy measures relied upon a variety of incentives and directives focused on encouraging late marriage, late childbearing and the one-child family.[37] Although detailed data are not currently available to establish a direct link between policy indicators and fertility indicators, the estimates given in table 103 suggest that the trend towards increasing family planning practice and rising age at marriage, on the one hand, and the declining fertility, on the other hand, can be attributed, in part at least, to the policy measures.

In the Republic of Korea, although a number of studies[38] have attempted to measure policy effects,

TABLE 103. POPULATION POLICY IN CHINA, 1972-1979

Demographic indicator	*1972*	*1973*	*1974*	*1975*	*1981*
Percentage of couples of reproductive ages practising birth control	. .	60.0[a]	60.0	73.8	. .
Average age at marriage[b]					
Urban areas	———	25.5	———	26.8[c]	. .
Suburban areas	———	23.2	———	24.2[c]	. .
Crude birth rate (per 1,000)	29.9	28.1	25.0	23.1	20.9

Sources: For all data except crude birth rate in 1981, L. Zheng and others, *China's Population: Problems and Prospects* (Beijing, New World Press, 1981), p. 68, table 14; p. 114, table 16; and p. 140, table 29. For 1981 crude birth rate, communiqué of the State Statistical Bureau of the People's Republic of China on major figures in the 1982 population census.

[a] Average for 1971-1973.

[b] Refers to Shanghai sample only.

[c] For 1975-1979.

particular social conditions (such as illegal interruptions of pregnancies) and lack of appropriate data in certain years (such as acceptor data affected by the target system and lack of continuation rates for certain contraceptive methods), permit only very rough estimates. Nevertheless, overall results show that policy measures have contributed to the fertility decline. One study,[39] which uses family planning field-workers as a programme input indicator, concludes that between 6 and 23 per cent of the variance of the total fertility rate in 1975 can be attributed to the programme as compared to 54 to 93 per cent range for the non-programme factor, the residual constituting joint effects. Another study[40] concludes that on the average, 37 per cent of the fertility change between 1963 and 1973 resulted from population policy activities among women between 15 and 44 years old.

Cross-national studies

An analysis at the aggregate level of the impact of family planning programmes on fertility was attempted some years ago.[41] Countries with different levels of development, different socio-cultural conditions, different levels of modernization, on the one hand; and with programmes of different duration, support and organizational efficiency, on the other hand, were compared. Despite difficulties in collecting comparable indices, a world-wide comparison[42] was undertaken on the basis of an elaborate scaling procedure combining quantitative and qualitative indices of level of development and family planning programme input. The results of this attempt are presented in table 104.

Despite the heterogeneity of the countries or areas included in the study, certain major inferences from the results are possible. Countries with a given level of socio-economic development that had adopted a population policy have, on the average, experienced a higher reduction in the crude birth rate than countries with a similar level of development that had not adopted a population policy. Among countries that had adopted a family planning programme as part of their population policy, the percentage decline in the birth rate is higher when the family planning programme effort is stronger, regardless of the level of socio-economic development. Countries that are implementing a population policy of a given strength tend to experience, on the average, a higher decline in the crude birth rate when their development level is high than when it is low. In the absence of an adequate policy to reduce the birth rate and a successful improvement in the level of socio-economic development, it is probable that the decline in birth rate will be minimal.

There are, of course, a number of exceptions to these conclusions; and a more detailed analysis could bring out some of the factors that account for these exceptions. For instance, the length of the implementation of the family planning programme is likely to play a substantial role in its effectiveness. Likewise, variations in the availability of birth regulation methods outside the programme, notably such efficient methods as recourse to illegal interruption of pregnancies, may also dilute the effect of the programme. The level of crude birth rate from which the decline is assessed may also affect the rate of decline, for it is more likely that a high rate can experience a steeper decline than a low rate.

TABLE 104. CRUDE BIRTH RATE DECLINES, BY SOCIAL SETTING AND PROGRAMME EFFORT: SELECTED DEVELOPING COUNTRIES OR AREAS, 1965-1980

(Percentage)

	Programme effort								
	Strong		*Moderate*		*Weak*		*None*		
Social setting	*Country or area*	*Decline*	*Country or area*	*Decline*	*Country or area*	*Decline*	*Country or area*	*Decline*	*Mean*
High	Singapore	43	Cuba	59	Brazil	23	Lebanon	27	
	Hong Kong	40	Colombia	36	Venezuela	14	Democratic People's Republic of Korea	20	
	Jamaica	30	Panama	33	Paraguay	14	Kuwait	8	
	Republic of Korea	29	Chile	32	Peru	11	Jordan	4	
	Mauritius	24	Trinidad and Tobago	23	Argentina	−12	Libyan Arab Jamahiriya	0	
	Costa Rica	24	Mexico	22					
	Fiji	18							
Mean		30		34		10		12	23
Upper middle	China	41	Malaysia	30	Turkey	32	Mongolia	9	
			Thailand	26	Egypt	12	Syrian Arab Republic	3	
			Philippines	23	Guatemala	7	Zambia	0	
			Dominican Republic	21	Ecuador	7	Congo	0	
			Tunisia	19	Nicaragua	7			
			Sri Lanka	18	Morocco	6			
			El Salvador	11	Honduras	6			
					Algeria	5			
					Iran (Islamic Republic of)	2			
					Ghana	0			
					Zaire	0			
					Iraq	0			
Mean		41		21		7		3	12

TABLE 104 (*continued*)

Social setting	Programme effort: Strong — Country or area	Strong — Decline	Moderate — Country or area	Moderate — Decline	Weak — Country or area	Weak — Decline	None — Country or area	None — Decline	Mean
Lower middle .	Viet Nam (part)[a] . .	10	Indonesia	24	Pakistan	9	Democratic Kampuchea	14	
			India	16	Papua New Guinea	5	Burma	6	
					Haiti	5	Democratic Yemen	3	
					Bolivia	2	Ivory Coast	1	
					Nigeria	1	Senegal	0	
					Kenya	0	Saudi Arabia	0	
					Liberia	0	Angola	0	
					Uganda	0	Madagascar	0	
							Mozambique	0	
							Cameroon[b]	0	
							Viet Nam (part)[c] . .	-	
							Lesotho	−4	
Mean		10		20		3		2	4
Low					Afghanistan	3	Lao People's Democratic Republic .	5	
					Benin	3	Burundi	4	
					Sudan	0	Bhutan	3	
					United Republic of Tanzania	0	Guinea	2	
					Bangladesh	0	Togo	2	
					Nepal	−1	Niger	1	
					Mali	−1	Central African Republic	0	
							Chad	0	
							Ethiopia	0	
							Malawi	0	
							Mauritania	0	
							Rwanda	0	
							Sierra Leone	0	
							Burkina Faso[d]	0	
							Yemen	0	
							Somalia	0	
Mean		-		-		1		1	1
Mean		29		26		5		3	10

Source: W. Parker Mauldin and Bernard Berelson, "Conditions of fertility decline in developing countries, 1965-75", *Studies in Family Planning*, vol. 9, No. 5 (May 1978); updated table 12 provided by W. P. Mauldin.

[a] Data only for former Democratic Republic of Viet Nam.
[b] Formerly called the United Republic of Cameroon.
[c] Data only for former Republic of South Viet Nam.
[d] Formerly called the Upper Volta.

Most of all, differences in cultural factors, such as status of women, marital decision-making and family structure, may also affect reproductive behaviour and, in particular, family planning behaviour. Lastly, political conditions, which cannot properly be quantified in such a study, need to be taken into consideration in certain cases.

A number of cross-national studies to assess the role of programme and non-programme determinants of fertility are based on multivariate analysis. Because the techniques utilized could not always meet the statistical pre-conditions necessary for their application and because of difficulties in data comparability and reliability, as well as differences in the cultural conditions of the countries analysed, the results should be interpreted with caution.

Despite these shortcomings, the summary results presented in tables 105-108 suggest that although family planning programmes may vary widely, their contribution (small or large) to fertility change is always observed. It is worth noting that in spite of the methodological limitations inherent in policy evaluation, an effort has been made in some of these studies to identify separately direct and indirect effects as well as joint effects (interaction) of particular determinants on fertility.[43]

Table 105 presents the results of a path analysis applied to two sets of programme countries. In this model, the infant mortality rate reflects the death of children under one year, but can also be interpreted as a proxy for the general social and economic level of the country. As such, it stands for a summary "demand" factor. Likewise, the "supply" factor is represented by the programme users. The crude birth rate constitutes the fertility indicator.

The data presented in table 105 for the first group of countries confirm the proposition that the higher the infant mortality (and lower the level of development), the higher the crude birth rate.[44] In all, about 39 per cent of variations in the crude birth rate are accounted

TABLE 105. EFFECT OF PROGRAMME AND NON-PROGRAMME FACTORS ON CRUDE BIRTH RATE: PATH ANALYSIS FOR SELECTED COUNTRIES

Variables	Variation in crude birth rate accounted for by variables: Path coefficient	Index
Twenty programme countries or areas[a]		
Infant mortality effect		
Direct effect	0.60	43
Indirect effect	0.19	14
Medical personnel	0.05	4
Programme users	0.54	39
Total effect	-	100
Nine Asian countries or areas[b]		
Infant mortality effect		
Direct effect	0.38	29
Indirect effect	0.35	26
Programme input	0.39	29
Programme output	0.21	16
Total effect	-	100

Source: K. S. Srikantan, *The Family Planning Program in the Socioeconomic Context* (New York, The Population Council, 1977), pp. 79 and 114.

[a] Bangladesh, Colombia, Egypt, Hong Kong, India, Indonesia, Iran (Islamic Republic of), Kenya, Malaysia, Mauritius, Morocco, Nepal, Pakistan, Philippines, Republic of Korea, Singapore, Sri Lanka, Thailand, Tunisia, Turkey.

[b] Burma, Democratic Kampuchea, Hong Kong, Indonesia, Malaysia, Philippines, Republic of Korea, Singapore, Thailand.

for by the programme. In the second set of countries, the impact of infant mortality is, on the average, about the same as the first set although the direct effect is less pronounced. In the second group of countries, where more data for programme effort were available or estimated, a programme input variable[45] was included. This latter variable accounts for about 30 per cent of the variation in the crude birth rate, excluding the role of the programme output indicator, somewhat difficult to interpret in this case.[46] An additional correlation analysis based on 29 socio-economic, demographic and family planning programme indicators reached a somewhat similar conclusion, namely, that favourable demographic and socio-economic conditions enhance the effect of a family planning programme on fertility.[47]

Table 106 presents an attempt at estimating net effects through a somewhat different multivariate approach.[48] The roles of the social setting and of the family planning programme are first assessed separately (two first lines of table 106) and then their combined effect is estimated by pooling the two sets of variables (programme and non-programme) in the correlation analysis. As can be seen, the combined effects do not add up to the sum of the individual effects because the variables overlap significantly in their action. The net effects of the social setting and the family planning programme—obtained by subtracting combined effects from individual effects—underscore the importance of the combination of social setting and programme activities. The joint effects thus have the bulk of the power to reduce the birth rate, according to this analysis.

An evaluation study undertaken by the World Bank[49] also provides evidence of the limited role of socio-economic variables as well as programme variables when measured in isolation and on the important role of the joint effects (interaction) of these two categories of factors (see table 107).

It is interesting to note that the pattern across Indian states is rather similar to the pattern across countries shown in table 106, although the dependent variable is programme contraceptive users instead of a fertility indicator. In the study based on 18 countries, the

TABLE 106. EFFECT OF PROGRAMME AND NON-PROGRAMME FACTORS ON CRUDE BIRTH RATE DECLINE: CORRELATION ANALYSIS FOR SELECTED COUNTRIES

Variables	Percentage of variation in birth rate decline accounted for by variables: Correlation	Index
Twenty-nine countries		
Social setting alone[a]	51.3	-
Programme effort alone[a]	60.7	-
Combined effect of social setting and programme[b]	68.1	100
Net effect of social setting[c]	7.4	11
Net effect of programme[c]	16.8	25
Joint effects[d]	43.9	64
Eighty-nine countries		
Social setting alone[a]	66.1	-
Programme effort alone[a]	78.5	-
Combined effect of social setting and programme[b]	83.1	100
Net effect of social setting[c]	4.6	5
Net effect of programme[c]	17.0	21
Joint effects[d]	61.5	74

Sources: Ronald Freedman and Bernard Berelson, "The record of family planning programs", *Studies in Family Planning*, vol. 7, No. 1 (January 1976), p. 19; and W. Parker Mauldin and Bernard Berelson, "Conditions of fertility decline in developing countries, 1965-75", *Studies in Family Planning*, vol. 9, No. 5 (May 1978), p. 106.

[a] Multiple correlation of relevant variables.

[b] Multiple correlation with all socio-economic indicators and the programme effort scores.

[c] Difference between squared multiple correlation and squared zero-order correlation of the other variable.

[d] Combined effect less the net effects.

TABLE 107. EFFECT OF PROGRAMME AND NON-PROGRAMME FACTORS ON PROGRAMME USER RATES: REGRESSION ANALYSIS FOR SELECTED COUNTRIES

Variables	Variation in programme user rates accounted for by variables: Decomposed R^2	Index
Selected states in India[a]		
Socio-economic variables	0.14	14
Programme input variables	0.19	20
Interaction	0.65	66
Total R^2	0.98	100
Eighteen countries[b]		
Socio-economic variables	0.19	20
Programme input variables	0.39	42
Interaction	0.35	38
Total R^2	0.93	100

Source: Timothy King and others, *Population Policies and Economic Development* (Baltimore, Md., Johns Hopkins University Press for World Bank, 1974), appendix B, tables B2-B5, pp. 153-159.

[a] Andhra Pradesh, Assam, Bihor, Gujarat, Haryana, Jemmu and Kashmir, Kerala, Madhya Pradesh, Maharoshtra, Mysore, Orissa, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh, West Bengal.

[b] Egypt, Fiji, Guatemala, India, Indonesia, Iran (Islamic Republic of), Kenya, Malaysia, Mauritius, Morocco, Nepal, Pakistan, Philippines, Republic of Korea, Sri Lanka, Thailand, Tunisia, Turkey.

TABLE 108. EFFECT OF PROGRAMME AND NON-PROGRAMME FACTORS ON CRUDE BIRTH RATE AND CHANGE IN CRUDE BIRTH RATE BETWEEN 1958 AND 1977: REGRESSION ANALYSIS FOR SELECTED COUNTRIES OR AREAS [a]

Dependent variable	Regression coefficients of independent variables				Explained variance R^2
	Family planning programme	Legal abortions	Crude birth rate, 1958	Socio-economic development	
Crude birth rates, 1977					
Regression coefficient	−0.52	−2.39	0.69	−3.87	0.90
Beta coefficient	−0.47	−0.10	0.31	−0.27	. .
Decline in crude birth rate					
Regression coefficient	−1.19	−5.57	-	−7.56	0.83
Beta coefficient	−0.60	−0.13	-	−0.30	. .

Source: Phillips Cutright and William R. Kelly, "The role of family planning programs in fertility declines in less developed countries, 1958-1977", International Family Planning Perspectives, vol. 7, No. 4 (1981), table 2, unit 3, pp. 149-150.

NOTES: Only relevant independent variables are shown. Results significant at 5 per cent level.

[a] Algeria, Angola, Bangladesh, Benin, Bolivia, Brazil, Burkina Faso, Burma, Burundi, Cameroon, Central African Republic, Chad, Chile, China, Colombia, Costa Rica, Cuba, Democratic Yemen, Dominican Republic, Ecuador, Egypt, El Salvador, Ethiopia, Ghana, Guatemala, Guinea, Haiti, Honduras, Hong Kong, India, Indonesia, Iran (Islamic Republic of), Iraq, Ivory Coast, Jamaica, Jordan, Kenya, Lao People's Democratic Republic, Lebanon, Liberia, Libyan Arab Jamahiriya, Madagascar, Malawi, Malaysia, Mali, Mexico, Mongolia, Morocco, Mozambique, Nepal, Nicaragua, Niger, Nigeria, Pakistan, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Republic of Korea, Rwanda, Saudi Arabia, Senegal, Sierra Leone, Singapore, Somalia, Sri Lanka, Sudan, Syrian Arab Republic, Thailand, Togo, Tunisia, Turkey, Uganda, United Republic of Tanzania, Venezuela, Yemen, Zaire and Zambia.

programme variable appears as significantly higher than in the other studies. A more detailed analysis would be needed to ascertain whether any methodological bias can account for this result or whether, on the average, this group genuinely had more successful family planning programmes. One possible "explanation" may be that the dependent variable is represented by programme users, which may be considered as an advanced indicator of fertility but not necessarily a satisfactory linear proxy of fertility.[50]

As can be seen, the ambiguities associated with programme evaluation through multivariate analysis derive from both the model specifications and the estimation procedures. Since no standard is currently available for selecting the optimal approaches, various approaches resorted to in research evaluation are examined here; and, in the absence of a criterion of reliability, they are reviewed from the point of view of corroboration. In other words, if different approaches, based on different models and encompassing different countries all tend to yield results that suggest effects of family planning programmes on fertility, the probability that these effects are genuine is increased, even though the magnitude of the effects cannot be fully ascertained.

Such a corroboration is further obtained with a lagged dependent variable model[51] on selected countries or areas, covering changes in crude birth rate between 1958 and 1977.[52] The results of this evaluation are presented in table 108. The results show that for the countries under study, the role of the family planning programme is of primary importance in accounting for the crude birth rate and crude birth rate changes. In both absolute (regression coefficients) and relative (beta coefficients) terms, the programme appears as a most important predictor of fertility change. In both models, the direct contribution of the programme is higher than that of the socio-economic variable: 0.47 versus 0.27 and 0.6 versus 0.3, respectively. But beta coefficients represent only direct effects, whereas socio-economic development also affects fertility indirectly through programme factors. When the indirect effect is taken into consideration, the total effect of development reaches a value of 0.56,[53] which is somewhat higher than the direct effect of the programme alone, estimated as 0.47 (see table 108). Once more, the important role of family planning programmes and the no less important role of the level of development are underscored by the results of this analysis, and especially the fact that part of the effect of the social setting is exercised through population policy measures.

Conclusion

Despite modelling problems, methodological shortcomings and data limitations, the results of the various evaluation studies examined above appear to fall in a common pattern. Countries with family planning programmes tend to experience more rapid declines in birth rates than countries without programmes. Countries with programmes that are at higher levels of development and modernization experience more rapid declines in birth rates than countries at lower levels. Among countries of a given development level, those where the programme effort is strong have experienced higher birth reductions. These findings, although not new, have by now received corroboration from numerous evaluation studies, covering a large number of countries and encompassing a relatively long span of time. However, these relationships certainly need more detailed analyses in order for programme managers and policy decision-makers to understand how the components of their policies and programmes have interacted to reach these achievements.

Indeed, population policies, if they are to maximize their effectiveness, must rely upon solid scientific know-

ledge. Such knowledge has not yet been established satisfactorily. For instance, there is a need for a better understanding of how modernization factors combine with programme factors to achieve reduced family size values and what contribution varying cultural and normative factors play in such a mechanism. Such knowledge would permit programme managers to identify more readily specific target groups for their activities and to avoid groups whose behaviour would consist mainly of producing substitution effects and encourage measures that, beyond the programme activities, would induce widespread catalytic effects. Indeed, experience has shown that economic development planning is usually the result of high-level political and economic decision-making processes. Since the objectives of such planning encompass a wide range of welfare targets of which population and health are but partial components, the economic measures in development plans are, in practice, given priority. As such, these measures, together with the prevailing social and economic situation, constitute the framework within which population policy measures must be carried out. Thus, population policy measures need to be designed with this framework in mind, with particular attention to the conditions that are most favourable for successful results.

The priority problem can thus be envisaged as one of selecting among various population policy proposals within a planned social and economic context rather than choosing between demographic proposals and economic proposals. From this point of view, evaluation of population policy measures becomes of fundamental importance not only for the measurement of population policy effects but for the adoption and modification of policies as well as the determination of cultural impediments to their effectiveness. Taking these impediments into consideration and circumventing their negative effects thus constitute crucial steps in programme implementation.

Measuring the impact of policies to increase fertility

The evaluation framework

While the developing countries were experiencing high fertility levels and were taking measures to reduce their fertility, a number of European countries, were, in contrast, experiencing declining crude birth rates seldom previously observed.[54] Governments in countries where these reductions appeared most significant became concerned about the long-term social and economic effects of such trends and in a number of cases were prompted to formulate explicit population policies directed to slowing or, better, reversing the alarming decline.[55] On the assumption that couples do want children but are in many circumstances unable to meet the economic cost of childbearing and child-rearing, measures to support large families were enacted, encompassing a variety of incentives and restrictions associated with reproductive behaviour. Among the most common components of such pro-natalist measures are maternity benefits and child allowances to encourage high-order births (i.e., three or more). Some of the most comprehensive legislative systems favouring large families are found in the Eastern European countries. Along with maternity grants and child allowances, such measures as expanded child-care facilities, part-time employment, maternity leave (and such special measures as the "childlessness tax" in Romania), are at the core of the population policy effort.[56] Among the other European countries, only France was, in the past, known to have made explicit pro-natalist statements,[57] although a number of the other countries have expressed dissatisfaction with their level of fertility.[58] In most of these countries, family legislation, generally pro-natalist in nature, is part of the overall social system; and, as such, it also includes liberal measures concerning access to and availability of contraceptive methods and, in many cases, access to legal interruption of pregnancies under more or less strict pre-conditions.[59]

Assessment of policy effect

The effect of such non-family planning programme measures on fertility is difficult to identify because the techniques to link these social programmes to specific occurrences of an increase in the birth rate have not received the same attention as the procedures designed to estimate births averted. More often than not, attempts to establish a causal link between pro-natalist measures and changes in the level of fertility are restricted to the observation of covariations between particular indicators of the pro-natalist measures and an indicator of fertility. Only in cases where the population legislation can be assumed to have a known effect on the proximate determinants of fertility, such as when indications for abortion are restricted, can the hypothesis of a direct effect be inferred.

Some techniques have however, been explored, notably attempts to associate child allowances and birth order occurrences;[60] from this standpoint, the amount of child allowance contribution to the overall family income becomes of great interest in evaluation research. Table 109 illustrates the child allowance provided according to birth order, in relation to the average income, in several Eastern European countries.

The pro-natalist potential of such benefits appears high; but, of course, the particular socio-economic conditions under which such measures are implemented have to be taken into account. In three countries, Bulgaria, Hungary and Czechoslovakia, allowances contribute one third of the salary, when a third child is born. When the fifth child is born, the contribution rises above 50 per cent in Czechoslovakia and Hungary.

Despite the diversity of socio-economic conditions and cultural values, an attempt has been made to assess the role of child allowances on a cross-national level in all the European countries. The results are shown in table 110.

The presence of a positive linear relationship between level of allowance and level of fertility would have placed all countries on the diagonal from the lower left to the upper right of table 110. As can be seen, only about half of the countries constitute evidence for this

TABLE 109. SPECIFIC WEIGHT OF ALLOWANCES TO AVERAGE MONTHLY WAGES SUBJECT TO NUMBER OF CHILDREN IN A FAMILY, SELECTED EASTERN EUROPEAN COUNTRIES

Country and currency unit	Average monthly wage of workers and employees in the national economy	Year	Specific weight of allowances to average monthly wage for: First child	Second child	Third child (percentage)	Fourth child	Fifth child
Bulgaria (lev)	148	1976	3.4	13.5	37.2	40.5	44.0
Czechoslovakia (koruna)	2 369	1976	3.8	18.2	37.2	54.0	64.2
German Democratic Republic (mark)	713	1969	2.8	5.6	9.8	18.2	28.1
Hungary (forint)	2 976	1976	. .	16.8	32.3	43.0	54.1
Poland (zloty)[a]	3 969	1976	4.0	10.3	18.9	25.5	37.0
Romania (leuv)[b]	1 964	1976	8.2	16.8	26.5	36.2	45.8

Source: Valentina Bodrova, "The family as an object of demographic policy in the Socialist countries of Europe", in *Recent Population Change Calling for Policy Action: With Special Reference to Fertility and Migration*, George S. Siampos ed. (Athens, National Statistical Service, 1980), p. 292.

[a]Allowances are provided when one member of a family is earning less than 1,400 zlotych.

[b]Allowances are determined by the number of children, the level of income and the place of residence of the parents. The table shows the allowances for children in families where the monthly income of the chief breadwinner is under 1.50 lei and where the place of residence is a town.

TABLE 110. RELATIONSHIP BETWEEN CHILD ALLOWANCE AND FERTILITY LEVEL, SELECTED EUROPEAN COUNTRIES, 1980-1981

Total fertility rate, 1980	Child allowance as percentage of average monthly industrial wage: Low — Two children (less than 10 per cent)	Low — Three children (less than 10 per cent)	Medium — Two children (10-15 per cent)	Medium — Three children (10-20 per cent)	High — Two children (over 15 per cent)	High — Three children (over 20 per cent)
High (2.0 or more)	Greece Ireland Poland Portugal Spain	Greece Ireland Portugal Spain	Bulgaria France	Poland	Czechoslovakia Romania	Bulgaria Czechoslovakia France Romania
Medium (1.7-1.9)	German Democratic Republic Italy Norway	German Democratic Republic Italy	Belgium Sweden England Scotland	Norway Sweden England Scotland	Austria Hungary	Austria Belgium Hungary
Low (under 1.7)	Denmark Finland Germany, Federal Republic of Luxembourg Netherlands Switzerland	Denmark Switzerland		Finland Germany, Federal Republic of Luxembourg Netherlands		

Sources: For child allowances, T. Frejka, "Europe; making children a more attractive proposition, *People*, vol. 9, No. 4 (1982), p. 11; and for total fertility rate, *World Population Trends, Population and Development Interrelations and Population Policies: 1983 Monitoring Report*, vol. I, *Population Trends* (United Nations publication, Sales No. E.84.XIII.10), table 12.

NOTES: Approximate dollar equivalent, June 1982 official exchange rate; tourist exchange rate for Eastern European countries. In Poland, allowances are lower for high income families; in Romania, they are not paid to high-income families.

proposition and a number of exceptions, perhaps due in part to the arbitrary classification resorted to, suggest that a number of other factors interact with the two main variables. As noted before, varying socio-cultural conditions may constitute an important factor of differentials. In certain countries, such as Austria, Belgium, and Hungary, small family-size norms seem to prevail despite the child support measures existing in these countries. On the other hand, in the upper left part of the table, the observed inverse relationship between allowance contribution and fertility could be readily accounted for by the fact that prevailing large family-size norms have maintained fertility satisfactorily high and that child allowance measures in favour of large families were not deemed necessary. Hence, the association between comparatively high fertility and low allowance contribution.[61]

The role of child allowances cannot, however, be isolated from other policy measures, for which detailed data are not currently available on a cross-national basis. In addition, birth control as well as abortion legislation are likely to compound or interfere with the effects of family benefits and should also be considered. In special situations, an attempt can be made to identify direct effects of this type of legislation, particularly in the short term. The cases illustrated here are those of Hungary and Romania, where abortion regulations, which were among the most liberal in Europe,[62] under-

TABLE 111. TRENDS IN POLICY INDICATORS AND FERTILITY INDICATORS, HUNGARY AND ROMANIA, SELECTED YEARS, 1967-1978

Country and indicator	*1965*	*1967*	*1972*	*1974*	*1978*	*1981*
Hungary						
Crude birth rate (per 1,000)	13.1	14.6	14.7	17.8	15.7	13.3
Abortion rate[a]	80.0	83.1	83.5	44.3	37.0	35.9[b]
Romania						
Crude birth rate (per 1,000)	14.6	27.4	18.8	20.3	19.1	18.0[c]
Abortion rate[a]	252.3	46.0	82.7	72.0	85.6	88.1[b]

Sources: For crude birth rates, *World Population Trends, Population and Development Interrelations and Population Policies: 1983 Monitoring Report*, vol. I, *Population Trends* (United Nations publication, Sales No. E.84.XIII.10), table 12; and *Demographic Yearbook 1975* (United Nations publication, Sales No. E.75.XIII.1), table 21. For abortion rate, Christopher Tietze, *Induced Abortion: A World Review, 1981*, 4th ed. (New York, The Population Council, 1981), table 2.

[a] Number of abortions per 1,000 women aged 15-44 years.
[b] For 1979.
[c] For 1980.

went strict application restrictions following the population policy measures adopted in 1973 in Hungary and in 1966 in Romania.[63] Furthermore, in Romania, it has been reported that, although no law prohibits contraceptives, birth control methods were not always readily available to the general public.[64] In examining table 111, it can be seen that, in the year following the policy decision, fertility rose sharply. In Hungary, the crude birth rate increased from 14.7 in 1972 to 17.8 per 1,000 in 1974; in Romania, the crude birth rate rose from 14.6 in 1965 to 27.4 per 1,000 in 1967, roughly a 100 per cent increase. Simultaneously, the abortion rates declined from 77.5 in 1972 to 44.3 per 1,000 in 1974 in Hungary; and from 252.3 to 46.0 per 1,000 in Romania for 1965 and 1967, respectively.

Because of the many factors involved and the methodological difficulties in ascertaining long-term effects, covariations of annual indices are not always the most satisfactory approach to assess the effects of policy measures on fertility. Cohort studies of fertility indicators are, in various circumstances, much more appropriate; and, in other cases, more detailed indices are needed. Furthermore, the particular social and cultural context is of fundamental importance in assessing policy impact, for policies of similar strength and efficacy can yield different outcomes under different conditions. For instance, the more a population resorts to artificial interruption of pregnancies in order to achieve desired family size, the more a sudden restriction on abortion will affect the occurrence of births,[65] the more so if access to alternative methods of birth regulation is also limited. In Hungary, the fact that fertility resumed its decline may indeed be due to increased use of contraception and abortion.[66] In any case, it appears that a new situation has emerged in this country and that it may affect the aims and content of its population policy.[67]

In Czechoslovakia, the crude birth rate was 15.9 per 1,000 in 1970; by 1974, this rate had risen to 19.9.[68] Family and child allowance increments enacted in 1970 and 1972 included extended paid post-maternity leave; maternity benefits and child allowances were raised and it is suggested that part of the explanation for the increase in the crude birth rate was the response of couples to the new population policy, along with a favourable age structure of women of reproductive ages. The policy measures are also credited with an increase in nuptiality which, in turn, increased the number of births.[69] A national study estimated that the contribution of the pro-natalist measures to the birth increase was about 73.0 per 100 up to 1974 and 77.0 per cent in 1975.[70] Nevertheless, by 1981, the crude birth rate seems to have fallen back to 15.5 per 1,000.[71]

Conclusion

The overall effect of policy measures cannot be adequately assessed with the available data on a cross-national basis in the European countries. The difficulty is compounded by the fact that both the crude birth rate and the total fertility rate continued to decline in most of these countries, and the evaluation tools to ascertain the effects of pro-natalist measures on declining fertility are not satisfactory. Among the countries with explicit policies to increase fertility, only France and Romania had experienced an increase in their fertility as of 1980. In Romania, the crude birth rate of 14.6 per 1,000 experienced in 1965, the year prior to the first policy measures, rose to above 19.0 per 1,000 in 1978 and had stabilized at 18.0 per 1,000 by 1980. This constitutes about a 25-30 per cent net increase, compared with the pre-1966 level.[72] There is no question that this situation, even if only temporary, is for the most part the result of a well-designed population policy. Likewise, a crude birth rate of 13.6 in France in 1976 had risen to almost 15 by 1980. In the absence of rigorous quantitative evidence, it is difficult to ascertain what part of this reversal can be credited to the child and maternity benefit policy. It may be assumed, however, that without such policies, the fertility recovery would have taken more time.

NOTES

[1] This regional commission is currently called the Economic Commission for Latin America and the Caribbean (ECLAC).
[2] Formerly called the United Republic of Cameroon.
[3] Formerly called the Upper Volta.

[4] T. J. Samuel, "The development of India's policy of population control", *The Milbank Memorial Fund Quarterly*, vol. 44, No. 1, part I (January 1966), pp. 49-67.

[5] Clyde V. Kiser, ed., *Research in Family Planning* (Princeton, N.J., Princeton University Press, 1962); Bernard Berelson and others, eds., *Family Planning and Population Programs: A Review of World Developments* (Chicago, Ill., University of Chicago Press, 1966); Organisation de coopération et de développement économique, *Une evaluation des programmes de planning familial* (Paris, 1972); C. Chandrasekaran and Albert I. Hermalin, eds., *Measuring the Effects of Family Planning Programs on Fertility*, published by the International Union for the Scientific Study of Population for the Development Centre of the Organisation for Economic Co-operation and Development (Dolhain, Belgium, Ordina Editions, 1975).

[6] See, for instance, United Nations Economic and Social Commission for Asia and the Pacific, *Evaluation of Family Planning Programmes*, Asian Population Studies Series, No. 5 (Bangkok, 1970); *A Comparative Study of the Input-Output Relationships of Family Planning Programmes in Selected Countries of the ESCAP Region*, Asian Population Studies Series, No. 30 (Bangkok, 1976); and *Report of the Expert Group Meeting on Socio-Economic Measures Affecting Fertility Behaviour, with Special Emphasis on Actionable Programmes* (Bangkok, 1978); and *Methods of Measuring the Impact of Family Planning Programmes on Fertility: Problems and Issues* (United Nations publication, Sales No. E.78.XIII.2); *Manual IX. The Methodology of Measuring the Impact of Family Planning Programmes on Fertility* (United Nations publication, Sales No. E.78.XIII.8) (hereafter referred to as *Manual IX*); *Evaluation of the Impact of Family Planning Programmes on Fertility: Sources of Variance* (United Nations publication, Sales. No. E.81.XIII.9).

[7] See use of this approach in W. Parker Mauldin and Bernard Berelson, "Conditions of fertility decline in developing countries, 1965-75", *Studies in Family Planning*, vol. 9, No. 5 (May 1978), pp. 102-103; Bernard Berelson, "An evaluation of the effects of population control programs", in *Population and Its Problems*, H. B. Harry, ed. (Oxford, Clarendon Press, 1974), pp. 133-170; John A. Ross, "Declines in the age and family size of family planning program acceptors: international trends", *Studies in Family Planning*, vol. 10, No. 10 (October 1979), pp. 290-299.

[8] It has often been suggested that the gross reproduction rate is the best fertility indicator; but studies show that the association between the crude birth rate and the gross reproduction rate is quite high which makes the crude birth rate an acceptable index for the present purpose. See Mauldin and Berelson, *loc. cit.*, pp. 94-95.

[9] United Nations Secretariat, "Standardization approach", in *Manual IX*, pp. 7-33.

[10] For non-family planning programme measures, see, notably, K. Sivaswamy Srikantan, "Fertility effect of policy measures and programmes other than the family planning programmes: methods of evaluation", in *Studies to Enhance the Evaluation of Family Planning Programmes* (United Nations publication, Sales No. E.84.XIII.9).

[11] Methods in this group are described in detail in United Nations, *Manual IX*.

[12] William Brass, "Assessing the demographic effect of a family planning programme", *Proceedings of the Royal Society of Medicine*, vol. 63 (November 1970), pp. 29-31; David Wolfers, "The estimation of potential fertility for family planning evaluation", *ibid.*, pp. 41-44; John C. Barrett, "Issues in the measurement of potential fertility of contraceptive acceptors", in *The Role of Surveys in the Analysis of Family Planning Programs*, Albert I. Hermalin and Barbara Entwisle, eds., proceedings of a seminar sponsored by the International Union for the Scientific Study of Population, (Liège, Ordina Editions, 1981), pp. 409-440; John Bongaarts, "The concept of potential fertility in evaluation of the fertility impact of family planning programmes", in *Studies to Enhance the Evaluation of Family Planning Programmes*.

[13] John Bongaarts, "A prevalence model for evaluating the fertility effect on family planning programmes: age-specific and method-specific results", in *Studies to Enhance the Evaluation of Family Planning Programmes*.

[14] This effect occurs notably when governmental mass media campaigns favouring the use of birth regulation methods induce couples to obtain contraceptive methods from private physicians or from pharmacies.

[15] Albert I. Hermalin, "Multivariate areal analysis", in *Manual IX*, pp. 97-111; F. M. Andrew, J. N. Morgan and J. A. Sonquist, *Multiple Classification Analysis* (Ann Arbor, University of Michigan, 1969); T. Paul Schultz, *The Effectiveness of Population Policies: Alternative Methods of Statistical Inference* (Santa Monica, Ca., Rand Corporation, 1971); Albert I. Hermalin, "Using individual and areal data in evaluating family planning programmes", in *Studies to Enhance the Evaluation of Family Planning Programmes*.

[16] Examples of such models can be found in the fertility literature, in general, and in the family planning evaluation literature, in particular, notably in Albert I. Hermalin, "Measuring the effects of family planning programs on fertility", in *Measuring the Effects of Family Planning Programs on Fertility*, Chandrasekaran and Hermalin, eds., p. 290; or K. S. Srikantan, *The Family Planning Program in the Socioeconomic Context* (New York, the Population Council, 1977), pp. 9-11. For research in comparative modelling, see notably, Marc B. Glassman and John A. Ross, "Two determinants of fertility decline: a test of competing models", *Studies in Family Planning*, vol. 9, No. 7 (July 1978), pp. 193-197.

[17] See, notably, Dorothy Nortman, *Population and Family Planning Programs: A Compendium of Data through 1981*, 11th ed. (New York, The Population Council, 1982); and the preceding editions. This series constitutes a unique source of population policy information.

[18] See, for instance, John A. Ross and others, *Findings from Family Planning Research*, Reports on Population/Family Planning, No. 12 (New York, The Population Council, 1972), table 17.

[19] For instance, in Pakistan, 33 per 100 of known contraceptive users declared in a survey that they had never practised; in the Republic of Korea, 34.5 per 100 of the women who received a contraceptive kit declared, in a post-distribution survey, that they had not received any kit; in the Philippines, 22 per 100 of the respondents denied having accepted a contraceptive method at the clinic where they were listed as acceptors. John Stoeckel and M. A. Choudhury, "Pakistan: response validity in KAP survey", *Studies in Family Planning*, vol. 1, No. 47 (1969), p. 9; Chai Bin Park, Lu-Jay Cho and James A. Palmore, "The Euiryong experiment: a Korean innovation in household contraceptive distribution", *Studies in Family Planning*, vol. 8, No. 3 (March 1977), p. 75 (this article refers to the Republic of Korea); John E. Laing, "Differentials in contraceptive use-effectiveness in the Philippines", *Studies in Family Planning*, vol. 5, No. 10 (October 1974), p. 302.

[20] Programme implementation is carried out through a progressive expansion based on both needs and the capacity of the programme to deliver the necessary services. In Malaysia, for instance, the population programme was carried out through five-phased coverage plans which progressively included urban, rural and remote areas of the country. Thus, a programme builds up slowly and results begins to appear only when a given threshold of activities is reached. See Nor Laily Aziz, Tan Boon Ann and Yuzuru J. Takeshita, "Utilization of the World Fertility Survey for population planning: the case of Malaysia", in *The Role of Surveys in the Analysis of Family Planning Programs*, Hermalin and Entwisle, eds., pp. 342-343.

[21] See discussion on this subject in Mauldin and Berelson, *loc. cit.*, p. 108.

[22] For an analysis of the dynamics of acceptor accumulation, see, notably, Ismail Sirageldin and John Ross, "Empirical demographic generalizations in response to family planning programs", in *International Population Conference, Mexico 1977* (Liège, International Union for the Scientific Study of Population, 1977), vol. 3, pp. 209-228.

[23] See, for instance, K. B. Pathak and C. V. S. Prasad, "Changing role of some socio-economic factors affecting family planning performance in India during 1967-73", *Journal of Population Research*, vol. 3, No. 1 (January-June 1976), pp. 40-56.

[24] The crude birth rate is taken here as the fertility indicator because data to obtain this indicator are the most easily obtained. Even when other data are available, however, the crude birth rate is often retained because "over-population" is considered in terms of population growth, of which the crude birth rate is the fertility component.

[25] In the presentation in table 102, the first two components enumerated are combined under the single factor "age structure".

[26] The decline in marital fertility is interpreted in this procedure as being a genuine fertility decline, i.e., one resulting from actual use of birth regulation methods (contraception or abortion). Of course, other

factors may affect marital fertility, notably changes in fecundity, foetal mortality, breast-feeding practices, exposure to the risk of contraception etc. These latter variables are not taken into consideration here.

[27] Jay D. Teachman, Dennis P. Hogan and Donald J. Bogue, "A components method for measuring the impact of a family planning program on birth rates", *Demography*, vol. 15, No. 1 (February 1978), table 3, p. 124.

[28] Siew-Ean Khoo, "Measuring the Thai family planning program's impact on fertility rates: a comparison of computer models", *Studies in Family Planning*, vol. 10, No. 4 (April 1979), table 8, p. 143. Since this estimate is based on the same number of acceptors as the preceding assessment, the difference in estimated impact is due solely to the difference in methodology.

[29] Siew-Ean Khoo, *Effects of Program Contraception on Fertility: A Comparison of Three Asian Countries*, Papers of the East-West Population Institute, No. 54 (Honolulu, Hawaii, East-West Center, 1978), table 14, p. 26.

[30] See, notably, A. Rosenfield and others, "Thailand's family planning programme: an Asian success story", *International Family Planning Perspectives*, vol. 8, No. 2 (June 1982), pp. 43-50; P. Kamnuasilpa and others, "Thailand's reproductive revolution: an update", *ibid.*, pp. 51-56; John Knodel and others, *Fertility in Thailand: Trends, Differentials and Proximate Determinants*, National Research Council Committee on Population and Demography Report No. 13 (Washington D.C., National Academy Press, 1982), pp. 112-114.

[31] William Brass, "Impact of the family planning programme in Mauritius", *International Planned Parenthood Federation Medical Bulletin*, vol. 10, No. 4 (1976), p. 2.

[32] See, notably, Aziz, Tan and Takeshita, *loc. cit.*, table 9, p. 356; and J. T. Johnson and others, "Impact of the Malaysian Family Planning Programme on births: a comparison of matched acceptor and non-acceptor birth rates", *Population Studies*, vol. 32, No. 2 (July 1978), pp. 215-230.

[33] The extent of programme activities is supported by findings from the *Enquesta Nacional de Prevalencia en el Uso de Metodos Anticonceptivos, Mexico, 1978: informe de resultados* (Mexico, Coordinación del Programa Nacional de Planificación Familiar, 1979); and by *Contraceptive Prevalence Survey, Mexico, Summary Report* (Columbia, Md., Westinghouse Health Systems, 1978).

[34] Geoffrey McNicoll and Masri Singarimbun, *Fertility Decline in Indonesia. Analysis and Interpretation*, National Research Council Committee on Population and Demography Report No. 20 (Washington D.C., National Academy Press, 1983), pp. 4-6.

[35] *Ibid.*, p. 98.

[36] *Ibid.*, pp. 104-106.

[37] L. Zheng and others, *China's Population: Problems and Prospects* (Beijing, New World Press, 1981), p. 67; and P-c. Chen and others, "Family planning incentives", *People*, vol. 9, No. 4 (1982), pp. 12-15.

[38] Kap Suk Koh and others, *Impact of National Family Planning Program on Fertility Levels in Korea* (Seoul, Korean Institute for Family Planning, 1980) (this publication refers to the Republic of Korea); Siew-Ean Khoo and C. B. Park, "The effect of family planning programs on fertility decline in four Asian countries", *International Family Planning Perspectives and Digest*, vol. 4, No. 3 (1978), p. 70; United Nations, *Evaluation of the Impact of Family Planning Programmes. . .*, pp. 172-174; Lee-Jay Cho, Fred Arnold and Tai Hwan Kwan, *The Determinants of Fertility in the Republic of Korea*, National Research Council Committee on Population and Demography Report No. 14 (Washington, D.C., National Academy Press, 1982), pp. 139-141.

[39] Nam Il-Kim, Seung-Huyun Han, Kap Suk Koh and M. S. Suh, with regression analysis by Karen G. Foreit, "Application of methods of measuring the impact of family planning programmes on fertility the case of the Republic of Korea", in *Evaluation of the Impact of Family Planning Programmes. . .*, p. 179, table 297. The variation in impact pertains to varying population subgroups for which the analysis was undertaken, with the largest programme effects in the subgroup with the lowest physician and pharmacist ratio providing non-programme contraception.

[40] Khoo and Park, *loc. cit.*, p. 70, table 4. In age groups 25-44, the programme impact ranges from 54 to 63 per cent.

[41] Mauldin and Berelson, *loc. cit.* See also Robert J. Lapham and W. Parker Mauldin, "National family planning programs: review and evaluation", *Studies in Family Planning*, vol. 3, No. 3 (March 1972), pp. 31-34.

[42] Lapham and Mauldin, *loc. cit.*, pp. 31-38; Mauldin and Berelson, *loc. cit.*, pp. 102-103; United Nations, *Variations in the Incidence of Knowledge and Use of Contraception: A Comparative Analysis of World Fertility Survey Results for Twenty Developing Countries* (ST/ESA/SER.R/40), table 1, p. 15. The supportive measures taken into consideration in this scale are from Lapham and Mauldin, *loc. cit.*: (1) fertility reduction included in official planning policy; (2) favourable public statements by political leaders; (3) contraception readily and easily available, publicly and commercially throughout the country; (4) customs and legal regulations allowing importation of contraceptives not manufactured locally; (5) vigorous effort to provide family planning services; (6) adequate family planning administration structure; (7) training facilities available and utilized; (8) full-time home-visiting field-workers; (9) post-partum information, education and service programme; (10) abortion services openly and legally available to all; (11) voluntary sterilization services (male and female) openly and legally available to all; (12) use of mass media on a substantial basis; (13) Government provides substantial part of family planning budget from its own resources; (14) record-keeping systems for clients at clinic level and for programme service statistics; (15) serious and continuous evaluation effort.

[43] Some multivariate analyses are actually more of an illustrative nature, mainly because of the often limited number of countries included in these regressions and the subsequent wide margin of error possible, and because few suitable family planning programme indicators are available. The "indirect effect" is the effect exercised by an independent variable on the dependent variable through one or more independent variables. The "direct effect" is the effect of an independent variable on the dependent variable with no intermediate factor.

[44] Country differentials in this relationship should be borne in mind, especially where health programmes geared at children are implemented. The associations between crude birth rate and infant mortality remains, however, one of the closest: see, for instance, *World Population Trends and Policies, 1981 Monitoring Report*, vol. I, *Population Trends* (United Nations publication, Sales No. E.82.XIII.2), table 66, p. 170. The model implied in this analysis assumes that infant mortality affects fertility directly as well as indirectly through the medical personnel and the family planning programme variables.

[45] Including information on availability, access and type of contraceptive methods, adequacy of administrative structure, training, personnel etc.

[46] Programme output items, being a function of programme input items, are to some extent closely associated; and the overlapping effect is not readily disentangled.

[47] Srikantan, *The Family Planning Program in the Socioeconomic Context*, p. 89.

[48] Ronald Freedman and Bernard Berelson, "The record of family planning programs", *Studies in Family Planning*, vol. 7, No. 1 (January 1976), p. 106.

[49] Timothy King and others, *Population Policies and Economic Development* (Baltimore, Md., Johns Hopkins University Press for World Bank, 1974).

[50] The relationship between contraceptive use and fertility decline has received little attention; thus far, there is no evidence to assume this relation to be linear.

[51] This model includes an independent variable of the level of fertility at an earlier time: see G. W. Borhnstedt, "Observations on the measurement of change", in *Sociological Methodology*, 1969, Edgar F. Borgatta, ed. (San Francisco, Ca. Jossey-Bass, 1969), pp. 113-136.

[52] Phillips Cutright and William R. Kelly, "The role of family planning programs in fertility declines in less developed countries, 1958-1977", *International Family Planning Perspectives*, vol. 7, No. 4 (1981), pp. 145-151.

[53] *Ibid.*, p. 149.

[54] *World Population Trends, Population and Development Interrelations and Population Policies: 1983 Monitoring Report* vol. I, *Population Trends* (United Nations publication, Sales No. E.84.XIII.10), table 12.

[55] See *World Population Trends and Policies: 1979 Monitoring Report*, vol. II, *Population Policies* (United Nations publication, Sales

No. E.79.XIII.5); *World Population Trends and Policies; 1981 Monitoring Report,* vol. II, *Population Policies* (United Nations publication, Sales No. E.82.XIII.3); and section A of the present chapter.

[56] Valentina Bodrova, "The family as an object of demographic policy in the Socialist countries of Europe", in *Recent Population Change Calling for Policy Action: With Special Reference to Fertility and Migration,* George S. Siampos, ed. (Athens, National Statistical Service, 1980), pp. 287-301; Henry P. David and Robert J. McIntyre, *Reproductive Behaviour: Central and Eastern European Experience* (New York, Springer Publishing, 1981).

[57] See, for instance, *Actes du colloque national sur la démographie française, Paris, 1980,* Travaux et documents, cahier No. 92 (Paris, Institut National d'études demographiques, 1981), pp. 202-207.

[58] See *1979 Monitoring Report,* vol. II; *1981 Monitoring Report,* vol. II; and section A of the present chapter.

[59] *Ibid.*; and Maurice Kirk, "Population policies in non-socialist societies", in *International Population Conference, Manila 1981; Solicited Papers* (Liège, International Union for the Scientific Study of Population, 1981), vol. I, pp. 373-385.

[60] See, for instance, C. B. Lloyd, "Some aspects of developed countries that encourage fertility" (ESA/P/AC.1/4), paper presented at the International Workshop on Population Action Programmes, Manila, 1972; Patrick Festy, "Mesure de l'efficacité des politiques à but nataliste dans les pays industrialisés", in *International Population Conference, Manila, 1981: Solicited Papers,* vol. I, pp. 387-409; T. Frejka, "Europe; making children a more attractive proposition", *People,* vol. 9, No. 4 (1982), p. 11; Michael S. Teitelbaum, "Fertility effects of legal abortion in Romania", *Population Studies,* vol. 26, No. 3 (November 1972) pp. 405-415.

[61] Lloyd, *op. cit.*

[62] Vladimir Wynnyczuk, "A general review of national policies intended to affect fertility: socialist countries", in *International Population Conference, Manila, 1981: Solicited Papers,* vol. 1, pp. 357-371; Christopher Tietze, *Induced Abortion: A World Review, 1981,* 4th ed. (New York, The Population Council, 1981).

[63] Tietze, *op. cit.*, pp. 12-13.

[64] Jan Stepan and Edmund H. Kellogg, *The World's Laws on Contraceptives,* Law and Population Monograph Series, No. 17 (Medford, Mass., Tufts University, Fletcher School of Law and Diplomacy, 1974), p. 46; and table 101 in the present chapter.

[65] The number of abortions per 1,000 live births in 1965 is reported to have been 1,328 in Hungary and 4,084 in Romania; see also Tietze, *op. cit.*, table 2; and Teitelbaum, *loc. cit.*, pp. 414-415.

[66] A recent survey reported that 70 per cent of all currently married women are contraceptive users and that women declare only about 50-60 per cent of abortions undergone, even though these abortions are legal. See Hungarian Statistical Office, *Main Results of the 1977 Hungarian Fertility, Family Planning and Birth Control Study,* TCS-77 (Budapest, n.d.), pp. 29-31.

[67] A. Klinger and I. Monigl, "Nepesedes es nepesedespolitika Magyarorszagon az 1970-es az 1980-es eotizedken" (Demographic situation and population policy in Hungary in the 1970s and 1980s), *Demografia,* vol. 24, No. 4 (1981), p. 433 (English summary).

[68] *World Population Trends and Policies: 1981 Monitoring Report,* vol. I, *Population Trends* (United Nations publication, Sales No. E.82.XIII.2), p. 39, table 5.

[69] Abortion, on the other hand, does not appear to have been a factor in the increase in the birth rate during the mid-1970s (see table 111).

[70] Vladimir Srb, "The 1972 population development in Czechoslovakia", *Demosta,* vol. 6, No. 2 (1973), pp. 35-40; Vladimir Srb and Alena Konëcna, "Effectiveness of pro-natalist policy", *Demosta,* vol. 9, No. 1 (1976), pp. 10-17.

[71] United Nations, *1983 Monitoring Report,* vol. I, table 13.

[72] *Ibid.*; B. Berelson, "Romania's 1966 anti-abortion decree: the demographic experience of the first decade", *Population Studies,* vol. 33, No. 2 (July 1979), pp. 209-219; and Vasile Ghetau, "Evolution de la fécondité en Roumanie: une approche longitudinale", *Population* (Paris), vol. 38, No. 2 (March-April 1983), pp. 247-264.

XXII. POPULATION DISTRIBUTION POLICIES*

Countries have been concerned with spatial distribution in relation to socio-economic development for many years, but systematic policies to influence distribution in relation to broader development goals have emerged only in the most recent decades. Moreover, this concern has varied in intensity over time, with spatial distribution policies typically being given less emphasis in periods of world or national recession. In the developed countries, spatial distribution policies have not been pursued vigorously in recent years, reflecting a preoccupation with national macro-economic and sectoral issues, such as inflation, slow economic growth and energy problems. In the developing countries, on the other hand, concern with spatial distribution policies has intensified in recent years. The reasons for this concern are obvious. Aggregate rates of population growth remain high, in spite of some successful attempts to reduce them. These high rates generate rural population surpluses that cannot be absorbed in rural areas, at least under current conditions of agricultural technology and social organization. As a result, migration rates have also been high. Although a large proportion of the migration is rural-rural (from areas of low to high agricultural fertility), the absolute numbers moving to the cities make a huge difference in urban growth rates, particularly in regions such as sub-Saharan Africa and South-eastern Asia, where the level of urbanization is still very low.

This chapter represents a first attempt by the Population Division to monitor population distribution and internal migration policies in a large number of countries. A chapter on population distribution policies was included in the *1979 Monitoring Report*,[1] although it primarily examined the policies of countries that had submitted detailed replies to the Fourth United Nations Population Inquiry. The *1981 Monitoring Report*[2] did not include a chapter on these policies, mainly for the reason that their impact can only be measured over a fairly long time period (typically 10 years or longer).

Although there is an attempt in this chapter to provide a fairly comprehensive overview of countries that have adopted population distribution and internal migration policies, a number of countries (particularly some of the smallest African countries) are not included, due to the absence of recent information on policy developments. Since it was not possible to go into great detail for the large number of countries covered in the regional overview, particularly on the topic of policy instruments, details are provided in tables 112 and 113 at the end of this chapter. Table 114, also at the end of this chapter, provides further summary information on Governments' perceptions and policies.

* Prepared by the Population Division of the Department of International Economic and Social Affairs of the United Nations Secretariat.

A. Regional review of population distribution policies

This section reviews the population distribution policies of Governments according to the areas of responsibility of the regional commissions and their geographical regions.

Economic Commission for Europe

In the area of responsibility of the Economic Commission for Europe (ECE), Bulgaria has maintained a consistent policy for the past several decades, as a means of avoiding overconcentration in the metropolitan centre (Sofia) and stimulating the growth of lagging regions. In successive plenum regulations, the Government has stressed its commitment to channeling migrants in planned directions (mainly to locations along the Black Sea) and to dispersing industrial activity to small towns surrounding existing urban centres.[3] In its 1983 reply to the Fifth Inquiry, the Government reported that it was making a continuous effort to narrow disparities in socio-economic levels and in levels of employment among the country's various territorial units.

Czechoslovakia has experienced a number of spatial problems in recent years, including disparities in levels of development between the Slovak and Czech republics, a dispersed pattern of settlement dominated by towns with fewer than 10,000 inhabitants and a high rate of growth and service deficits in the three largest metropolitan centres (Prague, Bratislava and Kosice). The Government reported in the Fifth Inquiry that it had periodically intervened to modify patterns of spatial distribution, by means of "timely state policy and remedial measures" — in an effort to avoid labour shortages in both the agricultural and industrial sectors.

Hungary stands out as one of the European countries with the highest degree of primacy. Indeed, the metropolitan centre (Budapest) dominates the country's urban system to the extent that the combined population size of the next five cities is about a third of that of Budapest. Furthermore, the relative absence of small towns and intermediate cities in the Hungarian Plain and the north-eastern region has resulted in problems of services delivery. As a means of achieving a more balanced urban hierarchy, the Government at first restricted in-migration to Budapest, causing a significant rise in the number of commuters. Since 1968, the Government has encouraged the growth of the six

largest provincial centres and 25 smaller urban centres by means of state subsidies and various controls (including housing allocation restrictions, curbs on new industrial activity in the Budapest area and the actual removal of some industrial plants from Budapest). The evidence suggests that the Government's policies have achieved some degree of success. Industrial employment at Budapest, for example, declined by 120,000 between 1965 and 1975 but increased rapidly in South Transdanubia and the Hungarian Plain.[4] Moreover, the highest rates of growth were registered in the medium-sized urban centres.

Although Poland has a more balanced national urban hierarchy than most of the other countries in the subregion, the country continues to experience a number of spatial problems, such as regional disparities in the labour supply between north and south and in income levels between east and west, the concentration of population in the largest metropolitan centres (Warsaw and Katowice) and the absence of intermediate urban centres in certain regions. The Government reported in the Fifth Inquiry that its spatial distribution strategy was directed towards deconcentrating the population of the most densely populated industrial areas and reducing out-migration from rural areas. With respect to measures, the Government emphasized the role of housing and employment policies, provision of infrastructure in rural areas and decentralization of decision-making powers from the highest level to local bodies of state administration.

In the United Kingdom of Great Britain and Northern Ireland, there have been continuing regional disparities, reflecting the disproportionate concentration of depressed industries in the older industrial regions of northern England, Wales and Scotland. The Government has the longest involvement in regional planning of any of the European countries and has sought to address regional imbalances since the early 1930s, mainly by "taking work to the workers" (that is, by encouraging the movement of industry to regions in decline).[5] By the mid-1960s, the Government had identified five extensive development areas that covered most of Scotland, Wales and northern England, which were eligible for a variety of incentives (e.g., plant and machinery grants, tax allowances and investment grants; removal grants, including help to transferred workers; labour subsidies). Subsequently, development areas that were considered likely to face significant unemployment as a result of technological change were designated "special development areas," whereas additional industrial areas with structural weaknesses were identified as "intermediate areas" and were also eligible for assistance. Although the Government had no formal growth-centre policy and extended its incentives throughout the assisted areas, a number of new towns were developed after 1946 — mainly, however, to accommodate growth rather than to change regional and interregional migration patterns.[6] Since 1979, the Government has greatly reduced its subsidies to the lagging regions, partially out of concern that the largest subsidies went to capital-intensive industries (e.g., chemicals, oil-refineries and steelworks) that created few jobs and that multinational firms sometimes had been subsidized to locate in areas where they probably would have located in any case.[7]

Although Ireland has experienced many of the regional imbalances common to other European countries (e.g., concentration of industry and employment in the capital and out-migration from lagging agricultural areas), the main challenge facing the Government has been to raise significantly the level of the economy as a whole.[8]

The current spatial strategy in Ireland is directed to limiting further in-migration to the capital (Dublin) by means of stimulating more balanced development throughout the country, a strategy that involves the promotion of eight intermediate cities, the expansion of a number of large towns in other regions (including the considerable expansion of settlements that are remote from existing towns) and the development of a number of lagging areas in the west. The Government's incentive system, which includes investment grants for new and small-scale industry, re-equipment grants, interest rebates, tax concessions and training grants, covers the entire country, because the regional policy is conceived as having a national scope, rather than being targeted to certain backward regions.[9]

Sweden has had a comprehensive spatial policy since 1964, when it was designed to curtail the growth of the three major metropolitan centres (Stockholm, Göteborg and Malmö) and to reduce out-migration from areas in the north. The Government introduced various subsidies to encourage industrial location in the north and identified a desired national settlement pattern, establishing quantitative targets for the three major metropolitan centres; the 24 additional "primary centres", to which some government offices and the head offices of manufacturing firms were to be relocated; and the 76 "regional centres" (which were eligible for subsidies to private investment) and 114 municipal centres (which would perform only modest service functions).[10]

Although Stockholm and Göteborg have experienced zero growth in recent years and some of the small urban centres in southern Sweden have been growing rapidly, this growth appears to have taken place more as a result of changes in the economy and various cultural factors (e.g., the preference of families for single-family units, which has necessitated moves to places outside the major urban centres), than of explicit population distribution policies.[11]

In Norway, regional disparities have not been so marked as in many of the European countries, although there are some minor problems (e.g., the decline of remote rural areas), which have resulted from structural changes in the economy. The Government has formulated a regional policy to bring about more balanced development between and within regions, which has been implemented by means of general measures (such as central budget allocations, transport policies and infrastructural investment), as well as specific action programmes (e.g., the Development Programme for North-Norway). The main instruments that have been

employed are the loans, guarantees and grants (provided by the Regional Development Fund) that are offered to private industry to locate in development areas.[12]

Finland, on the other hand, has greater regional inequalities, including large disparities in regional income levels, sparsely populated northern and eastern regions that have experienced high levels of unemployment (in spite of population losses due to internal and international migration), a clustering of jobs in the southern and south-western regions, and congestion in the Helsinki area. The Government's regional development policy, which divided the country into two large zones that were to receive differentiated assistance, began to be implemented in the mid-1960s. In 1975, the Government designated a number of special support areas, such as the south-western archipelago, which would receive priority assistance. With respect to instruments, the Government has employed interest subsidies, start-up subsidies, tax relief, transport subsidies and industrial estates, as well as training programmes and labour subsidies (to compensate firms for employing inexperienced labour).[13]

Denmark has experienced relatively high levels of unemployment in rural areas, which has induced migration to the Copenhagen region. Since the late 1950s, the Government has had elements of a regional policy, which have mainly been focused on designated problem areas. It was not until 1974 that legislation was passed to provide comprehensive physical planning at the national and regional levels. In recent years, the major instruments that have been employed have been direct state loans and investment grants to private enterprise, mobility grants (to cover the costs of moving a firm to a development area) and infrastructural grants and loans.[14]

Italy has a long history of involvement in regional planning — perhaps exceeded only by the British regional planning experience. The Government's efforts to narrow the socio-economic gap between the Mezzogiorno in southern Italy and the more prosperous central and northern regions intensified with the adoption of new legislation after 1970, which stipulated that investment in the Mezzogiorno should take place within the framework of national economic goals. Specifically, legislation mandated that private firms proposing to construct or expand industrial plants (where the investment exceeded 7 billion lire) should submit their proposals to the Government for approval. Moreover, State-controlled firms were required to devote at least 80 per cent of new investment and 60 per cent of overall investment to the Mezzogiorno. As a further measure, the Government restructured its programme of grants, giving greater priority to small and medium-sized firms. These firms could receive substantial subsidies (in the form of loans and grants) if the proposed industry was in a priority sector, or if the firm agreed to locate in an area that had suffered severe population losses.[15] In spite of such efforts, regional disparities in Italy appear to be widening and the Mezzogiorno remains a generally backward region.

The regional policies of Spain, which have been embodied in successive development plans, at first focused on a growth-centre approach, with identification of three types of centres to be developed: industrial development poles (to serve as nuclei of development in partially industrialized areas); industrial promotion poles (to stimulate industrial development in non-industrialized urban areas); and industrial relief areas (designed to relieve the pressure on Madrid). By the early 1970s, the Government had extended the strategy to the entire country and had begun to emphasize the development of large industrial areas rather than specific poles. There was a related change in emphasis in the instruments employed, as industrial location measures and related instruments (such as credit and tax relief and infrastructure investments) began to be considered means to attain broader national goals.[16]

Greece has experienced considerable urban growth over the past several decades and the Attica basin now contains some 40 per cent of the country's total population. A certain amount of spontaneous migration has recently taken place from urban to formerly declining rural areas, mainly as a result of improvements in infrastructure. However, as a result of increasing urban disamenities (e.g., pollution and congestion) the Government is concerned with accelerating the process of decentralization from the Athens area; towards this end, the Parliament ruled in 1981 that no more industry should be authorized in the Attica basin.

In Yugoslavia, there are significant differences in levels of development among the various republics and autonomous provinces, with Bosnia-Herzegovina, Macedonia, Montenegro and Kosova remaining among the less developed regions. Since the inception of the country's five-year planning, the Government has pursued a strategy of promoting a heavy industrial core in each of the less developed regions of the country — a strategy that has been rather costly. In spite of Government efforts to reduce interregional disparities, there has been a continuing process of concentration in the cities and larger towns of the country's economically advanced provinces and republics, as well as widening gaps in income per capita — which ranges from more than $4,000 in Slovenia to only $604 in Kosovo.[17] As one Yugoslav expert has noted, in spite of long-standing subsidies to the lagging regions from the more developed republics of Slovenia and Croatia and the Province of Vojvodina, regional disparities have not decreased at the desired tempo and intensity, and in certain instances have become even greater.[18]

Over the years, the regional situation in France has been characterized by declining employment in the agricultural and extractive sectors and a high degree of concentration in the Paris region. Although there has been considerable growth in many of the country's lagging regions and a number of intermediate cities have grown at higher rates than the Paris region, there is a continuing commitment to a decentralization strategy.

Regional policies have been incorporated into the French five-year plans for many years. In 1963, the

Government created a regional planning agency, Délégation à l'aménagement du territoire et à l'action régionale (DATAR), as a means of establishing a better balance between Paris and the provinces (mainly by decentralizing economic activity away from the Paris region); developing the west; improving the situation of border areas in the north and south (and, more recently, in the south-west); and modernizing agricultural activities in hard-hit rural areas (particularly the west, south-west and Massif Central, which have experienced the heaviest population losses).

The Government has utilized a broad array of incentives — and some disincentives — to attain these goals. Among the positive incentives that have been employed are decentralization allowances, regional development grants (with the rate of grant varying by region), loans, tax exemptions and depreciation allowances. As for disincentives, firms are not prohibited from locating in the Paris region but must pay a tax or agree to undertake part of their investment in the provinces. In addition to these industrial location measures, the Government has designated a number of alternative urban centres to serve as counter-magnets to the Paris region and has encouraged the development of regional centres and intermediate cities.

In France, regional plans have had nation-wide coverage since 1954, when the country was divided into 22 programme regions. Since the change of Government in 1981, there have been a number of shifts in the direction of greater decentralization of the planning process. The regional development grants now deal only with firms that have more than 30 employees, for example, with responsibility for the location of small firms falling entirely to the regions.[19]

Although Belgium is a small country, with highly developed communications and short distances between population centres, there are considerable regional disparities, which have been complicated by ethnic divisions and exacerbated by the poor performance of the Belgian economy in recent years. The Government has had a regional policy since 1959. Since 1974, however, it has been moving towards a comprehensive regionalization scheme in which regional economic policy has been increasingly integrated into a policy based on the Flemish, Walloon and Brussels regions.[20]

In Austria, regional imbalances have resulted both from geographical factors and from structural changes in the economy. The country's Alpine region, a number of agricultural and mining districts, areas depending upon old-established declining industries and areas along the eastern border, have continually lagged behind the major urban centres.[21] The Lander — the local authorities in the Austrian federal system — introduced some regional planning programmes during the 1940s and 1950s, and the federal Government became involved in regional issues a decade later. Whereas the Government at first formulated policies to address rather narrow regional issues, a broader framework was adopted beginning in the 1970s. With respect to instruments, the federal Government has tended to utilize existing instruments that were first adopted for other purposes (such as the general industrial development fund) and to adjust these instruments to achieve regional objectives.[22]

In Switzerland, the marked differences in levels of development among the various cantons are largely related to the country's geography. The less developed cantons, some of which have experienced significant population losses, are primarily located in the mountainous areas. Whereas regional policies at first focused on agricultural assistance as a means of stimulating the mountain regions, the Government's policy is now directed to developing a number of regional centres, mainly through the provision of infrastructure and public services that are jointly financed by the confederation and local authorities.[23]

In the Union of Soviet Socialist Republics, migration of the population in recent years has been mainly associated with vocational advancement, training and the desire of citizens to change their place of residence. The Government reported in the Fifth Inquiry that resettlement had taken place on the basis of the personal wishes of its citizens, although it acknowledged that the State had exerted considerable influence on migration by encouraging the movement of population in directions needed to meet the requirements of the economy. The Government further noted that state bodies recruited workers and specialists in an organized manner for existing enterprises and those under construction — particularly in regions with labour shortages. Organized resettlement has taken place on a contractual basis, with the population participating voluntarily. The cost of the organized movement of the population is assumed by the State, which not only pays workers' installation costs but assists them in finding employment in their fields of specialization. For workers in remote or newly developed regions, the Government has established a system of benefits, including higher pay, extended leave, free travel to the place of leave and early retirement.

With respect to the overall population distribution strategy in the USSR, the Government noted in the Fifth Inquiry that it had a consistent policy directed towards limiting the growth of large towns and developing small and intermediate-sized towns, where specialized and high-output production units are established. The Government reported that the implementation of such measures had been gradually eliminating the country's rural-urban gap. However, as a further means of improving the social conditions of the rural population and reducing migration to urban areas, the Government has been emphasizing the construction of housing, schools and various recreational facilities, the expansion of medical and social services and the development of transport and road communications, as a means of bringing the villages closer to the towns.

Israel has had a policy to promote population dispersion for many years — motivated less by the goal of maximizing the rate of overall economic growth than by the goal of national security. The Government's overall spatial strategy has been directed to settling sparsely populated regions and thereby alleviating regional ineq-

uities, preventing further concentration of population in the central coastal plain, promoting a more balanced urban hierarchy by establishing a greater number of small towns and intermediate cities; opening new "resource" frontiers, particularly in the southern desert areas; and occupying sensitive border regions for purposes of defence.[24]

The establishment of new towns and the promotion of "development" towns adjacent to existing nuclei have been important elements of this spatial strategy. The new-town programme has been beset by a number of problems over the years, including the inability of towns under a certain critical size to provide a requisite level of services and their lack of integration with their surrounding regions. Whereas the new towns were conceived as regional or subregional centres for surrounding agricultural areas, the rural settlements (such as the kibbutzim) generally had pre-existing and efficient marketing links with the major cities, and the new towns tended to remain outside this system.[25]

With respect to measures, the Government attempted to attract migrants to certain towns by means of various subsidized incentives, for example, rents, provision of social services and stimulation of employment through industrial infrastructure subsidies, direct state investment and concessions to the private sector. The Government also employed a number of disincentives, such as a ban on the construction of new housing for immigrants in the metropolitan area and legislation preventing the conversion of agricultural land in the metropolitan area to urban uses, in order to control the future growth of Tel Aviv.[26]

In its reply to the Fifth Inquiry, Cyprus reported that the country's most serious population distribution issue was the restriction of movement to the northern part of the country and the resultant imbalance between the distribution of population and natural resources. In regard to the distribution of population within the southern part of the country, the Government noted that although Cyprus did not suffer from a serious urbanization problem, the shift of population out of rural into urban areas, the related decline of certain rural areas and new and growing regional imbalances (which were related to the location of tourist resources in certain coastal areas), were areas of concern. The Government reported that its major strategy was to promote rural development (through the provision of social services, irrigation projects, price subsidies for certain crops and feeder roads, and the creation of industrial zones in rural areas) as a means of raising rural incomes and thereby retaining population in rural areas. The Government acknowledged, however, that further research was required before more concrete policies could be adopted.

Turkey reported in its reply to the Fifth Inquiry that the Government was attempting to decrease migration to the metropolitan centre (Istanbul), stimulate the growth of secondary cities and reduce out-migration from rural areas by means of a variety of disincentives (for example, preventing unauthorized construction in the metropolitan centre) as well as incentives — including stepped-up allocation of social services to secondary cities, greater investment in infrastructure (for example, electricity, water-supply and roads) in rural areas and secondary urban centres, and promotion of industrial decentralization.

In Canada, population distribution was traditionally imbalanced, with a majority of the population residing in the central provinces of Ontario and Quebec; and there were significant regional differentials in income per capita, particularly between the Atlantic region and the central provinces. In recent years, interprovincial income gaps have narrowed and the population has shifted westward. Whereas the total population of Canada increased by 12.9 per cent (to 24.3 million) between 1971 and 1981, the population of Alberta (where most of the oil and gas are found) and of British Columbia grew by 37.5 and 25.6 per cent, respectively. These were the only provinces of Canada to experience growth rates above the national average.

Canadian regional policies have evolved considerably since the 1960s. Following a review of federal regional policy in 1972-1973, the Government shifted from single-factor programmes to a multidimensional approach, involving co-ordination among local, provincial and federal agencies and co-operation from the private sector. The activities of the Department of Regional Industrial Expansion were decentralized to various regional and provincial offices; and development was planned within the framework of General Development Agreements, which sought to co-ordinate and develop joint federal and provincial programmes.

As the Government of Canada reported in its reply to the Fifth Inquiry, the Regional Development Incentives Programme and other industrial development programmes, tax concessions for expenditures related to employment moves, and the Government's Manpower Mobility Programme and the National Job Bank have continued to stimulate interregional migration for employment. The Government also noted that during the 1970s, there had been a tremendous expansion in federal programmes that provided transfer payments to individuals and business firms, and high-unemployment regions had received disproportionately more for those programmes.

The United States of America has experienced significant population shifts in recent decades and now faces the problems of the growing dichotomy between the older — and in some cases depressed — industrial regions and cities in the north-east and midwest and the more dynamic areas of the "sunbelt", mainly in the west and south-west and areas of the south. This process has occurred in response to the disproportionate concentration of "sunset" industries (e.g., such old-line industries as motor cars, steel, rubber and shipbuilding) in the traditional industrial heartland and the expansion of "sunrise" industries (e.g., defence and high-technology industries), as well as the relocation of many of the dynamic "footloose" industries, in the "sunbelt". As a result of these shifts in the location of industry, the gap in income levels per capita between the north-east and midwest, where income per capita was traditionally higher, and the "sunbelt" has narrowed considerably,

leading some economists to predict an eventual cross-over, whereby income levels in the older, traditionally higher income areas will fall below those of the south and south-west.

Although the United States Government has expressed the goal of attaining more "balanced" development, it has adopted few explicit policies and no direct measures to curb the growth of large cities. Rather, it has implemented regional development programmes designed to improve economic opportunities in the hinterlands, thus indirectly reducing migration to the larger cities. The Government's few explicit regional development programmes, such as the federal programme for the Appalachian region (1965), bear little responsibility for the recent population shifts, although certain broader federal programmes, such as the completion of the interstate highway system, may have facilitated the general decentralization of population and economic activity.

Economic and Social Commission for Asia and the Pacific

In terms of levels of urbanization, Asia is the most heterogeneous region, combining a low overall level of urbanization with the largest absolute urban population in the world (due to the dominant share of China, India and Indonesia). Again, there are significant differences in the level and pace of urbanization among the various regions and subregions in the area of responsibility of the Economic and Social Commission for Asia and the Pacific (ESCAP), with East Asia following the most divergent path, mainly as a result of its rapid economic growth and declining aggregate rates of population growth.

According to the replies of Asian countries to the Fifth United Nations Population Inquiry, Governments are about evenly divided, with about half desiring minor and half desiring major changes in their patterns of spatial distribution. Many countries in the region — both centrally planned and market economies — desire to control primate-city growth, whereas most Asian Governments (both in countries with large primate cities and related problems of urban management and in countries that are predominantly rural) have given major priority to the promotion of small towns and intermediate cities. Rural development programmes have been undertaken in nearly every country, and several countries have implemented relatively successful land resettlement projects. The large-scale urban construction projects and new-town development being undertaken in many of the Arab countries of Western Asia is not really comparable to strategies adopted in Asian countries in the ESCAP area since the former projects have taken place within a context of few capital constraints.

China is almost unique among developing countries in that it came into the modern age with a highly developed hierarchy of settlements, extending down to or even below the *xian,* or country, level. Population distribution policies were adopted in China at a relatively early date. The First Five-Year Plan (1953-1957) emphasized the establishment of new cities in the north and west and in other regions of the hinterland and placed restrictions on the cities of Manchuria and the Maritime Frontier (which had been associated with bourgeois corruption). By the late 1950s, largely as a result of the high costs involved in developing new cities, the Government had adopted a more balanced policy, resuming investments in the seaboard cities and emphasizing the development of small and medium-sized cities, a policy that has persisted to the present day. Beginning in the late 1950s, the Government also organized a series of long-range interregional migrations, such as the "Youth Volunteer Land Reclamation Corps" and campaigns known as "Face the Frontier Areas" and "Go to Mountain and Rural Areas". In addition to these schemes, which involved the transfer of some 40 million educated youth to the countryside during the period 1955-1965, the Government employed a wide array of measures — from the creation of jobs in the country's 53,000 communes to the issuance of ration cards — to retain population in rural areas. With respect to measures, China has had strict controls on individual mobility for 25 years — monitored by means of check-points, residence passes and ration cards. Although its "closed-door" policy, which is administered by rural communes and neighbourhood and street committees in urban areas, remains in force, its "downward transfer" policy, which first involved urban service workers and later involved "rusticated youth", was terminated in the late 1970s.

The Government's present policy, which is linked to its emphasis on light industry and production of consumer goods, is to continue to develop small cities and towns with an upper limit of 200,000 inhabitants. At a national planning conference held at Beijing in 1980, the participants emphasized the need to develop three types of small urban centres: existing towns with populations of over 10,000; cities and towns in areas endowed with natural resources; and satellite towns around the major cities.[27]

There is relatively little information on population distribution policies adopted in the Democratic People's Republic of Korea in recent years, although it is known that agriculture has received priority attention. Pyongyang, the capital, is a model city of about 1 million inhabitants whose growth has been controlled by means of restrictions on mobility. Mongolia, on the other hand, has urbanized rapidly in recent decades and is now more than 50 per cent urban. In addition to rural restructuring, involving the consolidation of agricultural co-operatives into large state farms, the Government's spatial strategy involves strengthening second-order industrial complexes (for example, Darkhan, Erdenet and Choybalsan) and developing smaller towns at the district level.

The Republic of Korea, which was 54.8 per cent urban in 1980, has had an active policy since the 1960s to control the growth of Seoul and to decentralize industry away from the metropolitan region (partially for national security reasons). Towards this end, the

Busan region has been promoted as a counter-magnet to the Seoul region.[28] More recently, the Government has begun developing Gwangju, located in a depressed region, in order to develop a "balanced triangular pole system" based on Seoul, Busan and Gwangju. The Government has also implemented strong industrial promotion and location policies, constructed satellite towns to draw industries and inhabitants from the metropolitan core and identified selected cities that will accommodate government offices and public corporations, which will be shifted from the capital.

The Government's major policy instrument has been industrial estates, which occupied more than 20 per cent of all industrial sites in the country and involved more than 220,000 jobs as of 1975. In addition, as the Government reported in the Fifth Inquiry, it has employed a number of disincentives to restrict migration to Seoul and to encourage reverse migration from the metropolitan centre. These have included restrictions on new construction and on the expansion of existing firms at Seoul, reduction in the size of Seoul's industrial zone, limits on student transfers and the imposition of higher residence taxes at Seoul than in the other major cities.

In South-eastern Asia, Indonesia, Malaysia, the Philippines and Thailand all have adopted spatial strategies designed to control primate-city growth, reduce regional disparities and develop their resource frontier regions, although each has a unique approach.

The world's largest island country (consisting of some 3,000 islands), Indonesia has a low level of urbanization (20.2 per cent), a very unevenly distributed population and a wide gap in levels of development between Java and the other islands. The Government's earliest population distribution policies — the policy of containing the growth of the Jakarta Metropolitan Area, which is no longer in force, and the transmigration programme, which has been continued and expanded — are related to its overall spatial strategy, which is to reduce the country's regional disparities. To date, the Government has identified a number of "backward", "critical" and/or "border areas"; and has divided the country into 10 planning regions and four development regions — with the aim of decentralizing manufacturing activities out of Jakarta. The Government will also develop growth centres in each of the four subregions, on the basis of various resource exploitation projects.

Malaysia is another country in the subregion that is seriously affected by regional disparities, which are complicated by ethnic issues — mainly, the imbalanced economic shares of the Malay and non-Malay population. In fact, it could be argued that enforcement of ethnic identity is one of the most important national goals in Malaysia, and one to which spatial goals are subordinate. Although Malaysia, which is 29.4 per cent urban, has not experienced the same degree of urban concentration as the other countries in the region (as a result of its historical urban process and the effects of long-standing rural development programmes), policy-makers are still concerned with decentralization issues, such as controlling the growth of Kuala Lumpur (which is not a large city by international standards) and relocating industry outside the Klang Valley.

Although the Philippines has a moderate level of urbanization, 36.2 per cent, the Government is greatly concerned by the dominance of the core region (Metropolitan Manila). The Government intends to further develop the two areas (Cebu-Mandaue-Lapu Lapu and Davao-Tagum) that are capable of serving as counter-magnets to Metropolitan Manila. In addition, planners have identified a system of intermediate and smaller growth centres (in the 1978-2000 prospective plan) in the various planning regions, which will be developed as self-sufficient entities capable of attracting new industry away from Metropolitan Manila.

Thailand has a low average level of urbanization, 14.4 per cent, but a highly skewed urban hierarchy; the primate city, Bangkok, is 46 times larger than the second largest urban centre, Chiengmai. Although the Government has been concerned for a number of years with counteracting the strong attraction of metropolitan Bangkok, this has been difficult to achieve, given the effects of various implicit spatial policies and the only modest encouragement that industrial growth has received to date in other regions. Moreover, the Government's efforts to promote alternate growth centres (such as at Khon Khaen during the 1960s) were largely unsuccessful, because the dominance of Bangkok was simply too great. The Government of Thailand is currently attempting — through its decentralized urbanization strategy, which is a continuation of earlier policies emphasizing regional growth poles — to upgrade selected urban centres into medium-sized "regional urban growth centres", which would eventually have populations of between 100,000 and 300,000.

The remaining countries of South-eastern Asia are rather special cases. As a city-State of less than 600 square kilometres in area, Singapore has spatial problems that are basically a question of metropolitan planning; the Government's current spatial distribution policy has involved the construction of new towns ringing the central core.

In recent years, the Government of Burma, which is 27.2 per cent urban, has resettled slum-dwellers in planned satellite towns outside the metropolitan centre. In addition, it has allocated resources for the expansion of settlements and for the resettlement of the rural population.

The centrally planned economies in the region — Democratic Kampuchea and Viet Nam — have been concerned with controlling primate-city growth. Democratic Kampuchea, of course, presents an extreme example of an attempt to reverse urbanization by forced expulsion. In Viet Nam, the spatial strategy — which is seen as a means of achieving a better balance between population and resources — is directed towards controlling and eventually reducing urbanization; and it emphasizes agriculture over industry (a reverse of pre-war government policy). Specifically, it involves channelling some 10 million migrants from north to south over the next two decades, with the Mekong delta, the plateau

areas and the eastern rubber-growing zones being the major destination. The Government's strategy also encourages continuing out-migration from cities in the south (such as Ho Chi Minh City) to the New Economic Zones[29] and discourages migrants from the north from settling in Ho Chi Minh City (as both government officials and spontaneous migrants have done in the past). Lastly, some resettlement is planned within the mountainous areas (from upland to valley areas), in response to environmental concerns.

With respect to the measures employed in an attempt to control primate-city growth, many Governments in Asia at one time adopted restrictive policies and/or disincentives, although these efforts were generally unsuccessful. Indonesia, for example, adopted a "closed-city policy" for Jakarta in 1970; the Government of the Philippines removed slums in Manila and required residence permits to obtain free schooling; likewise, street vendors were periodically removed at both Bangkok and Jakarta.

In recent years, the Governments of all of the above-mentioned countries have placed more of an emphasis on such strategies as developing rural towns — in conjunction with rural and regional development programmes. Indonesia, for example, has promoted the concept of "village working units" — groups of villages that share common processing and marketing facilities. In Malaysia, one of the facets of the New Economic Policy (1971) has been the establishment of a series of new rural cities; the Panang Tenggara project, for example, involves the projected settlement of 500,000 persons by 1990, with many of the migrants to be settled in some 29 towns. Both the Philippines and Thailand have also promoted growth-centre strategies for rural areas, involving direct investments in infrastructure, co-operatives, credit facilities, agricultural extension and government land development.

Several of the countries have also emphasized colonization programmes, mainly to develop selected regions. The Indonesian transmigration programme (1966) has been one of the most successful colonization experiments in Asia. First conceived as a programme to resettle the surplus population of Java in Sumatra and thus basically as a type of social programme for the poor, transmigration is now regarded as an instrument of regional development as well. Over the years, the programme has also moved from providing assistance to individuals to placing greater emphasis on the provision of infrastructure and the development of co-operatives and marketing systems. In its reply to the Fifth Inquiry, the Government noted that the Third Five-Year Plan identified a target of resettling 2.5 million persons (500,000 families) in the outer islands during the plan period, a programme that would involve incentives for industries locating in the outer islands and vocational training for prospective migrants.

In Malaysia, the politically motivated Federal Land Development Authority (FELDA) programme has likewise been relatively successful[30] — settling some 50,000 families by 1979. Initially established to assist the landless poor, FELDA was primarily designed to meet the demands of the neglected Malay ethnic group (who constitute a majority of the rural population) for land and better incomes.

India and Pakistan are among the least primate of the developing countries,[31] although both are expected to experience strong rural-urban migration over the next two decades. Hence, planners in India and, more recently, Pakistan have assigned high priority to shaping their urban systems before higher levels of urbanization have been reached.

As a result of its complex geography, imbalanced spatial patterns inherited from the colonial past and the effects of post-1957 locational policies, India has a low overall level of urbanization (22.2 per cent), a highly imbalanced national urban structure and wide regional disparities. Its spatial policies have evolved considerably over the past two decades and have involved industrial licenses to affect industrial location (since the 1950s); direct investment in Government-owned enterprises (directed to restricting the growth of the larger cities, since preferences were given to low-income areas); encouragement of small-scale industries (which are not normally located in large cities); and provision of industrial estates. The Government of India has also engaged in metropolitan planning (for all large Indian cities and for some metropolitan regions), which has been partially directed to limiting the growth of manufacturing within these cities. Since about 1970, the Government has focused on development and industrial location in backward districts, which, nation-wide, contain about 60 per cent of the total population.

Pakistan, which was 28.2 per cent urban in 1980, represents a somewhat different case because its urban development strategies are at the incipient stages. At the federal level, in part as a means of reducing the importance of Karachi, the Government established a new capital at Islamabad and constructed a large-scale industrial complex at Taxila (near Rawalpindi) — creating a third major metropolitan region in addition to Karachi and Lahore. In 1981, the federal Government established the High-Level Committee Regarding National Urbanization Policy and City Management; and, in the same year, it commissioned a national human settlements policy study to provide input for the formulation of a national human settlements policy.

In both India and Pakistan, development of rural towns has also been important — as a means both of promoting rural development and of achieving regional integration. For more than a decade, India has operated a pilot programme for rural growth centres, whereas Pakistan has assigned a high priority to the promotion of small rural towns (agrovilles). Progress in Pakistan, however, has been slower than anticipated; only a small number of the projected 200 agrovilles have as yet been developed, due to financial constraints. The Government also formulated plans to establish more than 700 *marakaz*, local centres providing services and marketing facilities for a hinterland population of between 50,000 to 100,000.[32]

Several of the remaining countries in Southern Asia are predominantly rural, with spatial strategies that emphasize rural and regional development and colonization programmes. Nepal, which was 95 per cent rural in 1980, adopted planned resettlement schemes (designed to settle landless peasants in the Terai and inner Terai areas), which have been operating for nearly two decades but have been only moderately successful. Sri Lanka has been engaged in colonization efforts for nearly 30 years — shifting peasant families from the densely populated wet zone to the sparsely populated dry zone. In addition, the Mahawali project, a high-investment, multi-purpose project that plans to settle about 140,000 Sri Lankan farm families, or about 10 per cent of the total population, has been one of the major regional development projects in Southern Asia.

Several countries in the subregion have also been involved in promoting rural towns. Bangladesh, for example, which was 88.8 per cent rural in 1980, has designated certain *thanas* (rural growth centres) that will be developed as agro-processing centres. Sri Lanka is in the process of establishing 25,000 model villages to accommodate resettled urban slum-dwellers. In Nepal, the spatial distribution strategy — which is largely at the planning stages — envisions the development of four north-south growth axes (or development corridors), containing various small rural towns. In its reply to the Fifth Inquiry, Nepal reported that it had established a task force on the promotion of rural markets and rural growth centres that would conduct a feasibility study and present a report.

Afghanistan reported in its reply to the Fifth Inquiry that its major concerns in relation to population distribution were the shift of population out of rural into urban areas (and the resultant pressure on services and housing) and the need to resettle the nomadic population. The Government noted that on the basis of democratic land reforms, a programme for the settlement of nomads was being implemented.

One of the two island countries in the subregion, Maldives has formulated a policy to generate development in the atolls — groups of rural islands that have lagged behind the main island in economic growth and in the share of social services. According to the Government's reply to the Fifth Inquiry, the Atolls Development Board selected 68 of the country's 202 inhabited islands for phased development, with the first phase consisting of the identification and development of eight islands to serve as growth centres for their respective atolls.

The remaining country in the subregion, the Islamic Republic of Iran, is more than 50 per cent urban; and it is the only country in Southern Asia with a high degree of primacy. Although little is known about implementation of spatial strategies, the Government has expressed the intention of relocating up to half of 6 million inhabitants of Teheran in intermediate cities. The Government is also attempting to retain population in rural areas — by providing basic services, establishing small-sized industries and redistributing land.

Oceania has a very high level of urbanization (75.8 per cent urban in 1980), due to the dominant weight of Australia and New Zealand, although the region as a whole has the world's smallest absolute urban population.

Whereas Australia and New Zealand are developed countries with low aggregate levels of population growth and hence are unlikely to experience major changes in national settlement systems, many of the small Pacific island countries are growing and urbanizing rapidly. In responding to the Fifth United Nations Population Inquiry, a number of these small countries and areas indicated that they desire major changes in their patterns of spatial distribution. Indeed, faced with a concentration of population in their capital city or major island, many Governments in the subregion are pursuing development strategies involving decentralization and regionalization — even though the population and economic activity of these very small countries may already be highly dispersed.[33]

In Australia, a country that is highly urbanized (88.1 per cent), with the remainder of the population widely scattered over a vast hinterland, a significant amount of migration took place during the past several decades, although more as a result of spontaneous forces than of explicit policies. Although the Government has formulated a number of explicit population distribution policies, the focus of these policies typically changed following changes in the Government. For example, following a period of public debate on growth centres and "system cities" during the late 1960s, the Government introduced a national growth-centre programme in the early 1970s and inaugurated programmes for growth centres, metropolitan land development and urban public transport.[34] The subsequent Government dismantled a number of these programmes, however, and cut back support for the growth-centre programmes. In its place, the Government introduced new measures designed to encourage private investment in non-metropolitan areas and emphasized a selective decentralization approach.

Australia has employed a wide array of policy measures to encourage development in the various states, including payroll-tax and land rebates, machinery transport grants, rail freight concessions, oil price equalization schemes and personnel removal and housing assistance. However, this broad range of policy measures did not greatly increase employment opportunities in non-metropolitan areas, largely as a result of the very wide diffusion of available assistance.[35]

Papua New Guinea, which is the world's second largest island and contains 84 per cent of the land mass and 62 per cent of the total population of the Pacific island countries, is concerned by the concentration of population and activity in the major urban centre, Port Moresby, which had a population of 113,000 in 1976. The Government's current development plans are directed to encouraging industrial development in rural areas, mainly by means of tax concessions, and strengthening existing rural development programmes.

As a further means of retaining potential migrants in rural areas, the Government has implemented a number of resettlement schemes intended to resettle persons residing in disadvantaged areas and those without access to land or cash-earning opportunities. The Government is also concerned with promoting the equalization of services among regions and towns in different size categories (particularly the small towns, which have often stagnated). Towards this end, the Government reported in the Fifth Inquiry that it was preparing to formulate a national urban policy, in order to establish the basis for distribution of national government resources that will affect the pattern of urban growth.

In Solomon Islands, regional planning is basically in the incipient stages. Although the draft Solomon Islands National Plan (1980-1984) proposed the establishment of a number of rural service centres in selected provinces, this strategy was never implemented, largely as a result of the country's domestic political reorganization.[36] The Government's current efforts to establish a federation are expected to result in greater emphasis on regional planning (as envisaged, for example, in the draft Thirty-Month Programme of Action).

Fiji, which has the longest experience with regional planning (and with planning in general) of any of the Pacific island countries, has a number of spatial problems, including continuing migration to the metropolitan centre (Suva-Nausori) and the depopulation of certain peripheral islands (e.g., Rotuma and Lau). In spite of the identification of a number of rural and regional development projects in the Sixth Plan (1971-1975) and the announcement of a comprehensive system of regional development in the Seventh Plan (1976-1980) — all of which were explicitly designed to slow urban-rural migration — the trends have essentially remained unchanged. The Government's Eighth Plan (1981-1985) outlines a number of further measures designed to stimulate growth outside of Suva-Nausori, including the establishment of a network of rural growth centres, development of rural infrastructure and implementation of various incentive measures designed to attract industry outside the Suva-Nausori corridor.[37]

Samoa is another Pacific island country that has gradually extended its regional planning efforts. Whereas the country's Third Plan (1975-1979) included a village development programme that was expected to have significant regional impacts, the subsequent plan — the Fourth Plan (1980-1984) — outlined an explicit regional development programme, as well as a proposed national urban system, consisting of one primary urban centre for the entire country (Apia), one secondary urban centre on the island of Savaii, 10-12 primary "village development centres" and about 20 secondary village centres.[38]

Kiribati is also concerned with reducing rural-urban migration, particularly to the capital region (Tarawa). Although the Government formulated a number of decentralization strategies prior to independence — which were designed to develop district subcentres and to decentralize commercial projects — those strategies were never implemented due to financial constraints.[39] The Government's current plan, the Kiribati National Development Plan (1979-1982), seeks to decentralize economic activities, to develop alternate urban centres in the capital region and to promote rural development as a means of limiting urban growth.

Noting a trend of accelerating migration to the Tongatapu island group, particularly to Nuku'alofa, during the preceding decade, the Third Development Plan (1975-1980) of Tonga outlined a goal of achieving balanced growth in the three major island groups (Tongatapu, Ha'apai and Vava'u), mainly by means of locating certain development projects in each of the island groupings.[40]

In Tuvalu, a predominantly subsistence economy where nearly 70 per cent of the population is engaged in village agriculture, the Government's First Development Plan (1978-1980) emphasized the need for setting up development projects outside the capital (Funufatu), as a means of achieving balanced development through the country's various island groupings.[41]

Economic Commission for Latin America

The most heavily urbanized of the less developed regions, Latin America as a whole was 65.4 per cent urban in 1980 and is projected to be about 75 per cent urbanized by the year 2000, although there will be significant differences in the tempo of urbanization within the various subregions. As reflected in replies to the Fifth United Nations Population Inquiry, a majority of Governments in the area of responsibility of the Economic Commission for Latin America (ECLA)[42] continue to consider patterns of spatial distribution to be largely unacceptable and to require major modification, a perception that is related to the significant number of absolutely large primate cities in the ECLA area and to related problems of urban management. Indeed, although the growth of a number of these cities has slowed considerably, largely as a result of spontaneous forces rather than of explicit population distribution policies, controlling primate-city growth continues to be a major policy objective throughout the region, with very few exceptions.[43] This has been true even in a country such as Colombia, where the spatial distribution of population has been much less concentrated than in most developing countries.[44]

In attempting to control metropolitan growth, most Governments in the ECLA area have sought to retain potential migrants in rural areas (or to induce colonists to settle in rural areas), mainly by means of rural development (including land reform), regional development and colonization programmes, although there has been growing emphasis in recent years on channelling migrants to smaller towns and intermediate-sized cities. Latin America is, of course, highly heterogeneous — in terms of topography, climate, levels of development, demographic patterns, social structure and so forth, factors that have influenced the variety of spatial strategies adopted.

In most of the small island countries of the Caribbean, which as a whole was more than 50 per cent urban

in 1980, the spatial problems are basically those of a large metropolitan region and its hinterland. Although there are no absolutely large cities in the Caribbean, other than Havana, a majority of the Governments are interested in controlling primate-city growth, because such problems as congestion and urban sprawl are perceived as more acute in small island countries that face limits to expansion.

The Governments of Barbados, the Dominican Republic, Haiti and Jamaica all have formulated policies designed to control the growth of their primate cities, generally through a combination of rural development and the promotion of small towns and intermediate-sized cities, although the largest cities (which are also the principal harbours) have in most cases continued to expand due to a combination of push-and-pull factors. Trinidad and Tobago has been something of an exception in the subregion, since it has the highest level of income per capita, the lowest level of urbanization (21.5 per cent) and the most diffused pattern of urbanization — mainly as a result of the availability of off-farm employment in rural areas (in the petroleum and asphalt industries) and of the Government's promotion of industry outside the main urban centres, which stimulated migration away from the capital region.

The Dominican Republic, which was more than 50 per cent urban in 1980, has experienced considerable rural-urban migration in recent years.[45] The Government desires to reduce migration to the metropolitan centre, mainly through agrarian reform, the provision of services in rural areas, and the promotion of small towns and intermediate-sized cities.[46] Although Jamaica is a moderately urbanized country, most of the growth has taken place in the Kingston metropolitan area, which has experienced serious problems of manageability.[47] The Government reported in the Fifth Inquiry that it sought to retain population in rural areas mainly through its Rural Township Development Programme. Haiti has also experienced significant rural-urban migration in recent decades, largely as a result of the lack of alternative opportunities in rural areas. Although the Government's policy has the stated objective of achieving balanced regional growth and diverting population and economic activity away from Port-au-Prince, due to the large number of subcontracting activities, Port-au-Prince has grown in terms of economic activity, making the rural-urban move even more attractive.[48]

Since the colonial period, Cuba has been one of the most urbanized countries in Latin America (65.4 per cent in 1980). The significant decline in the growth rate of Havana after 1960 was principally achieved by an overall transfer of resources, investment and employment to other areas of the country, particularly to the agricultural sector. In the years immediately after the revolution, various disincentives were directed at slowing the growth of Havana.[49] Subsequently, however, the Government emphasized job creation through direct investment in State-owned industries, regional development and rural development.

The development of Oriente Province assumed an important role in Cuban regional planning. The largest city in Oriente Province, Santiago de Cuba, was converted into a major industrial centre, as well as an important regional port; and diversified projects were also undertaken in a number of other intermediate urban centres: Nuevitas; Cienfuegos; Santa Clara; Camagüey; and Sancti Spiritus. In rural areas, the Government's policy of grouping the rural labour force in small communities had an important redistributive effect; indeed, by 1980, some 347 "new communities" had brought together some 150,000 Cubans, or approximately 5 per cent of the rural population.[50]

Unlike Temperate and Tropical South America, where many of the major urban centres are located on the coast, the spatial structure of most Central American countries is very different: the coastal areas are relatively sparsely populated, whereas the main population centres are located in the interior, usually on the Central Plateau.

A number of Central American countries have a high degree of primacy;[51] and several Governments have formulated policies designed to slow primate-city growth, although these policies have not been particularly successful.

Costa Rica (43.3 per cent urban in 1980) has attempted to slow the growth of San José for nearly two decades — mainly by means of industrial location policies and rural development — although market forces have led to continuing concentration of population at San José.[52] The Government of Panama (54.3 per cent urban) has also formulated policies to control the growth of Panama City, to integrate the national territory (which is bisected by the Panama Canal) and to promote rural and regional development. However, although there has been considerable progress in the provision of services to rural towns, the terminal cities (Panama City and Colon) have continued to exert considerable attraction for rural migrants.[53]

El Salvador is a densely populated country that has sought in the past to manage urban growth, chiefly by means of accommodationist policies and the location of infrastructure in secondary cities.[54] In recent years, however, political unrest has largely undermined the effects of any explicit spatial distribution policies.

Mexico, of course, is a case by itself. It is a large country, has one of the world's highest urbanization rates and contains the world's largest poor city (Mexico City), which is projected to grow to an unprecedented size by the end of the century.[55] Although Mexico has engaged in regional planning (through the work of the River Basin Commissions) since the 1940s and adopted industrial decentralization measures during the 1950s (primarily, however, to promote industries rather than regions), changes in the Mexican pattern of spatial distribution have been more the result of spontaneous forces than of explicit population distribution policies, which have had relatively little impact. Of course, during the period 1940-1970, government policies were generally non-spatial and patterns of population distribution were largely the result of market forces. Even where a government policy, such as the Assembly Industries Programme, may have stimulated growth and

attracted migrants to the cities along the United States border, these cities would probably have expanded rapidly in any case. During 1970-1976, the Government became increasingly concerned by the negative aspects of urban growth and adopted more explicit population distribution policies. The Government also invested heavily in rural development, with the implicit objective of stemming migration to the larger cities. The subsequent administration (1976-1982) reverted back to a more pro-urban, pro-industrial position, although a number of plans were drafted that, for the first time, advocated the promotion of secondary cities — mainly to divert migration from the overburdened core but also to promote the exploitation of national resources outside the core.[56] The plans, however, were sometimes contradictory; incentives were extended to many areas and thus were substantially diluted; moreover, the incentives were generally not large enough to be more than a quite secondary factor in locational decisions.

In Guatemala, the principal spatial problem has been the concentration of the Indian subpopulation at relatively high densities in the central and western highland regions, and their limited interaction with the population of the towns and the metropolitan centre. In its reply to the Fifth Inquiry, the Government reported that it desired to promote small towns and intermediate cities, to retain population in the rural areas and to reduce migration to the capital (Guatemala City). The Government has provided some infrastructure, such as a road into the northern province of Petén, and designated certain areas of colonization, although the spatial impacts of these policies cannot yet be assessed.

Although very different in terms of geographical structure, the countries of Temperate South America have a number of characteristics in common — a high degree of primacy, with primacy indices of 62 (Chile), 54 (Uruguay) and 45 (Argentina);[57] high levels of urbanization, low aggregate levels of population growth and relatively low levels of rural-urban migration — giving their Governments relatively little scope for adjusting patterns of spatial distribution.

Chile has a unique geographical structure (4200 kilometres long and 400 kilometres wide), with most of its population clustered in the central region and heavily urbanized (81.1 per cent). The country has had years of experience with regional planning, although there are still significant regional income differentials. The Government currently seeks to open up the sparsely populated south, mainly through the provision of highway infrastructure and small-scale colonization programmes.[58] In recent years, however, market forces have made the capital (Santiago) increasingly attractive to migrants from both rural and other urban areas.

Uruguay is a very small country, consisting of a single metropolitan region (Montevideo) and its hinterland, and it is more than 85 per cent urban. The Government has implemented some fairly large-scale colonization programmes during the past several decades — mainly to raise agricultural productivity rather than to adjust patterns of spatial distribution — although its more explicit spatial policy of channelling migrants to frontier regions (for reasons of national security) has not been entirely successful.[59]

Argentina is the second largest country on the South American continent, with more than 80 per cent of its population clustered in the main port cities and in the cities of the pampa, and a large relatively sparsely settled hinterland. Argentine planners have sought to control the growth of metropolitan Buenos Aires, to retain and eventually to increase the population of the north, the centre and the littoral, and to settle migrants in the sparsely populated south — through a combination of rural development, colonization and industrial decentralization, although these policies have had limited success.

The medium-income countries of Tropical South America — many of which have moderate aggregate levels of population growth, sizeable interregional gaps in income levels and a large geographical area — are countries where population distribution policies could be critically important. These countries have very different topographical features, however, among other differences, which have directly influenced their Governments' spatial strategies. Ecuador and Peru, for example, are divided into three "natural regions": *costa, sierra* (highlands), and *selva* (lowlands), which are poorly integrated; and Bolivia is a land-locked country that is sharply differentiated into highland and lowland areas.

In its reply to the Fifth Inquiry, Bolivia (which is more than one third urban) reported that it desired to reduce in-migration not only to La Paz, the metropolitan centre, which is located in the highlands, but to the secondary city of Santa Cruz, a lowland city that has been growing at a very rapid rate — mainly as a result of improvements in the transport network.

Although its capital (Quito) is located in the interior, most of the mestizo population of Ecuador inhabits the coastal zone, which is dominated by the primate city of Guayaquil (the primacy index of Ecuador is 34); the large indigenous population resides in the *sierra*, although many commute to Quito each day, swelling its daytime population. The Government desires to control the expansion of both Quito and Guayaquil, chiefly by channelling migrants to small towns and intermediate cities. In recent years, more as a result of market forces (for example, the discovery of oil) than of explicit spatial policies, several of the newer cities in the *selva* have grown at rapid rates.[60]

Successive Governments in Peru, including the present one, have identified slowing the growth of Lima as a major policy objective. For a number of years, Peruvian planners have sought to link Lima with the major towns of the central region, and especially the *sierra*, in what was termed the central urban system. Plans have called for promoting Huancayo as the principal dynamic centre of the macro system, in order to compete with Lima in attracting industry and private investment and to hold migrants in the Sierra.[61] A strategy for the spatial reorganization of the metropolitan region that

has been discussed more recently is based on the principle of promoting "decongestion corridors" along the coast, in order to provide alternative locations for migrants and industrial investment. However, in spite of the Government's explicit strategies to control the growth of Lima, its various macro and sectoral policies (for example, subsidized utility rates, free urban lots, subsidized mortgages, cheap petrol and subsidized food prices) have had strong implicit spatial impacts, favouring the growth of Lima.

Colombia and Venezuela, which are isolated from the rest of the continent by the Amazon Basin and the Andes Mountains, consist of a mixture of valleys and highlands. Although the system of separated valleys in Colombia has led to the growth of regional urban centres that have not been dominated by the capital region, there is a consensus among policy-makers (most recently expressed in the Fifth Inquiry) and society at large that there is too much concentration of human and economic resources at Bogotá, and perhaps at the two other main cities, Cali — which serves as a counter-magnet to Bogotá — and Medellín, that form the vertices of the so-called "golden triangle". Moreover, projections of urban population support the view that polarization towards Bogotá will continue if spatial processes are left to market forces.[62] The Government of Colombia has included population distribution goals in successive development plans. In recent years it has employed a number of spatial policy instruments to divert new industrial activity away from the major cities and has begun introducing administrative (including fiscal and political) decentralization. In spite of the Government's efforts to modify the spatial distribution of population and economic activity, the unintended spatial impacts of macro and sectoral policies have been a problem. For example, a key aspect of the Government's strategy to promote national spatial integration is improving the road communication network — a policy that may conflict with its decentralization goal by reinforcing concentration in the three main cities.[63]

In an attempt to reduce, or at least to manage, the primacy of Caracas and the north-central region — which has been a goal of successive Governments since the late 1950s — the Government of Venezuela stimulated the development of two major growth poles for the purpose of attracting rural migrants and eventually diluting the primacy of Caracas. The first of these growth poles, Ciudad Guyana, was developed by the public sector. Although its population increased fivefold during the period 1961-1971, reaching a size of 200,000, Ciudad Guyana failed to attract skilled workers and therefore did little to counteract the strong attraction of Caracas, in spite of its relative economic success. The second, Valencia, doubled in size during 1961-1971, reaching a population size of 400,000.[64] During the 1970s, the public-sector commitment to Ciudad Guyana was somewhat reduced; and the Government began investing heavily in greater Maracaibo and, to a lesser degree, developing the Amazonian frontier bordering on Brazil. The Government is likely to continue with the complex urban-regional development strategy that has been developed in recent years. A foremost element of this strategy is the Policy of Deconcentration and Regional Development, which is directed to locating new economic activity (and relocating some established industries) in designated regions.[65]

Brazil, which was more than two thirds urban in 1980, has severe urbanization problems, although it is one of the least primate of the developing countries (the Greater Rio de Janeiro-São Paulo metropolitan areas absorb only about 12 per cent of the total population). Brazil has the distinction of being the only Latin American country to have established a new national capital (Brasilia), a city that has had considerable spatial impact at the regional level since its establishment in 1964. It was not until 1975, however, with the formulation of the Second National Development Plan, that explicit attention was given to the urban system and the more salient macro-spatial issues. For the first time, a national development plan addressed the desirability of deconcentrating population and economic activities from the primate metropolises, while promoting growth in intermediate cities and in the larger cities of peripheral regions.[66] The Government's most recent spatial strategy, which was announced in 1981, places major emphasis on stimulating investment in intermediate cities.

Due to the difficult topography of many of the countries in the subregion, linkage (highway) infrastructure has received particular attention: in Bolivia, where the Government has been concerned with developing a transverse axis as a means of achieving national economic integration; in Chile, where the provision of highway infrastructure is viewed as crucial to opening up the sparsely populated south; in Colombia, where highway investment has been a major priority even though it may conflict with the Government's decentralization goal; and in Peru, where the goal of constructing the marginal forest highway has been pursued for decades.

Several Governments in the subregion have imposed restrictions or controls on industries. Since 1974, new industries in Argentina have been required to locate at least 60 kilometres outside of Buenos Aires. Similarly, Colombia has maintained a ban of foreign investment at Bogotá, Medellín and Cali. Venezuela has a similarly restrictive policy; the Government's Policy of Deconcentration and Regional Development divided the country's industries into various categories, identifying those which could remain at Caracas and those which would be required to relocate outside the metropolitan centre (in one of the four other industrial regions) and established appropriate incentives (credits, tax exemptions) and discentives for each of these regions.

A number of countries, such as Argentina and Ecuador, have offered various incentives for the installation of industries in designated development areas and frontier zones; Colombia has also granted loan interest rates subsidies to firms agreeing to locate outside the main urban centres.

Lastly, although the nature of the programmes varies, all of the countries in the subregion have rural develop-

ment programmes of fairly long standing; similarly, all have regional development programmes, for both lagging regions and/or border regions; and most (for example, Argentina, Bolivia, Brazil, Chile, Ecuador, Guyana, Paraguay and Uruguay) have colonization programmes.

Economic Commission for Africa

The area of responsibility of the Economic Commission for Africa (ECA)[67] is the least urbanized of the less developed regions, with less than 30 per cent of the population living in urban areas in 1980. There are great differences among the five subregions, however, making the regional average quite misleading. Northern and Southern Africa were already close to 50 per cent urban in 1980, whereas Middle Africa was only about one-third urban, and Eastern and Western Africa were less than 25 per cent urban (and will be one-third urban by the year 2000). Whereas the spatial problems of countries in Northern Africa are similar to those of some other world subregions (such as Western Asia) and mainly involve regional imbalances and the concentration of population in a few absolutely large primate cities, the countries of sub-Saharan Africa are quite unique. Most have small, sparsely distributed populations, low levels of urbanization, a colonial legacy of primacy and very high urbanization rates, a combination that presents unique policy problems not found in other less developed regions.

According to replies to the Fifth United Nations Population Inquiry, Governments of a large number of geographically different African countries are concerned by spatial distribution issues (although a greater proportion of the Governments in Africa than in Latin America desire only minor adjustments in their national settlement patterns). Most African Governments desire to reduce migration to the metropolitan centre (even in cases where it is small by absolute standards), and many desire to reduce migration to intermediate urban centres (even in countries where the overall level of urbanization is fairly low). Virtually every Government in the ECA area wants to reduce out-migration from rural areas and many want to encourage migration into rural areas. However, according to replies to the Fifth Inquiry, more Governments would like to induce reverse (urban-rural) migration than to encourage migration of a rural-rural type.

Whereas very few African Governments have formulated comprehensive spatial distribution strategies, most have tackled spatial problems indirectly, relying upon the gradual impact of rural development and the provision of basic infrastructure to retain population in rural areas. A number of African countries (proportionately more than in the other regions) have also undertaken very large-scale urban projects, such as the construction of new towns and new national capitals.

Eastern Africa is a very diverse subregion with respect to country size and geographical characteristics: it contains several large, mostly arid countries, some small and some medium-sized land-locked countries, a country that consists of one large island and several countries that consist of scattered groups of very small islands. The population distribution of individual countries reflects this fact. The subregion as a whole was only 16.3 per cent urban in 1980,[68] although it had three cities with over 1 million population (Addis Ababa, Nairobi and Dar es Salaam); four cities of between 500,000 and 1,000,000 inhabitants; and seven of between 250,000 and 500,000.

It is important to note that Eastern Africa is one of the African subregions where international migration (consisting mainly of refugee movements) has affected internal settlement patterns. In Djibouti, for example, more than 20,000 refugees (who constituted 9 per cent of the country's total urban population in 1980) settled at Djibouti City. In Somalia, more than 1 million refugees have been living in makeshift camps, many of which have been turning into permanent settlements.

Although Ethiopia remains a predominantly rural country (88.5 per cent rural in 1980), Addis Ababa, which is the largest city in the subregion, has been expanding rapidly in recent years, due in part to an influx of migrants from drought-stricken areas. The country's population is very unevenly distributed, as a result both of climatic factors and of physical terrain,[69] and of pre-revolutionary patterns of land tenure, which obliged the bulk of the population to live in the highland areas as tenant farmers. The Government's current spatial strategy, which is directed to reducing regional disparities, involves resettling the population of the country's drought-prone areas in the river valleys and lowlands — at first at a rate of about 10,000 families per annum.

Nairobi is the second largest city in the subregion, with an estimated population of 1.3 million in 1980. Although it is a relatively small primate city by international standards and accounts for less than 6 per cent of the total population of Kenya,[70] the Government's spatial goals have been dominated by the aims of slowing the rate of growth at Nairobi and minimizing out-migration from rural areas — mainly by means of promoting small-scale industry in rural areas, through the Rural Industrial Development Programme (RIDP), and developing nine alternate growth centres. The Government's strategy also involves the creation of a network of rural service centres throughout the country and the selective allocation of investment. During the planning period 1978-1983, for example, a larger share of investment was allocated to Western Kenya, a region that had had a large share of out-migration to Nairobi and Mombasa.

Because of a deliberate Government policy, the United Republic of Tanzania is one of the least urbanized large countries in Africa, with only some 11.8 per cent of the population living in urban areas in 1980. The Government's major strategy is a process now called "villagization", formerly known as *ujamma*. Although the Government at first emphasized communal civilization, it was apparent by 1972 that the villagization programme was proceeding at too slow a pace, and the policy of collectivization was temporarily

abandoned. The Government also decided that villagization was no longer a voluntary matter and began a massive transfer of rural population into new villages comprising at least 600 households.[71] An estimated 14.5 million Tanzanians are now living in these new villages, which are grouped into three categories, reflecting relative stages of progress towards self-sufficiency and self-rule. During the mid-1970s, the Government also decided to transfer the country's capital from Dar es Salaam (the third largest city in the subregion, with a population of 1.1 million in 1980) to Dodoma, an urban centre of some 60,000 inhabitants located in the interior of the country. In 1982, however, as a result of financial constraints, the planned transfer of the Government to Dodoma was indefinitely postponed.

In Zambia, where rural-urban migration was strictly controlled through pass laws prior to independence in 1964, urbanization has been rapid during the past two decades; indeed, the Government reported in the Fifth Inquiry that Zambia was more than 43 per cent urban in 1983. As a means of reducing out-migration from rural areas, the Government has experimented with Intensive Development Zones, village regrouping and co-operatives, and with the Rural Reconstruction Programme, which was intended to resettle more than 200,000 migrants in some 250 rural centres (by 1976, however, only 50 centres had been established).

In Zimbabwe, rural-urban migration was also strictly controlled prior to independence, and the growth of unauthorized squatter settlements was likewise prohibited. Zimbabwe has experienced rapid in-migration in the past several years and the Government reported in the Fifth Inquiry that it desired to reduce migration to the major urban centres and to retain population in rural areas. Although some rural resettlement schemes have been implemented since independence was attained, the Government acknowledged in the Fifth Inquiry that it was still at a largely transitional stage and had not formulated a comprehensive population distribution strategy.

A number of the smaller, less urbanized countries in the subregion have also adopted at least partial spatial strategies. Malawi, a land-locked country with a relatively high level of urbanization for the subregion (33.6 per cent urban in 1980) represents a rather unusual case. In addition to shifting the capital from Zomba to Lilonge, the Government has been making efforts to plan urbanization at the early stages, primarily by means of the Rural Growth Centre Project, which is directed to strengthening existing service and market centres and to creating new centres to serve as links between rural and urban areas.

Burundi, which is a small, predominantly rural country (97.7 per cent rural in 1980), has attempted to establish pilot centres for the consolidation of population in sparsely populated rural zones. Rwanda (95.7 per cent rural) has emphasized integrated rural development in sparsely inhabited zones, as well as the creation of rural villages. A somewhat different policy has been adopted in Madagascar (81.6 per cent rural), where the Government has sought to channel migrants to underpopulated areas — by providing assistance to potential migrants, establishing a number of small communal villages and promoting artisanal activities in rural areas. Seychelles, a country consisting of groups of scattered islands, has been concerned with reducing the concentration of population in the metropolitan centre, as well as populating its outlying islands and promoting rural development.

In its reply to the Fifth Inquiry, Zaire — which is nearly 40 per cent urban and contains two of the three cities with over 1 million population in Middle Africa, Kinshasa and Kananga — reported that it sought to retain potential migrants in rural areas and to move migrants out of the largest urban centres, mainly by sending agricultural brigades and groups of artisans to rural areas and by establishing re-education centres throughout the country.

The Central African Republic, which at 40.9 per cent urban is the most urbanized country in the subregion, also emphasized in its reply to the Fifth Inquiry that it desired both to reduce in-migration and to encourage out-migration from the metropolitan centre, Bangui, to retain population in rural areas and to encourage migration of a rural-rural type.

In its reply to the Fifth Inquiry, Cameroon[72] reported that it sought to decrease in-migration to the metropolitan area (Douala) and to its other large urban centres (for example, Yaoundé). The Government also noted that the location of secondary cities in relation to the country's natural resources was an important planning issue.

Although Gabon has no absolutely large cities (Libreville had fewer than 150,000 inhabitants in 1980), the country is more than 35 per cent urban and the Government is concerned with reducing the attraction of its urban areas — mainly through the establishment of rural industries. A secondary policy designed to slow the exodus from rural areas has been a village regroupment programme, mainly involving the provision of collective infrastructure.

The semi-industrialized countries of Northern Africa have experienced rapid urbanization in recent decades. Except for Algeria and Morocco, which have fairly well-developed urban hierarchies, the other countries in the subregion desire to control the growth of their primate cities, although their Governments have adopted very different spatial strategies.

Egypt is relatively more urbanized (45.5 per cent in 1980) than most other countries at a comparable stage of development and has a high degree of primacy (39).[73] Egyptian policy-makers and planners are intent on controlling the growth of Cairo and Alexandria, as well as preventing further encroachment on the limited supply of agricultural land, which is being eroded by urban uses — mainly by channelling migrants to six new cities being constructed in desert areas[74] and to several new, primarily desert development regions. The latter so-called "remote areas" include various oases in the western desert; settlements on the north-western

coast and in the Sinai; and three settlements in the Red Sea Governate. Regional planning is another element of the spatial strategy. Aswan/Lake Nasser was the most sustained regional planning effort ever mounted in Egypt, although it has so far failed to generate substantial economic growth in the Aswan region; recently, the Government has identified several additional areas in Upper Egypt (Assiut and Quena/Naga Hanadi) for future regional planning programmes.[75]

During the past three decades, successive Governments in the Libyan Arab Jamahiriya, which was 32.4 per cent urban in 1980, have expressed the intent of controlling migration to the major coastal cities (Tripoli and Benghazi), although intervention was confined to work on the preparation of master plans and to an unsuccessful attempt to establish a new capital at Al Bayda between 1954 and 1969. With the rapid development of the Libyan Arab Jamahiriya as a petroleum exporter, and with the change of Government in 1969, the country embarked on a vigorous programme of industrial expansion. Although committed in principle to locating industry outside the two main cities, the Government has located about half of its 40 new industrial plants at or near Tripoli or Benghazi, cities that have expanded rapidly in recent years due to the massive influx of international migrants.

Algeria is the most urbanized (60.8 per cent urban in 1980) although the least primate of the Northern African countries, in part as a result of the changes in its urban profile following its transition to a centrally planned economy. Whereas industry was once concentrated primarily in the coastal ports (and principally at Algiers), the Government has invested heavily in "industrializing industries" in three industrial development poles (Arzew, Skikda and El Hadjar); industries have been established in the chief towns of the *wilayate* (departments), *arrondissements* and communes, and in other small towns and intermediate cities, particularly in the east. In rural areas, the Government's spatial strategy has involved regrouping the population into 1,000 new villages (co-operatives); implementation, however, has been slow.

Morocco, which was 40.5 per cent urban in 1980, presents a somewhat special case. Due to its late colonization and to a number of other historical factors (such as the rotation of the capital among four cities), Morocco has a well-developed urban hierarchy. Moroccan planners have therefore been primarily interested in deflecting growth from areas that were privileged during colonial rule (that is, Rabat and Casablanca) to those which were relatively neglected (mainly Fez and Marrakesh). Another priority since independence has been attempting to establish closer links between north and south — mainly through public infrastructure development, such as the construction of the Unity Highway linking the north and south.

As Tunisia reported in the Fifth Inquiry, the Government desires to control migration to the metropolitan centre (Tunis) and to achieve more balanced regional development — particularly between coastal areas and the interior. To achieve these ends, the Government has emphasized industrial decentralization (through the Fund for the Promotion and Decentralization of Industry), rural development and the provision of infrastructure in depressed areas.

Labour migration has been a long-standing and pervasive feature in Southern Africa, where peasant economies on the periphery of the South African mining centre have been subject to land restrictions, taxation and statutory labour requirements, which have drawn rural producers into the monetary economy and, over the years, compelled workers to migrate more often in their lives and for longer periods.

South Africa, which is the recipient of this migrant labour, has strictly controlled urbanization by means of influx controls, which restrict the movement of workers from "homelands" to "prescribed" areas; the Government has also attempted to resettle workers outside the major urban centres by establishing resettlement camps in nearly all the homelands. In a further attempt at decentralization, the Government encouraged industrial location in towns bordering the homeland areas (mainly during the 1960s) and later promoted industrial growth centres within the homelands themselves. These efforts were generally unsuccessful, however, and industry remains concentrated in the four major metropolitan areas.

Botswana has experienced rapid urbanization in recent decades, following the construction of a new capital (Gaborone) and the development of new mining areas; and it was nearly 30 per cent urban in 1980. The Government is attempting to control migration from rural areas to the capital, mainly by means of its National Settlement Policy, which seeks to reduce urban-rural imbalances through the allocation of investment, the provision of infrastructure in rural areas, integrated rural development; and special area development programmes, such as the Remote Area Development Programme.

The two remaining countries in the subregion, Swaziland and Lesotho, are predominantly rural (91.1 and 95.5 per cent, respectively), although the Governments of both countries desire to retain population in rural areas and to reduce migration to the large cities in South Africa. Although Swaziland reported in the Fifth Inquiry that it had not formulated explicit population distribution policies, the Government has established rural development areas, which are designed to modernize traditional agricultural practices, in the hope of eventually reducing out-migration from rural zones. As a means of retaining population in rural areas, Lesotho reported in the Fifth Inquiry that it would emphasize the provision of social services and the creation of employment in rural areas, particularly through the Government's programme of support for cottage industries.

Western Africa is one of the more diverse subregions of Africa, containing several large desert (Sahelian) countries; a number of small, moderately urbanized countries; and a large, populous country, Nigeria, that contains not only the largest city in sub-Saharan Africa

(Lagos) but about half of the 60 or so towns in Africa that have populations of more than 60,000 inhabitants. The dominant migration flows in Nigeria are from the north to the south and from the east to the west, as rural-urban migrants move to the industrial areas at and around Greater Lagos and to the rapidly growing oil cities of Port Harcourt and Warri. However, the state capitals and local government headquarters are also recipients of rural migrants. As a result of these shifts, the already uneven population densities between the north and south are widening.

The Government has adopted an ambitious and very expensive strategy for adjusting patterns of population distribution. The centre-piece of its strategy is the development of a new national capital, Abuja, in a newly designated Federal Capital Territory in a remote rural area in central Nigeria — a site that was chosen mainly for its location in a politically neutral area. Several ministries were expected to move to the new capital in 1982/83 (although construction recently has slowed), and the target population of the city is 1.6 million by the year 2000 (and eventually 3 million). The main aim of the new capital (which has been the largest construction project in Africa) is obviously to slow down the growth of Greater Lagos, one of the largest and most congested cities in Africa. In macro-spatial terms, building the new capital has been an attempt to reduce the overall mismatch between the distribution of population and resources by means of promoting the development of a sparsely settled agricultural hinterland in central Nigeria and by providing alternative destinations for the excess rural population of eastern Nigeria.[76] The Government's urban strategy has been coupled with policies to modernize agriculture and strengthen the rural areas. The Green Revolution Programme was begun in 1980 and was supported by plans to develop rural infrastructure for the construction of feeder roads, housing, health and educational facilities, water-supply projects and rural electrification.

The Ivory Coast has been urbanizing rapidly in recent years and was 37.6 per cent urban in 1980. The Government is intent on reducing disparities between north and south and controlling migration to Abidjan — mainly through the creation of a network of medium-sized towns and the improvement of conditions in rural areas. Towards this end, the Government has focused on stimulating agriculture and agro-industry in rural areas (particularly the savannah) and creating employment in towns in the interior — as a means of retaining potential migrants and promoting return migration. In the long term, the Government considers the solution to the problem of continuing rural-urban migration to be the development of "new modes of living" outside of the large cities; it intends to create what it terms a "modern peasantry" by means of changes in the educational system, the focus of the mass media, the country's system of agricultural production, the status of women and so forth. To date, however, the Government's major projects, such as development of a new port (San Pedro) to encourage development in the south-western region, construction of a dam on the Bandana River and development of a growth pole in the northern region (Korhogo), have had little impact on migration flows.

As a means of reducing its interregional and inter-urban imbalances, Ghana (which was 35.9 per cent urban in 1980) has encouraged both industrial and administrative decentralization (a second port, Tema, was constructed and some government agencies have been relocated outside Accra) and gives high priority to rural areas, through the provision of basic services, rural industrialization and rural development.

Liberia has experienced accelerating rural-urban migration in recent years, as a result of the increasing gap between the quality of life in rural and urban areas; and it was 33 per cent urban in 1980. The Government's present policy — of integrated rural development within the framework of regional development — involves the establishment of a network of some 200 rural community growth centres in selected areas, as well as the promotion of regional and subregional urban growth centres.

In Senegal, where three quarters of the population is located within one quarter of the national territory, the Government's strategy has proposed strengthening a number of regional growth centres (for example, Kaolack, Zinguincho, Saint-Louis and Tambacourda), enabling them to become potential counter-magnets to Dakar, and decentralizing industry from the metropolitan centre to the Dakar-Thiès axis. The Government has also sought to regroup the dispersed rural population in central villages, providing services and infrastructure. Lastly, the Government has proposed channelling from 100,000 to 200,000 migrants from the over-populated ground-nut producing region to the "new lands" of eastern Senegal and the upper and middle (Asamance) regions, where there are large areas of undeveloped land.

Sierra Leone has experienced rapid urbanization in recent decades and is nearly 25 per cent urban. The Government would like to reduce migration to the capital (Freetown) and to the diamond-mining areas, and to achieve more balanced regional development, mainly by means of channelling migration to selected regional growth centres.

A number of Governments in Western Africa submitted brief policy statements in the Fifth Inquiry. As Gambia reported, the Government has no explicit population distribution policy, although the goal of reducing rural-urban migration (particularly to the Banjul-Senekunda area) is implicit in its macro and sectoral policies (for example, rural development and support to agriculture). In Burkina Faso,[77] a country that has experienced long-standing rural-urban migration across international borders, the Government is engaged in large-scale colonization of the Volta Valley region. The Government reported in the Fifth Inquiry that the policy was designed both to reclaim needed agricultural land and to reduce rural-urban migration — by recruiting colonists from the densely populated traditional sending areas, such as the Central Plateau. Although Mali has a low level of urbanization (19.9 per

cent), the Government reported in the Fifth Inquiry that it would like to reduce in-migration to the metropolitan centre (Bamako), as well as to other urban centres. Mauritania reported that its policy was directed to retaining population in rural areas by means of a number of programmes (for example, irrigation) designed to promote the agricultural sector.

Economic Commission for Western Asia

The area of responsibility of the Economic Commission for Western Asia (ECWA) is a very diverse subregion — encompassing countries with a large geographical area and small city-States, resource-rich and resource-poor countries, labour exporters and countries that have very large immigrant populations. The various spatial strategies that have been adopted reflect these differences. The resource-rich countries that have few capital constraints have opted for large-scale construction of infrastructure, new towns, industrial zones and so forth, whereas the resource-poor countries envision change on a more modest scale.

Saudi Arabia, a country with a low level of urbanization largely influenced by geography, has been urbanizing rapidly in recent years. The Government has large oil revenues, hence few capital constraints, and has invested heavily in industrial and transportation infrastructure and in the construction of large new cities. One of its major projects has been the construction of Jubail — a planned city with a target population of 300,000 by the end of the century — which is expected to stimulate development of the eastern province. The Government has also constructed several large new industrial zones (such as those at Riyadh, Jedda and Damman), as a means of distributing industry throughout the country. Since it remains a primarily rural country, the Government has channelled significant investment (for electrification, water-supply, irrigation etc.) to Asir region and to its major oases, as part of its strategy of retaining population in rural areas; and it has designed large-scale programmes (such as the Faisal Model Settlement Scheme) to resettle the nomadic population.

Kuwait, a relatively small, largely urban country (88.4 per cent urban in 1980) with the highest income per capita in the world, has developed rapidly in recent years. Among other projects, the Government has invested in the construction of three large industrial zones, at Shuwaikh, Ahmadi and Shuwaiba; a new port at Failaka, a major reconstruction of Kuwait City and its environs and the construction of a new town south of Kuwait City.

The United Arab Emirates, a very small, resource-rich Gulf State, has also experienced rapid change. Prior to the recent period of economic expansion associated with the petroleum industry, the seven emirates consisted principally of port cities (although there were settled rural populations in the northern emirates and nomadic populations in Abu Dhabi). The Government's strategy is directed to avoiding complete urbanization, eliminating regional differentials and achieving balanced regional growth, by means of industrial decentralization; provision of infrastructure and services to the urban population, as well as to the nomadic and oasis population; construction of model villages and development of modernized primary production. One of its major projects has been the construction of a new town (Jebel Ali), one of the largest new cities being planned in the region — with a target population of 500,000 by the end of the century.

In Bahrain, a city-State that is about 80 per cent urban, the Government's spatial strategy is one of metropolitan decentralization. Since the 1960s, it has constructed low-cost housing in satellite towns and improved public transportation to facilitate commuting; established a new town (Issa Town), which has a target population of 100,000; and recently decided to construct another new town outside the capital.

Qatar, a small, highly urbanized (86.1 per cent) Gulf State, is focusing on constructing the necessary infrastructure for economic development and widening its economic base. One of its major industrial projects has been the construction of a new town and industrial complex south of Doha; the town (Umm Said) has a target population of 35,000.

A country that was relatively isolated prior to the early 1970s and is still predominantly rural (92.7 per cent rural in 1980), Oman has also been experiencing rapid change. In recent years, the Government has focused on the provision of infrastructure and housing in decentralized centres within the metropolitan region and has taken steps both to modernize the country's rural settlements and to sedentarize the nomadic and semi-nomadic population.

In recent years, Iraq has been concerned with the over-concentration of population in some urban areas (the country as a whole is more than 70 per cent urban) and the depopulation of certain rural areas; and it has sought to control the growth of its larger cities — by means of industrial location (in third-order centres); development of medium-sized towns, market centres and rural growth centres; provision of services and infrastructure to the least developed provinces and collectivization of peasants in centralized villages. The Government also began construction of a new industrial city (population: 125,000) in Babylon Governate as a means of reducing migration to Baghdad and constructed two satellite towns (Madinal al Thawra and Al-Nur) to control the growth of squatter settlements.

In Jordan, which has a high degree of primacy and a moderately high level of urbanization (56.3 per cent), the Government has acknowledged the severe diseconomies arising from continuing rural-urban migration and announced its intention to reduce migration by modernizing rural areas, developing local resources and providing services — one of the more comprehensive examples of which has been the Jordan Valley Rural Development and Rehabilitation Plan (1974). The Government has also developed a programme for the settlement of the nomadic population. Although the Government has emphasized industrial decentralization and has located

some large-scale industry in Ma'an and Karak governorates, most of the country's small and medium-sized industries continue to be located within the metropolitan area (which continues to offer significant locational advantages).

The Syrian Arab Republic, which has undergone steady urbanization in recent years (it is now more than 50 per cent urban) that has resulted in pressure on urban services, has adopted various measures to avoid further concentration in the large metropolitan areas (Damascus and Aleppo): industrial decentralization; "urbanizing" some 520 villages; comprehensive regional planning for Euphrates; development of major mineral and irrigation projects; expansion of highway infrastructure; provision of services and employment in the least accessible rural areas; and consolidation of the previously widely dispersed rural population. In its Fourth Plan, the Government noted its intention to disperse manpower throughout the country by means of government employment offices.

In Yemen, which experienced little internal migration before about 1970 and is still only about 10 per cent urban, the Government considers that continuing rural-urban migration is appropriate during the early phase of its development. The Government has, however, prepared master plans and made provisions for low-cost housing.

Democratic Yemen, which has experienced somewhat reduced rural-urban migration in recent years, has shifted its focus from urban to rural areas.[78] The Government has recently focused on agrarian reform and rural development, and sedentarization of the nomadic population, as well as stimulating the growth of regional and subregional centres by extending the road and communications networks.

Conclusion

From the preceding review, it is clear that in many developing countries, population distribution policies have been synonymous with measures to control the growth of the primate city. In some countries, particularly in Latin America, the growth of the primate city has slowed down, but the forces responsible have often been spontaneous rather than the result of explicit policies. In some other countries, especially where levels of urbanization are still very low, policies to slow the growth of the primate city may still be premature, since the cities still may be too small to maximize the country's capacity to diffuse innovations and development. These considerations suggest that the criterion of slowing primate-city growth probably should not be the sole test of success for population distribution policies. Perhaps a more useful criterion would stress raising the levels of living of all the national population, regardless of whether they live in the primate city, other cities and towns or rural areas.

The brief review presented in this chapter suggests that the increasing concern with population distribution issues in developing countries has not been matched with conspicuous success in implementing population distribution policies. However, the severity of the difficulties facing policy-makers should not be underestimated. Population distribution policies make sense only as long-run policies, but Government officials are often obliged to operate in terms of rapid results; hence, population distribution policies have not received the priority they deserve. Furthermore, in many countries, such policies have been subject to major swings in emphasis and content, often due to over-expectations about fast and visible results. The resources and commitment to population distribution policies have in most cases been limited, and their impact is almost always outweighed by the unintended spatial effects of macro and sectoral policies. These implicit spatial policies often work in different directions from spatial policy objectives, for example, by reinforcing primacy. Lastly, the deflection of Governments' attention from long-term population distribution policies in recent years is understandable in view of the severity of the world economic conditions and the much slower economic growth since 1975. The problems of spatial maldistribution will not go away, however, and the further attention by Governments will almost certainly be called for.

TABLE 112. STRATEGIES OF POPULATION DISTRIBUTION POLICIES, COUNTRIES BY AREA OF RESPONSIBILITY OF REGIONAL COMMISSIONS AND GEOGRAPHICAL REGION, 1983

	Comprehensive strategies			*Partial strategies*						
Region and country	*Slowing of primate-city (metropolitan) growth*	*Promotion of small towns and intermediate cities*	*Rural development strategies*	*Relocation of national capital*	*Counter-magnets*	*New towns*	*Regional development policies for lagging regions*	*Border region strategies*	*Land colonization schemes*	*Ethnic population distribution policies*
A. AREA OF RESPONSIBILITY OF ECONOMIC COMMISSION FOR EUROPE										
Eastern Europe										
Bulgaria	X	X	X	-	-	-	X	-	-	-
Czechoslovakia	-	X	X	-	-	-	X	-	-	-
German Democratic Republic	-	X	X	-	-	-	X	-	-	-
Hungary	-	X	X	-	-	-	X	-	-	-
Poland	X	X	X	-	-	-	X	-	-	-
Romania	X	X	X	-	-	-	X	-	-	-
Northern Europe										
Denmark	-	-	-	-	-	-	X	-	-	-
Finland	X	-	-	-	-	-	X	-	-	-

TABLE 112 *(continued)*

Region and country	Comprehensive strategies			Partial strategies						
	Slowing of primate-city (metropolitan) growth	*Promotion of small towns and intermediate cities*	*Rural development strategies*	*Relocation of national capital*	*Counter-magnets*	*New towns*	*Regional development policies for lagging regions*	*Border region strategies*	*Land colonization schemes*	*Ethnic population distribution policies*
A. AREA OF RESPONSIBILITY OF ECONOMIC COMMISSION FOR EUROPE *(continued)*										
Northern Europe *(continued)*										
Iceland	-	-	-	-	-	-	X	-	-	-
Ireland	X	-	-	-	-	-	X	-	-	-
Norway	-	-	-	-	-	-	X	-	-	-
Sweden	-	-	-	-	-	-	X	-	-	-
United Kingdom	-	X	-	-	-	X	X	-	-	-
Southern Europe										
Albania	-	-	X	-	-	-	-	-	-	-
Greece	X	-	-	-	-	-	X	-	-	-
Italy	-	-	-	-	-	-	X	-	-	-
Malta	-	-	-	-	-	-	-	-	-	-
Portugal	-	-	-	-	-	-	X	-	-	-
Spain	-	-	-	-	-	-	X	-	-	-
Yugoslavia	X	-	-	-	-	-	X	-	-	-
Western Europe										
Austria	-	-	-	-	-	-	X	-	-	-
Belgium	-	-	-	-	-	-	X	-	-	-
France	X	-	-	-	-	X	X	-	-	-
Germany, Federal Republic of	-	-	-	-	-	-	X	-	-	-
Netherlands	-	-	-	-	-	-	X	-	-	-
Switzerland	-	-	-	-	-	-	X	-	-	-
Western Asia (part)										
Cyprus	-	-	X	-	-	-	X	-	-	-
Israel	-	X	X	-	-	X	X	X	X	-
Turkey	X	-	X	-	-	-	X	-	-	-
Northern America										
Canada	-	-	-	-	-	-	X	-	-	-
United States of America	-	-	-	-	-	-	-	-	-	-
Union of Soviet Socialist Republics										
Byelorussian SSR	-	X	X	-	-	-	X	-	-	-
Ukrainian SSR	-	X	X	-	-	-	X	-	-	-
USSR	-	X	X	-	-	-	X	-	-	-
B. AREA OF RESPONSIBILITY OF ECONOMIC AND SOCIAL COMMISSION FOR ASIA AND THE PACIFIC										
China										
China	X	X	X	-	-	-	X	X	-	-
Japan										
Japan	-	-	-	-	-	-	X	-	-	-
Other East Asia										
Democratic People's Republic of Korea	-	X	X	-	-	-	X	X	-	-
Mongolia	-	X	X	-	-	-	X	-	-	-
Republic of Korea	X	X	X	-	X	X	-	X	-	-
South-eastern Asia										
Burma	X	X	X	-	-	-	X	-	-	-
Democratic Kampuchea	-	-	X	-	-	-	-	-	-	-
Indonesia	X	X	X	-	-	-	X	-	X	-
Lao People's Democratic Republic	-	-	X	-	-	-	-	-	-	-
Malaysia	X	X	X	-	-	X	X	-	X	X
Philippines	X	X	X	-	-	-	X	-	X	-
Singapore	X	-	-	-	-	-	-	-	-	-
Thailand	X	X	X	-	-	-	X	X	X	-
Viet Nam	X	-	X	-	-	-	X	-	X	-

TABLE 112 *(continued)*

Region and country	Comprehensive strategies			Partial strategies						
	Slowing of primate-city (metropolitan) growth	*Promotion of small towns and intermediate cities*	*Rural development strategies*	*Relocation of national capital*	*Counter-magnets*	*New towns*	*Regional development policies for lagging regions*	*Border region strategies*	*Land colonization schemes*	*Ethnic population distribution policies*
B. AREA OF RESPONSIBILITY OF ECONOMIC AND SOCIAL COMMISSION FOR ASIA AND THE PACIFIC *(continued)*										
Southern Asia										
Afghanistan	-	-	X	-	-	-	-	-	-	-
Bangladesh	-	X	X	-	-	-	-	-	-	-
Bhutan	-	-	X	-	-	-	-	-	-	-
India	X	X	X	-	X	X	X	-	-	-
Iran (Islamic Republic of)	X	X	-	-	-	-	-	-	-	-
Maldives	-	X	X	-	-	-	X	-	-	-
Nepal	-	X	X	-	-	-	X	-	X	-
Pakistan	X	X	X	X	X	X	X	-	-	-
Sri Lanka	X	X	X	-	-	-	X	-	X	-
Oceania										
Australia-New Zealand										
Australia	-	X	-	-	-	-	X	-	-	-
New Zealand	-	-	-	-	-	-	X	-	-	-
Melanesia										
Fiji	-	X	X	-	-	-	X	-	-	-
Papua New Guinea	-	X	X	-	-	-	X	-	-	-
Solomon Islands	-	-	X	-	-	-	X	-	-	-
Vanuatu	-	-	X	-	-	-	X	-	-	-
Micronesia-Polynesia										
Kiribati	-	X	X	-	-	-	X	-	-	-
Nauru	-	-	X	-	-	-	X	-	-	-
Samoa	-	-	X	-	-	-	X	-	-	-
Tonga	-	-	X	-	-	-	X	-	-	-
Tuvalu	-	-	X	-	-	-	X	-	-	-
C. AREA OF RESPONSIBILITY OF ECONOMIC COMMISSION FOR LATIN AMERICA										
Economic Commission for Latin America										
Caribbean										
Bahamas	X	-	X	-	-	-	-	-	-	-
Barbados	X	-	X	-	-	-	-	-	-	-
Cuba	X	X	X	-	X	X	X	-	-	-
Dominica	-	-	X	-	-	-	-	-	-	-
Dominican Republic	X	X	X	-	-	-	X	-	-	-
Grenada	-	-	X	-	-	-	X	-	-	-
Haiti	X	X	X	-	-	-	X	-	-	-
Jamaica	X	X	X	-	-	-	X	-	-	-
Saint Lucia	-	-	X	-	-	-	-	-	-	-
Saint Vincent and the Grenadines	-	-	X	-	-	-	-	-	-	-
Trinidad and Tobago	X	-	X	-	-	-	-	-	X	-
Central America										
Belize	-	-	X	-	-	-	X	-	-	-
Costa Rica	X	X	X	-	-	-	-	-	X	-
El Salvador	X	-	X	-	-	-	-	-	-	-
Guatemala	-	-	X	-	-	-	X	-	X	X
Honduras	-	X	X	-	-	-	-	-	-	-
Mexico	X	X	X	-	-	X	X	X	X	-
Nicaragua	X	X	X	-	-	-	X	-	X	-
Panama	X	X	X	-	X	-	X	-	X	-
Temperate South America										
Argentina	X	-	X	-	-	-	X	X	-	-
Chile	X	-	X	-	-	-	X	X	X	-
Uruguay	X	-	X	-	-	-	X	X	X	-
Tropical South America										
Bolivia	X	X	X	-	-	-	X	X	X	-
Brazil	X	X	X	X	-	-	X	X	X	-
Colombia	X	-	X	-	X	-	X	X	-	-
Ecuador	X	X	X	-	-	-	X	-	X	-
Guyana	X	-	-	-	-	-	X	X	X	-
Paraguay	-	-	X	-	-	-	X	X	X	-
Peru	X	X	X	-	-	-	X	X	-	-
Suriname	X	X	X	-	-	-	X	-	X	-
Venezuela	X	X	X	-	-	X	X	X	X	-

TABLE 112 *(continued)*

Region and country	Comprehensive strategies			Partial strategies						
	Slowing of primate-city (metropolitan) growth	*Promotion of small towns and intermediate cities*	*Rural development strategies*	*Relocation of national capital*	*Counter-magnets*	*New towns*	*Regional development policies for lagging regions*	*Border region strategies*	*Land colonization schemes*	*Ethnic population distribution policies*
D. AREA OF RESPONSIBILITY OF ECONOMIC COMMISSION FOR AFRICA										
Eastern Africa										
Burundi	X	X	X	-	-	-	X	-	-	-
Comoros	-	-	X	-	-	-	X	-	-	-
Djibouti	-	-	-	-	-	-	X	-	-	-
Ethiopia	X	X	X	-	-	-	X	-	X	-
Kenya	X	X	X	-	-	-	X	-	X	-
Madagascar	X	X	X	-	-	-	X	-	X	-
Malawi	X	X	X	X	-	-	X	-	-	-
Mauritius	-	-	X	-	-	-	X	-	-	-
Mozambique	X	X	X	-	-	-	X	-	X	-
Rwanda	-	X	X	-	-	-	X	-	-	-
Seychelles	-	-	X	-	-	-	X	-	-	-
Somalia	-	-	X	-	-	-	-	-	X	-
Uganda	X	-	X	-	-	-	X	-	-	-
United Republic of Tanzania	X	X	X	X	-	-	X	-	-	-
Zambia	X	X	X	-	-	-	X	-	-	-
Zimbabwe	X	X	X	-	-	X	X	-	X	-
Middle Africa										
Angola	-	-	X	-	-	-	-	-	-	-
Cameroon[a]	X	X	X	X	-	-	X	-	X	-
Central African Republic	X	-	X	-	-	-	-	-	-	-
Chad	-	-	X	-	-	-	-	-	-	-
Congo	-	-	X	-	-	-	X	-	-	-
Equatorial Guinea	-	-	X	-	-	-	X	-	-	-
Gabon	X	-	X	-	-	-	X	-	-	-
Sao Tome and Principe	-	-	X	-	-	-	X	-	-	-
Zaire	X	-	X	-	-	-	X	-	X	-
Northern Africa										
Algeria	X	X	X	-	-	X	X	-	X	-
Egypt	X	X	X	-	-	X	X	X	-	-
Libyan Arab Jamahiriya	X	-	X	-	-	X	-	-	-	-
Morocco	X	X	X	-	-	-	-	-	-	-
Sudan	X	-	X	-	-	-	X	-	X	-
Tunisia	X	-	X	-	-	-	X	-	-	-
Southern Africa										
Botswana	X	X	X	X	-	-	X	-	-	-
Lesotho	-	-	X	-	-	-	-	-	-	-
South Africa	X	-	-	-	-	X	-	-	-	X
Swaziland	X	-	X	-	-	-	-	-	X	-
Western Africa										
Benin	-	-	X	-	-	-	-	-	-	-
Burkina Faso[b]	-	-	X	-	-	-	X	-	X	-
Cape Verde	-	-	X	-	-	-	-	-	X	-
Gambia	X	-	X	-	-	-	-	-	-	-
Ghana	X	X	X	-	-	-	X	-	-	-
Guinea	X	-	X	-	-	-	-	-	-	-
Guinea-Bissau	X	-	X	-	-	-	X	-	-	-
Ivory Coast	X	X	X	X	-	-	X	-	-	-
Liberia	X	X	X	-	-	-	-	-	-	-
Mali	-	-	X	-	-	-	X	-	-	-
Mauritania	X	-	X	-	-	-	X	-	-	-
Niger	-	-	X	-	-	-	X	-	-	-
Nigeria	X	X	X	X	-	-	X	-	X	-
Senegal	X	X	X	-	X	-	X	-	X	-
Sierra Leone	X	X	X	-	-	-	-	-	-	-
Togo	-	X	X	-	-	-	X	-	-	-
E. AREA OF RESPONSIBILITY OF ECONOMIC COMMISSION FOR WESTERN ASIA										
Western Asia[c]										
Bahrain	-	X	-	-	-	X	-	-	-	-
Democratic Yemen	-	X	X	-	-	-	-	-	X	-
Iraq	X	X	X	-	-	X	X	X	X	-

TABLE 112 *(continued)*

Region and country	Comprehensive strategies			Partial strategies						
	Slowing of primate-city (metropolitan) growth	*Promotion of small towns and intermediate cities*	*Rural development strategies*	*Relocation of national capital*	*Counter-magnets*	*New towns*	*Regional development policies for lagging regions*	*Border region strategies*	*Land colonization schemes*	*Ethnic population distribution policies*
E. AREA OF RESPONSIBILITY OF ECONOMIC COMMISSION FOR WESTERN ASIA *(continued)*										
Western Asia[c] *(continued)*										
Jordan	X	X	X	-	-	-	X	-	X	-
Kuwait	-	X	-	-	-	X	-	-	-	-
Lebanon	-	-	-	-	-	-	-	-	-	-
Oman	-	X	X	-	-	X	-	-	X	-
Qatar	-	X	-	-	-	X	-	-	-	-
Saudi Arabia	-	X	X	-	-	X	X	-	X	-
Syrian Arab Republic	X	X	X	-	-	-	X	-	-	-
United Arab Emirates	-	X	-	-	-	X	X	-	-	-
Yemen	-	X	X	-	-	-	-	-	-	-

Source: Categories based on Harry W. Richardson, "Population distribution policies", *Population Bulletin of the United Nations, No. 15-1983* (United Nations publication, Sales No. E.83.XIII.4), pp. 42-46. Assignment to categories based on assessment by Population Policy Section of the Population Division of the Department of International Economic and Social Affairs of the United Nations Secretariat.

[a] Formerly called the United Republic of Cameroon.

[b] Formerly called the Upper Volta.

[c] Excluding Cyprus, Israel and Turkey.

TABLE 113. TAXONOMY OF POPULATION DISTRIBUTION POLICY INSTRUMENTS, COUNTRIES BY AREA OF RESPONSIBILITY OF REGIONAL COMMISSIONS AND GEOGRAPHICAL REGION, 1983

Region and country	*Enterprise-oriented*							*Individual-oriented*					
	Public infrastructure subsidies and/or development	*Grants, loans and tax incentives to new industries and relocatees*	*Direct restrictions and controls on industrial location*	*Labour and employment subsidies*	*Direct state investment*	*Transport rate (and other interregional cost) adjustments*	*Growth-centre strategies*	*Migration subsidies and worker relocation assistance*	*Housing and social services*	*Human resource investments and job training*	*Residential controls*	*Rural development programmes*	*Land colonization schemes*
A. AREA OF RESPONSIBILITY OF ECONOMIC COMMISSION FOR EUROPE													
Eastern Europe													
Bulgaria	X	-	X	-	X	X	-	-	X	X	X	-	-
Czechoslovakia	X	-	X	-	X	X	-	-	X	X	X	-	-
German Democratic Republic	X	-	X	-	X	X	-	-	X	X	X	-	-
Hungary	X	-	X	-	X	X	-	-	X	X	X	-	-
Poland	X	-	X	-	X	X	-	-	X	X	X	-	-
Romania	X	-	X	-	X	X	-	-	X	X	X	-	-
Northern Europe													
Denmark	X	X	-	-	-	-	-	-	X	X	-	-	-
Finland	X	X	-	X	X	-	-	X	X	X	-	-	-
Iceland	X	X	-	-	-	-	-	-	X	X	-	-	-
Ireland	X	X	-	-	-	-	X	-	X	X	-	-	-
Norway	X	X	-	-	-	-	-	-	X	X	-	-	-
Sweden	X	X	-	-	-	-	-	-	X	X	-	-	-
United Kingdom	X	X	-	X	-	-	-	X	X	X	-	-	-
Southern Europe													
Albania	X	-	X	-	X	X	-	-	X	X	X	-	-
Greece	X	X	-	-	-	-	X	X	X	X	-	-	-
Italy	X	X	-	-	-	-	-	-	X	X	-	-	-
Malta	X	X	-	-	-	-	-	-	X	X	-	-	-
Portugal	X	X	-	-	-	-	-	-	X	X	-	-	-
Spain	X	X	-	-	-	-	-	-	X	X	-	-	-
Yugoslavia	X	-	X	-	X	X	-	-	X	X	X	X	-
Western Europe													
Austria	X	X	-	-	-	-	-	-	X	X	-	-	-
Belgium	X	X	-	-	-	-	-	-	X	X	-	-	-
France	X	X	-	-	-	-	-	-	X	X	-	-	-
Germany, Federal Republic of	X	X	-	-	-	-	-	-	X	X	-	-	-
Netherlands	X	X	-	-	-	-	X	-	X	X	-	-	-
Switzerland	X	X	-	-	-	-	-	-	X	X	-	-	-
Western Asia (part)													
Cyprus	X	X	-	-	-	-	-	-	X	X	-	-	-
Israel	X	X	-	-	X	-	-	-	X	X	X	X	-
Turkey	X	X	-	-	-	-	-	-	X	X	-	X	-
Northern America													
Canada	X	X	-	-	-	-	-	X	X	X	-	-	-
United States of America	X	X	-	-	-	-	-	-	X	X	-	-	-
Union of Soviet Socialist Republics													
Byelorussian SSR	X	-	X	-	X	X	-	X	X	X	X	-	-
Ukrainian SSR	X	-	X	-	X	X	-	X	X	X	X	-	-
USSR	X	-	X	-	X	X	-	X	X	X	X	-	-

TABLE 113 *(continued)*

Region and country	*Enterprise-oriented*							*Individual-oriented*					
	Public infrastructure subsidies and/or development	*Grants, loans and tax incentives to new industries and relocatees*	*Direct restrictions and controls on industrial location*	*Labour and employment subsidies*	*Direct state investment*	*Transport rate (and other interregional cost) adjustments*	*Growth-centre strategies*	*Migration subsidies and worker relocation assistance*	*Housing and social services*	*Human resource investments and job training*	*Residential controls*	*Rural development programmes*	*Land colonization schemes*
B. AREA OF RESPONSIBILITY OF ECONOMIC AND SOCIAL COMMISSION FOR ASIA AND THE PACIFIC													
China													
China	X	-	X	-	X	X	X	X	X	X	X	X	-
Japan													
Japan	X	X	-	-	X	-	-	-	X	X	-	-	-
Other East Asia													
Democratic People's Republic of Korea	X	-	X	-	X	-	-	-	X	X	X	X	-
Mongolia	X	-	X	-	X	-	-	-	X	X	-	X	-
Republic of Korea	X	X	X	X	X	X	X	-	X	X	X	X	-
South-eastern Asia													
Burma	X	-	-	-	-	-	-	X	X	X	-	X	-
Democratic Kampuchea	X	-	-	-	-	-	-	-	X	X	X	X	-
Indonesia	X	X	-	-	-	-	-	X	X	X	-	X	X
Lao People's Democratic Republic	X	-	-	-	-	-	-	-	X	X	-	X	-
Malaysia	X	X	X	-	X	-	X	X	X	X	-	X	X
Philippines	X	X	X	-	X	X	X	X	X	X	X	X	X
Singapore	X	X	-	-	X	-	-	-	X	X	-	-	-
Thailand	X	X	X	X	X	-	X	X	X	X	-	X	-
Viet Nam	X	X	-	-	X	-	-	X	X	X	X	X	X
Southern Asia													
Afghanistan	X	-	-	-	-	-	-	-	-	X	-	-	-
Bangladesh	X	-	-	-	-	-	X	-	X	X	-	X	-
Bhutan	X	-	-	-	-	-	-	-	X	X	-	-	-
India	X	X	X	-	X	X	X	-	X	X	-	X	-
Iran (Islamic Republic of)	X	-	X	-	X	-	-	-	X	X	-	X	-
Maldives	X	-	-	-	X	-	X	-	X	X	-	X	-
Nepal	X	-	-	-	-	-	X	-	X	X	-	X	-
Pakistan	X	X	X	-	X	-	X	-	X	X	-	X	-
Sri Lanka	X	-	X	-	-	-	-	-	X	X	-	X	X
Australia-New Zealand													
Australia	X	-	-	-	-	-	-	-	X	X	-	-	-
New Zealand	X	-	-	-	-	-	-	-	X	X	-	-	-
Melanesia													
Fiji	X	-	-	-	-	-	-	-	X	X	-	-	-
Papua New Guinea	X	-	-	-	-	-	X	-	X	X	-	-	-
Solomon Islands	X	-	-	-	-	-	-	-	X	X	-	-	-
Vanuatu	X	-	-	-	-	-	-	-	X	X	-	-	-
Micronesia-Polynesia													
Kiribati	X	-	-	-	-	-	-	-	X	X	-	-	-

Nauru	X	-	-	-	-	-	-	-	X	X	-	-	-
Samoa	X	-	-	-	-	-	-	-	X	X	-	-	-
Tonga	X	-	-	-	-	-	-	-	X	X	-	-	-
Tuvalu	X	-	-	-	-	-	-	-	X	X	-	-	-

C. Area of responsibility of Economic Commission for Latin America

Economic Commission for Latin America													
Caribbean													
Bahamas	X	X	-	-	-	-	-	-	X	X	-	-	-
Barbados	X	X	-	-	-	-	-	-	X	X	-	-	-
Cuba	X	-	X	-	X	-	X	X	X	X	X	X	-
Dominica	X	-	-	-	-	-	-	-	X	X	-	-	-
Dominican Republic	X	X	-	-	-	-	X	-	X	X	-	X	-
Haiti	X	-	-	-	-	-	-	-	X	X	-	X	-
Jamaica	X	X	-	-	-	-	X	-	X	X	-	X	-
Saint Lucia	X	-	-	-	-	-	-	-	X	X	-	X	-
Saint Vincent and the Grenadines	X	-	-	-	-	-	-	-	X	X	-	X	-
Trinidad and Tobago	X	X	-	-	-	-	-	-	X	X	-	X	X
Central America													
Belize	X	-	-	-	-	-	-	-	X	X	-	X	-
Costa Rica	X	X	-	-	-	-	-	-	X	X	-	X	X
El Salvador	-	-	-	-	-	-	-	-	X	X	-	X	-
Guatemala	-	-	-	-	-	-	-	-	X	X	-	X	X
Honduras	-	-	-	-	-	-	-	-	X	X	-	X	-
Mexico	X	X	X	-	X	-	X	-	X	X	-	X	-
Nicaragua	X	-	X	-	X	-	X	X	X	X	X	X	X
Panama	X	X	X	-	X	-	-	-	X	X	-	X	X
Temperate South America													
Argentina	X	X	X	-	-	-	-	-	X	X	X	X	-
Chile	X	-	-	-	-	-	X	-	X	X	-	X	X
Uruguay	X	-	-	-	-	-	-	-	X	X	-	X	X
Tropical South America													
Bolivia	X	-	-	-	-	-	-	-	X	X	-	X	X
Brazil	X	X	X	-	X	-	X	-	X	X	-	X	X
Colombia	X	X	X	-	-	-	-	-	X	X	-	X	-
Ecuador	X	X	-	-	-	-	X	-	X	X	-	X	X
Guyana	-	-	-	-	-	-	-	-	X	X	-	-	X
Paraguay	X	X	-	-	X	-	-	-	X	X	-	X	X
Peru	X	X	-	-	X	-	X	-	X	X	-	X	-
Suriname	X	-	-	-	-	-	-	-	X	X	-	X	-
Venezuela	X	X	X	-	X	-	X	-	X	X	-	X	X

TABLE 113 *(continued)*

Region and country	Enterprise-oriented							Individual-oriented					
	Public infrastructure subsidies and/or development	*Grants, loans and tax incentives to new industries and relocatees*	*Direct restrictions and controls on industrial location*	*Labour and employment subsidies*	*Direct state investment*	*Transport rate (and other interregional cost) adjustments*	*Growth-centre strategies*	*Migration subsidies and worker relocation assistance*	*Housing and social services*	*Human resource investments and job training*	*Residential controls*	*Rural development programmes*	*Land colonization schemes*
D. AREA OF RESPONSIBILITY OF ECONOMIC COMMISSION FOR AFRICA													
Eastern Africa													
Burundi	X	-	-	-	-	-	X	-	X	X	-	X	-
Comoros	X	-	-	-	-	-	-	-	X	X	-	-	-
Djibouti	X	-	-	-	-	-	-	-	X	X	-	-	-
Ethiopia	X	-	-	-	-	-	-	X	X	X	-	X	X
Kenya	X	X	X	-	X	-	X	-	X	X	-	X	-
Madagascar	X	-	-	-	X	-	X	X	X	X	X	X	X
Malawi	X	-	-	-	-	-	-	-	X	X	-	X	-
Mauritius	X	-	-	-	-	-	-	-	X	X	-	X	-
Mozambique	X	-	-	-	X	-	-	-	X	X	-	X	X
Rwanda	X	-	-	-	-	-	-	-	X	X	-	X	-
Seychelles	X	-	-	-	-	-	-	-	X	X	-	X	X
Somalia	X	-	-	-	-	-	-	-	X	X	-	X	-
Uganda	X	-	-	-	-	-	-	-	X	X	-	X	-
United Republic of Tanzania	X	-	X	-	X	-	X	X	X	X	X	X	X
Zambia	X	X	-	-	X	-	-	-	X	X	-	X	-
Zimbabwe	X	X	X	-	X	-	X	-	X	X	-	X	X
Middle Africa													
Angola	X	-	-	-	-	-	-	-	X	X	-	X	-
Cameroon[a]	X	-	-	-	-	-	-	X	X	X	-	X	X
Central African Republic	X	-	-	-	-	-	-	-	X	X	-	X	-
Chad	X	-	-	-	X	-	-	-	X	X	-	X	-
Congo	X	-	-	-	-	-	-	-	X	X	-	X	-
Equatorial Guinea	X	-	-	-	-	-	-	-	X	X	-	X	-
Gabon	X	-	-	-	-	-	-	-	X	X	-	X	-
Sao Tome and Principe	X	-	-	-	-	-	-	-	X	X	-	X	-
Zaire	X	-	-	-	-	-	-	X	X	X	-	X	-
Northern Africa													
Algeria	X	-	X	-	X	-	X	-	X	X	X	X	X
Egypt	X	X	-	-	X	-	X	-	X	X	-	X	-
Libyan Arab Jamahiriya	X	X	X	-	X	X	-	-	X	X	X	X	-
Morocco	X	X	-	-	-	-	-	-	X	X	-	X	-
Sudan	X	X	-	-	-	-	-	-	X	X	-	X	X
Tunisia	X	X	-	-	-	-	-	-	X	X	-	X	-
Southern Africa													
Botswana	X	X	X	-	X	-	X	-	X	X	-	X	-
Lesotho	X	X	-	-	-	-	-	-	X	X	-	X	-
South Africa	X	X	X	-	-	-	-	-	X	X	X	-	-
Swaziland	X	X	-	-	-	-	-	-	X	X	-	X	X

Western Africa													
Benin	X	-	-	-	-	-	-	-	X	X	-	X	-
Burkina Faso[b]	X	-	-	-	X	-	-	-	X	X	-	X	X
Cape Verde	X	-	-	-	-	-	-	-	X	X	-	X	-
Gambia	X	-	-	-	-	-	-	-	X	X	-	X	-
Ghana	X	X	-	-	X	-	X	-	X	X	-	X	X
Guinea	X	-	-	-	-	-	-	-	X	X	-	X	-
Guinea-Bissau	X	-	-	-	-	-	-	-	X	X	-	X	-
Ivory Coast	X	X	-	-	X	-	-	-	X	X	-	X	-
Liberia	X	-	-	-	-	-	X	-	X	X	-	X	-
Mali	X	-	-	-	X	-	-	-	X	X	-	X	-
Mauritania	X	-	-	-	-	-	-	-	X	X	-	X	-
Niger	X	-	-	-	X	-	-	-	X	X	-	X	-
Nigeria	X	X	-	-	X	-	X	-	X	X	-	X	X
Senegal	X	X	-	-	-	-	X	-	X	X	-	X	X
Sierra Leone	X	-	-	-	-	-	X	-	X	X	-	X	-
Togo	X	-	-	-	-	-	X	-	X	X	-	X	-

E. Area of responsibility of Economic Commission for Western Asia

Western Asia[c]													
Bahrain	X	-	-	-	X	-	X	-	X	X	-	-	-
Democratic Yemen	X	-	-	-	X	-	X	-	-	X	-	X	X
Iraq	X	-	X	-	X	-	X	-	X	X	-	X	X
Jordan	X	-	X	-	X	-	-	-	X	X	-	X	X
Kuwait	X	X	-	-	X	-	X	-	X	X	-	-	-
Oman	X	-	-	-	X	-	-	-	X	X	-	-	-
Qatar	X	-	-	-	X	-	X	-	X	X	-	-	X
Saudi Arabia	X	X	X	-	X	-	X	-	X	X	-	X	X
Syrian Arab Republic	X	-	X	-	X	-	-	-	X	X	-	X	-
United Arab Emirates	X	X	X	-	X	-	X	-	X	X	-	-	-
Yemen	X	-	-	-	-	-	-	-	X	X	-	X	-

Source: Categories based on Roland J. Fuchs and George J. Demko, "Population distribution measures and the redistribution mechanism", in *Population Distribution Policies in Development Planning* (United Nations publication, Sales No. E.81.XIII.5), pp. 70-84.

[a] Formerly called the United Republic of Cameroon.
[b] Formerly called the Upper Volta.
[c] Excluding Cyprus, Israel and Turkey.

TABLE 114. GOVERNMENTS' PERCEPTIONS AND POLICIES CONCERNING INTERNAL MIGRATION AND SPATIAL DISTRIBUTION, BY LEVEL OF DEVELOPMENT, AREA OF RESPONSIBILITY OF REGIONAL COMMISSIONS AND GEOGRAPHICAL REGION, 1983

Perception of overall acceptability of spatial distribution			*Policies concerning basic trends in internal migration*			
Appropriate	*Partially appropriate*	*Inappropriate*	*Accelerate*	*Decelerate*	*Reverse*	*No intervention*
			World			
19	70	79	4	102	21	41
			Developing countries			
6	48	75	3	81	15	30
			Developed countries			
13	22	4	1	21	6	11
			A. AREA OF RESPONSIBILITY OF ECONOMIC COMMISSION FOR EUROPE			
			Eastern Europe			
Czechoslovakia German Democratic Republic Hungary	Bulgaria Poland Romania	—	—	Bulgaria Czechoslovakia German Democratic Republic Hungary Poland Romania	—	—
			Northern Europe			
Denmark Sweden	Finland Iceland Ireland Norway United Kingdom	—	—	Finland Ireland Norway Sweden	Iceland United Kingdom	Denmark
			Southern Europe			
Holy See Malta San Marino	Albania Greece Italy Portugal Spain Yugoslavia	—	—	Albania Greece Italy Portugal Spain Yugoslavia	—	Holy See Malta San Marino
			Western Europe			
Belgium Liechtenstein Luxembourg Monaco	Austria Germany, Federal Republic of Switzerland	France Netherlands	—	Austria Germany, Federal Republic of	France Netherlands Switzerland	Belgium Liechtenstein Luxembourg Monaco
			Western Asia (part)			
—	Cyprus Israel	Turkey	Cyprus	Israel Turkey	—	—
			Northern America			
United States of America	Canada	—	—	—	—	Canada United States of America
			Union of Soviet Socialist Republics			
—	Byelorussian SSR Ukrainian SSR USSR	—	—	Byelorussian SSR Ukrainian SSR USSR	—	—
TOTAL	39			39		
			B. AREA OF RESPONSIBILITY OF ECONOMIC AND SOCIAL COMMISSION FOR ASIA AND THE PACIFIC			
			China			
—	China	—	—	—	China	—
			Japan			
—	—	Japan	—	Japan	—	—
			Other East Asia			
—	Democratic People's Republic of Korea	—	—	Democratic People's Republic of Korea	—	—

TABLE 114 *(continued)*

Perception of overall acceptability of spatial distribution			*Policies concerning basic trends in internal migration*			
Appropriate	*Partially appropriate*	*Inappropriate*	*Accelerate*	*Decelerate*	*Reverse*	*No intervention*
	B. AREA OF RESPONSIBILITY OF ECONOMIC AND SOCIAL COMMISSION FOR ASIA AND THE PACIFIC *(continued)*					
			Other East Asia (continued)			
	Mongolia Republic of Korea			Mongolia Republic of Korea		
			South-eastern Asia			
Singapore	Burma Malaysia	Democratic Kampuchea Indonesia Lao People's Democratic Republic Philippines Thailand Viet Nam	—	Burma Indonesia Thailand	Democratic Kampuchea Lao People's Democratic Republic Philippines Viet Nam	Malaysia Singapore
			Southern Asia			
—	Afghanistan Bangladesh Bhutan Maldives	India Iran (Islamic Republic of) Pakistan Nepal Sri Lanka	Bhutan	India Iran (Islamic Republic of) Maldives Pakistan Nepal Sri Lanka	Bangladesh	Afghanistan
			Australia-New Zealand			
—	New Zealand	Australia	—	—	Australia	New Zealand
			Melanesia			
—	Solomon Islands Vanuatu	Fiji Papua New Guinea	—	Fiji	—	Papua New Guinea Solomon Islands Vanuatu
			Micronesia-Polynesia			
Nauru	Kiribati Tonga Tuvalu	Samoa	—	Tonga Tuvalu	Kiribati	Nauru Samoa
TOTAL	34				34	
	C. AREA OF RESPONSIBILITY OF ECONOMIC COMMISSION FOR LATIN AMERICA					
			Caribbean			
Barbados	Antigua and Barbuda Bahamas Cuba Dominica Saint Lucia Saint Vincent and the Grenadines	Dominican Republic Grenada Haiti Jamaica Trinidad and Tobago	—	Bahamas Cuba Grenada Haiti Jamaica Trinidad and Tobago	—	Antigua and Barbuda Barbados Dominica Dominican Republic Saint Lucia Saint Vincent and the Grenadines
			Central America			
—	Belize Nicaragua	Costa Rica El Salvador Guatemala Honduras Mexico Panama	—	Belize Costa Rica El Salvador Guatemala Mexico Nicaragua Panama	—	Honduras
			Temperate South America			
—	—	Argentina Chile Uruguay	—	Argentina Chile Uruguay	—	—

TABLE 114 *(continued)*

Perception of overall acceptability of spatial distribution			*Policies concerning basic trends in internal migration*			
Appropriate	*Partially appropriate*	*Inappropriate*	*Accelerate*	*Decelerate*	*Reverse*	*No intervention*
		C. AREA OF RESPONSIBILITY OF ECONOMIC COMMISSION FOR LATIN AMERICA *(continued)*				
		Tropical South America				
—	Brazil	Bolivia Colombia Ecuador Guyana Paraguay Peru Suriname Venezuela	Brazil	Bolivia Colombia Ecuador Guyana Paraguay Peru Suriname Venezuela	—	—
TOTAL	32			32		
		D. AREA OF RESPONSIBILITY OF ECONOMIC COMMISSION FOR AFRICA				
		Eastern Africa				
—	Burundi Comoros Djibouti Malawi Uganda Zimbabwe	Ethiopia Kenya Madagascar Mauritius Mozambique Rwanda Seychelles Somalia United Republic of Tanzania Zambia	—	Ethiopia Kenya Madagascar Malawi Mauritius Seychelles Somalia Uganda United Republic of Tanzania Zambia Zimbabwe	Djibouti Mozambique	Burundi Comoros Rwanda
		Middle Africa				
—	Chad	Angola Cameroon[a] Central African Republic Congo Equatorial Guinea Gabon Sao Tome and Principe Zaire	—	Cameroon[a] Congo Gabon Sao Tome and Principe Zaire	Angola Central African Republic Equatorial Guinea	Chad
		Northern Africa				
—	Libyan Arab Jamahiriya Tunisia	Algeria Egypt Morocco Sudan	—	Algeria Egypt Libyan Arab Jamahiriya Morocco Sudan Tunisia	—	—
		Southern Africa				
—	Lesotho South Africa	Botswana Swaziland	—	Botswana Swaziland	South Africa	Lesotho
		Western Africa				
—	Gambia Guinea Sierra Leone	Benin Burkina Faso[b] Cape Verde Ghana Guinea-Bissau Ivory Coast Liberia Mali Mauritania Niger Nigeria Senegal Togo	—	Gambia Ghana Ivory Coast Liberia Mali Mauritania Nigeria Senegal Togo	Guinea-Bissau	Benin Burkina Faso[b] Cape Verde Guinea Niger Sierra Leone
TOTAL	51			51		

TABLE 114 *(continued)*

Perception of overall acceptability of spatial distribution			*Policies concerning basic trends in internal migration*			
Appropriate	*Partially appropriate*	*Inappropriate*	*Accelerate*	*Decelerate*	*Reverse*	*No intervention*
		E. AREA OF RESPONSIBILITY OF ECONOMIC COMMISSION FOR WESTERN ASIA				
		Western Asia[c]				
Bahrain	Democratic Yemen	Jordan	Saudi Arabia	Democratic Yemen	Jordan	Bahrain
Kuwait	Iraq			Iraq		Kuwait
Qatar	Lebanon			Lebanon		Qatar
	Oman			Oman		Yemen
	Saudi Arabia			Syrian Arab Republic		
	Syrian Arab Republic			United Arab Emirates		
	United Arab Emirates					
	Yemen					
TOTAL	12			12		

Sources: Replies to "Fifth Population Inquiry among Governments: monitoring of government perceptions and policies on demographic trends and levels in relation to development as of 1982"; and from information in the Population Policy Data Bank maintained by the Population Division of the Department of International Economic and Social Affairs of the United Nations Secretariat.

[a] Formerly called the United Republic of Cameroon.

[b] Formerly called the Upper Volta.

[c] Excluding Cyprus, Israel and Turkey.

NOTES

[1] *World Population Trends and Policies: 1979 Monitoring Report*, vol. II. *Population Policies* (United Nations publication, Sales No. E.79.XIII.5).

[2] *World Population Trends and Policies: 1981 Monitoring Report*, vol. II. *Population Policies* (United Nations publication, Sales No. E.82.XIII.3).

[3] George W. Hoffman and Ronald L. Hatchett, "Policy and population in Yugoslavia and Bulgaria" in *Population and Migration Trends in Eastern Europe*, Huey L. Kostanick, ed. (Boulder, Col., Westview Press, 1977), pp. 120-121.

[4] Niles Hansen, "A review and evaluation of attempts to direct migrants to smaller and intermediate-sized cities", in *Population Distribution Policies in Development Planning* (United Nations publication, Sales No. E.81.XIII.5), p. 120.

[5] Organisation for Economic Co-operation and Development, *Regional Problems and Policies in OECD Countries* (Paris, 1976), vol. II, pp. 20-22.

[6] There are now some 30 of these towns, with a combined population of some 2 million.

[7] "Regional policy under the axe", *The Economist*, 19 February 1983, p. 61.

[8] Organisation for Economic Co-operation and Development, *Regional Problems and Policies in OECD Countries*, Vol. I, (Paris, OECD, 1976), vol. I, p. 61.

[9] *Ibid.*, p. 64.

[10] Hansen, *loc. cit.*, pp. 116-117.

[11] *Ibid.*, p. 116.

[12] Organisation for Economic Co-operation and Development, *Regional Problems and Policies in OECD Countries*, vol. II, p. 87.

[13] *Ibid.*, pp. 101-102.

[14] *Ibid.*, vol. I, p. 84.

[15] Alan Rodgers, "Recent developments and proposed changes in Italian regional policy: their impact and potential implications", paper presented at the Conference on Regional Development Problems and Policies in Eastern and Western Europe, Bellaggio, Italy, 7-11 June 1982, sponsored by the Rockefeller Foundation and the American Council of Learned Societies.

[16] Organisation for Economic Co-operation and Development, *Regional Problems and Policies in OECD Countries*, vol. II, p. 113.

[17] Zlatko Pepeonik, "Some regional geographical issues in Yugoslavia", paper presented at the Conference on Regional Development Problems and Policies in Eastern and Western Europe, Bellaggio, Italy, 7-11 June 1982.

[18] *Ibid.*

[19] Michel Savy, "Regional development issues in France", paper presented at the Conference on Regional Development Problems and Policies in Eastern and Western Europe, Bellaggio, Italy, 7-11 June 1982.

[20] Organisation for Economic Co-operation and Development, *Regional Problems and Policies in OECD Countries*, vol. II, p. 58.

[21] *Ibid.*, p. 131.

[22] *Ibid.*, p. 141.

[23] *Ibid.*, p. 210.

[24] Nathaniel Lichfield, "National strategy for the new-towns program in Israel", in *International Urban Growth Policies*, Gideon Golany, ed. (John Wiley and Sons, New York, 1978), p. 165.

[25] *Ibid.*, p. 167.

[26] E. B. Attah, "Migrant exchange in an urban system: policy effects in Israel", paper presented at the annual meeting of the Population Association of America, Pittsburgh, Pa., 14-16 April 1983, p. 5.

[27] *Population Policy Compendium: China*, situation as assessed in May 1981, joint publication of the Population Division of the Department of International Economic and Social Affairs of the United Nations Secretariat and the United Nations Fund for Population Activities (New York, 1981).

[28] The development of an industrial pole at Ulsan (since 1962) has helped to cement the Busan counter-magnet strategy.

[29] The Government's target is to settle some 4 million migrants in the New Economic Zones during the period 1981-1985.

[30] During the period 1957-1970, the urban population of Malaysia grew at the same rate as the rural population.

[31] The four largest Indian cities absorb only about 3.5 per cent of the total population; Karachi accounts for only about 5 per cent of the population of Pakistan.

[32] These agrovilles and *marakaz* have little prospect for influencing the settlement pattern, although they may make a difference to the efficiency of rural areas at the micro level.

[33] Benjamin Higgins, "Substantial regions in subregional nations", *Regional Development Dialogue*, special issue (1982), p. iv.

[34] Robin Pryor, "Population distribution policies in developed countries and the case of Australia", paper presented at Symposium on Population Distribution Policies, International Geographical Union, p. 7.

[35] *Ibid.*, p. 9.

[36] H. M. Gunasekera, "3 Trends in Regional Planning in the South Pacific", *Regional Development Dialogue*, special issue (1982), p. 36.

[37] *Ibid.*, p. 34.

[38] *Ibid.*, pp. 35-36.

[39] *Ibid.*, p. 38.

[40] *Ibid.*, p. 38.

[41] *Ibid.*, p. 39.

[42] This regional commission is currently called the Economic Commission for Latin America and the Caribbean (ECLAC).

[43] Nine Governments in Temperate and Tropical South America, four in Central America and five in the Caribbean desire to slow metropolitan growth.

[44] In Colombia, the degree of urban primacy is far from extreme; it has two other major cities besides Bogotá, several strong intermediate cities and at least one well-developed urban hierarchy (at Valle).

[45] The Government reported in the Fifth Inquiry that 49 per cent of the population of Santo Domingo and 43 per cent in the second largest city, Santiago, could be classified as migrants.

[46] *Population Policy Compendium: Dominican Republic,* situation as assessed in September 1979, joint publication of the Population Division of the Department of International Economic and Social Affairs of the United Nations Secretariat and the United Nations Fund for Population Activities (New York, 1979).

[47] *Population Policy Compendium: Jamaica,* situation as assessed in March 1982, joint publication of the Population Division of the Department of International Economic and Social Affairs of the United Nations Secretariat and the United Nations Fund for Population Activities (New York, 1982).

[48] *Population Policy Compendium: Haiti,* situation as assessed in August 1980, joint publication of the Population Division of the Department of International Economic and Social Affairs of the United Nations Secretariat and the United Nations Fund for Population Activities (New York, 1980).

[49] The Government's earliest strategy involved curtailing investments that would stimulate employment at Havana, ending school construction etc. Although ration cards and worker identity cards were introduced in 1963, there is no evidence that this documentation and related registration systems have been directly monitored to control migration.

[50] *Population Policy Compendium: Cuba,* situation as assessed in September 1979, joint publication of the Population Division of the Department of International Economic and Social Affairs of the United Nations Secretariat and the United Nations Fund for Population Activities (New York, 1979).

[51] The primacy indices for a number of Central American countries are as follows: Costa Rica, (53); Nicaragua, (43); El Salvador, (40); Guatemala, (39); Honduras, (36); and Mexico, (30). Bertram M. Renaud, *National Urbanization Policies in Developing Countries* (Washington, D.C., The World Bank, 1979), p. 31.

[52] *Population Policy Compendium: Costa Rica,* situation as assessed in November 1981, joint publication of the Population Division of the Department of International Economic and Social Affairs of the United Nations Secretariat and the United Nations Fund for Population Activities (New York, 1981).

[53] *Population Policy Compendium: Panama,* situation as assessed in January 1979, joint publication of the Population Division of the Department of International Economic and Social Affairs of the United Nations Secretariat and the United Nations Fund for Population Activities (New York, 1979).

[54] El Salvador was the location of one of the first major sites and services projects of the World Bank.

[55] According to various official estimates, Mexico City is projected to grow from 13.2 million in 1980 to from 32 million to 35 million; and according to the most conservative estimates, to at least 20 million.

[56] See, for example, the National Urban Plan, the National Plan for Industrial Development and the Regional Demographic Policy.

[57] Renaud, *op. cit.*, p. 31.

[58] *Population Policy Compendium: Chile,* situation as assessed in March 1981, joint publication of the Population Division of the Department of International Economic and Social Affairs of the United Nations Secretariat and the United Nations Fund for Population Activities (New York, 1981).

[59] The recent construction of hydroelectric plants on the western border of Uruguay has stimulated fairly large-scale migration to the region, although it is still uncertain whether it will result in permanent settlement on any significant scale.

[60] Santo Domingo de los Colorados, for example, grew at nearly 14 per cent per annum during the last intercensal period (1962-1974).

[61] Such a strategy would be difficult to implement since, except for Huancayo and Arequipa, most of the towns of the *sierra* are small and stagnant; moreover, the topographical barriers between Lima and the *sierra* towns would be very costly to surmount.

[62] *Population Policy Compendium: Colombia,* situation as assessed in January 1981, joint publication of the Population Division of the Department of International Economic and Social Affairs of the United Nations Secretariat and the United Nations Fund for Population Activities (New York, 1981).

[63] *Ibid.*

[64] Developed jointly by the public and private sectors, Valencia succeeded in attracting skilled workers, although its proximity to Caracas (100 kilometres) has prevented it from serving as an effective counter-magnet.

[65] *Population Policy Compendium: Venezuela,* situation as assessed in February 1982, joint publication of the Population Division of the Department of International Economic and Social Affairs of the United Nations Secretariat and the United Nations Fund for Population Activities (New York, 1982).

[66] *Population Policy Compendium: Brazil,* situation as assessed in July 1983, joint publication of the Population Division of the Department of International Economic and Social Affairs of the United Nations Secretariat and the United Nations Fund for Population Activities (New York, 1983).

[67] The figures for percentage urban refer to 1980 and are based on the 1980 assessment by the Population Division of the Department of International Economic and Social Affairs of the United Nations Secretariat. Improved data received from a number of countries in Africa indicate that the figures for percentage urban in 1980 are substantially different for some countries. For example, according to the 1982 assessment, Botswana was only 15.3 per cent urban in 1980, while Malawi was only 9.7 per cent urban.

[68] This figure would have been lower without the inclusion in the subregional total of two small island countries — Mauritius and Réunion, which had 1980 urban populations of 54.9 and 52.8 per cent, respectively.

[69] In Ethiopia, the eastern and south-eastern provinces, which are desert and semi-desert areas, are sparsely populated, as is one western province that is similarly arid; the mountainous plateau is more heavily settled.

[70] Kenya as a whole was only 14.2 per cent urban in 1980.

[71] *Population Policy Compendium: United Republic of Tanzania,* situation as assessed in September 1980, joint publication of the Population Division of the Department of International Economic and Social Affairs of the United Nations Secretariat and the United Nations Fund for Population Activities (New York, 1980).

[72] At the time of the Fifth Population Inquiry, this country was called the United Republic of Cameroon.

[73] The population of metropolitan Cairo (5 million in 1980), the largest city in Africa, is nearly 3 million larger than the combined population of the 14 intermediate cities in Egypt, including the secondary metropolis of Alexandria.

[74] The six cities, 10th of Ramadan City, Sadat City, El Obour, El Amal (Helwan), 6th of October and 15th of May, have projected populations of up to 500,000.

[75] *Population Policy Compendium: Egypt,* situation as assessed in August 1982, joint publication of the Population Division of the Department of International Economic and Social Affairs of the United Nations Secretariat and the United Nations Fund for Population Activities (New York, 1982).

[76] *Population Policy Compendium: Nigeria,* situation as assessed in November 1981, joint publication of the Population Division of the Department of International Economic and Social Affairs of the United Nations Secretariat and the United Nations Fund for Population Activities (New York, 1981).

[77] At the time of the Fifth Population Inquiry, this country was called the Upper Volta.

[78] Following independence, the reduced functioning of Aden (and the resultant unemployment) deterred in-migration; pressure on Aden was further reduced by massive emigration during the 1970s.

XXIII. INTERNATIONAL MIGRATION POLICIES*

There have been important changes in the volume, direction and characteristics of international migration flows since the World Population Plan of Action was drafted in 1974, and a number of policy trends that were beginning to emerge at the time the Plan was issued are now firmly established. First, the number of places for permanent immigrants has more or less stabilized and there is a clear and growing preference in all regions of the world for temporary rather than permanent workers. Secondly, in a context of a slowdown in world economic growth, a limited number of places for permanent immigrants, the ending of the recruitment of foreign manpower in Western Europe and growing restrictions on foreign workers in Western Asia and other regions, there has been a rise in illegal/undocumented migration in nearly all world regions; and this has become an active area of policy concern. Thirdly, refugee movements have been larger in recent years than at any time since the Second World War; and a number of developing countries — including some of the world's poorest countries — have been most severely affected. It now appears that a majority of refugees will remain in the less developed regions from which they come and that durable solutions must be found to assist them there. Basic information on countries' perceptions and policies concerning international migration is summarized in tables 115-118 at the end of this chapter.

This chapter briefly describes the major policy changes that have taken place between 1974 and 1983, with respect to: permanent immigration/emigration; labour migration, in both developed and developing countries; illegal/undocumented migration; and refugees.

A. Permanent immigration

Countries with a tradition of accepting relatively large numbers of immigrants for permanent settlement adopted increasingly selective policies during the 1970s; and the number of places for permanent immigrants in all world regions is now relatively small, has more or less stabilized and may well decline in future years. The four traditional immigration countries — the United States of America, Canada, Australia and New Zealand — have accepted a total of fewer than 1 million immigrants per annum in recent years.[1] All of these countries revised their immigration policies beginning in the 1960s, when the policies became more "universalist" (in the sense that they accepted immigrants on a wider geographical basis) yet generally more restrictive. Utilizing quotas and, in some countries, "point systems" or numerical weightings (for example, the system of preferences in the United States of America, per country and with world-wide ceilings; the Canadian triennial rolling immigration quotas; and the Australian Numerical Multi-factor Assessment System (NUMAS)), the policies of the traditional immigration countries remain heavily biased towards family reunion but also give preference to immigrants with assets, education and specific skills.

Briefly reviewing major policy developments during the period 1974-1983 in the traditional immigration countries, the United States is somewhat different from the other immigration countries, in that no other country appears to have adopted numerical limits as a migration control mechanism, something that has been a feature of United States immigration policy since 1921. The United States system has relied upon the utilization of numerical limits — a world-wide ceiling of 270,000 (excluding refugees) and a per country limit of 20,000 — which are largely based on precedent rather than on any recent assessment of national needs. The overall ceiling, which does not apply to refugees, has remained fixed, regardless of changing international and internal circumstances.

In response to growing concern over national immigration policies, the United States Congress, in 1980, established the Select Commission on Immigration and Refugee Policy, in order to undertake the first comprehensive assessment of United States immigration policies by a Congressional-Presidential Commission since 1911. With respect to total immigrant admissions, the Select Commission recommended a continuing system whereby some immigrants would be numerically limited but certain others, such as immediate relatives of United States citizens,[2] would be exempt from any numerical ceilings. More specifically, the Commission recommended an annual ceiling of 350,000 numerically limited immigrant visas, with an additional 100,000 visas available for the first five years (to permit backlogs to be cleared). With respect to the admission of "seed immigrants" — for example, persons having no family or other ties to the country — the Commission recommended that some 100,000 visas should be made available for this category.

Following the change of administration in 1981, a new institution — the Task Force on Immigration and Refugee Policy — was established, which prepared a legislative package containing some, but not all, of the proposals put forth by the Select Commission and proposing a number of new initiatives. Subsequently, however, the United States Congress drew up its own

* Prepared by the Population Division of the Department of International Economic and Social Affairs of the United Nations Secretariat.

immigration reforms, whose main provisions were: a numerical ceiling of 450,000 legal admissions per annum (not including refugees), of which 100,000 would be allocated to "independent" immigrants (for example, workers or investors); of those remaining, first access would be for immediate family members of United States citizens; then all others.

In its reply to the Fifth Inquiry, the United States Government reported: "Major reform legislation passed the Senate and was introduced and debated in the House of Representatives in the last Congress. It is anticipated that similar legislation will be introduced early in the 98th Congress".

In 1974, the Canadian Immigration Policy Study Group published a discussion paper on immigration (the Green Paper), which made a number of important recommendations concerning the role of immigration in overcoming bottle-necks in the labour market: namely, that immigration policy and domestic manpower policy should be closely linked and that priority in hiring should be given to residents of Canada.

As the Government of Canada reported in 1983 in the Fifth Inquiry, most of these recommendations had been implemented in the Immigration Act of 1976. This legislation was basically directed towards achieving a stable intake of immigrants — to be determined in a demographic context and to be based on consultations with the provinces. Because it was thought that the Canadian immigration targets could best be attained by longer term planning, the Government adopted a three-year planning period of annually announced immigration levels, with the total level for each year representing the sum of three immigration categories: family class; refugees; and selected workers (which corresponded to the social, humanitarian and economic components of the Canadian immigration policy). As the Government reported in the Fifth Inquiry, the basic aim of its immigration policy has been to avoid major swings in total inflows from one year to another, although it acknowledged that there might be marked changes from year to year in the relative contribution of a given category. With respect to the actual quotas, Canada has determined that it would be appropriate to admit from 105,000 to 110,000 immigrants in 1983, from 115,000 to 125,000 in 1984 and from 120,000 to 135,000 in 1985.

The immigration policy of Australia underwent a number of significant changes during 1974-1984, with the Government tightening, then relaxing and then once again tightening entry criteria in response to a number of external and domestic factors (for example, world recession, large-scale refugee admissions during the 1970s, rising domestic unemployment and demands for immigration curbs from unions and employers). The Australian immigration policy was tightly defined during the period 1974-1977. However, following the recommendations of a Green Paper prepared by the Australian Population and Immigration Council (1976), the Government announced a new immigration policy (1978), which would facilitate the admission of some 210,000 immigrants during the following three-year period.

One of the major innovations of the 1978 immigration policy was its relative flexibility. As a means of maintaining a steady rate of immigration and providing a reliable basis for planning in the public and private sectors, the Government of Australia implemented a "triennial rolling immigration programme", which had annual quotas and was continously monitored, in order to vary the composition of the migrant intake to meet particular demands.[3] The Australian approach to migrant selection was based on numerical weightings of a group of economic and what the Government termed "personal and settlement factors" that were considered to be indicators of capacity to settle successfully in Australia.[4] All applicants for migrant entry, except refugees, were assessed under this Numerical Multi-factor Assessment System (NUMAS). To cite an example of how the system operated, in the economic category, out of a possible total of 50 points, the greatest number of points (14) were awarded for a skill in demand in Australia. Skills that were recognized in Australia (if not in greatest demand) or "transferable assets to assist in settlement" were each awarded six points, while "pre-arranged employment" and "economic viability" were each awarded five. Lastly, age could be awarded up to four points, competence in English was given three points and "ability to communicate in proposed employment" was awarded two.[5] In late 1982, largely as a result of unease over rising unemployment, the Government altered its target intake in mid-course. Whereas the total intake was 119,900 in 1980/81 and 118,700 in 1981/82, it was expected to be around 100,000 in 1982/83.[6]

Whereas immigration has played a historically significant role in contributing to population growth in New Zealand, the Government is now relatively satisfied with the low level of population growth and moderate immigration levels. Since 1976, the policy of New Zealand has been directed to receiving an annual net immigration of only some 5,000 persons, mainly limited to specific occupation groups whose skills are in demand, family members, immigrants from the South Pacific and refugees. Although the high level of emigration after the mid-1970s was not at first considered to be a problem, the Government of New Zealand became concerned over the negative effects of the transfer of emigrants' assets on the balance of payments. As a result, the Government slightly revised its immigration policy in 1979, deciding to consider applications from potential immigrants who did not have a specific skill in demand but who had sufficient capital and business experience to qualify for permanent residence.[7]

Given the economic prospects and domestic political concerns of the traditional immigration countries, their restrictive immigration policies are likely to remain in force in the foreseeable future. While none of these countries is likely to bring about a halt in immigration, neither are they likely to increase their intake significantly. Rather, it is reasonable to assume that their Governments will continue to "fine-tune" immigration

decisions, weighing humanitarian concerns with other political and societal objectives, probably by means of increasingly specific selection criteria.

The policies in regard to permanent immigration of a number of countries in other regions also are briefly reviewed here. Among the European countries, the United Kingdom of Great Britain and Northern Ireland has been one of the major recipients of permanent immigrants, primarily from its former colonies. On 1 January 1983, the United Kingdom put into force its new citizenship law, culminating a 20-year process of placing increasing controls on immigration and, in effect, closing the door to future permanent immigration from overseas. The 1983 Nationality Act created three separate categories of British subjects to replace the old citizenship of the United Kingdom and its former colonies. Under the new rules, all citizens of the United Kingdom, including the Channel Islands and the Isle of Man, as well as colonies "closely connected" with the United Kingdom, become British citizens, with the right to live in that country and pass this right on to their children. The other two categories — citizens of British dependent territories, who include some 3 million persons; and British oversea citizens, who are mainly located in former British colonies in Eastern Africa and in Malaysia — have no automatic right of residence. The Nationality Act also ended the seven-century-old legal tradition of *jus soli,* by which any child born in the United Kingdom was eligible for British citizenship.

In a number of other European countries, temporary worker programmes were so thoroughly transformed after 1973-1974 that they became in a sense *de facto* immigration policies. There are, of course, major differences between the basically unplanned immigration policies of the Western European countries and the policies of the traditional immigration countries. The former countries make no pretence of achieving "universality", since the immigrants have come from the former sending countries of the Mediterranean basin. Family reunion has been the most important, if not the only, admissions criteria. Moreover, immigrants to Western Europe have been more likely to remain non-citizens, although they gradually have been granted wider although still limited political rights.

A number of Latin American countries (primarily Venezuela and Argentina but, on a smaller scale, most countries in the region), as well as a few countries in other regions, such as Israel and South Africa, also have admitted permanent immigrants by means of selective immigration policies. The flows have been smaller than desired, however, since target immigrants (typically those with technical skills and/or capital or specific social characteristics) have generally preferred to migrate to the developed countries. Indeed, two of the countries that have had long-standing pro-immigration policies — Argentina and Israel — have been experiencing large-scale emigration in recent years.

Although there is likely to be a growing demand in future years for the limited number of places that are available for permanent immigrants in all world regions, there is no substantial basis to believe that any new sources of places for permanent immigrants will emerge. The small number of developing countries that desire increased — and largely selective — immigration may continue to do so in the future, although domestic economic and political problems may continue to make these countries relatively unattractive destinations for potential immigrants. Some migrants possibly might be induced to settle in developing countries that desire immigration if sufficient incentives could be provided, while refugees could, in limited instances, fill the role of settlers. However, the high costs involved in both of these alternatives and the continuing need for outside financial assistance make these possibilities unlikely to occur on anything but a token scale.

B. Permanent emigration

A number of Governments have formulated policies to discourage emigration, particularly of professionals and other highly trained personnel. However, few Governments in any region of the world have explicit policies to encourage permanent emigration. Two important points must be made in discussing permanent emigration. First, a growing number of developing countries encourage temporary worker emigration rather than permanent emigration, since their Governments are interested in obtaining remittances. (The consumption, savings and remittance habits of permanent and temporary emigrants usually are very different, since they are affected by such factors as length of stay and whether the migrant's dependants are in the host or home country.) Secondly, a number of countries that experience a significant amount of permanent emigration do so either because there is some leakage into permanence of temporary migrants or because their Governments have implicit emigration policies. Because the topic of permanent emigration is sensitive, the following brief discussion focuses mainly on countries that have explicit policies to promote permanent emigration.

Economic Commission for Europe

In the area of responsibility of the Economic Commission for Europe (ECE), three countries have explicit policies to encourage the emigration of their nationals. In its reply to the Fourth Population Inquiry, the Netherlands reported that, for demographic as well as socio-economic reasons, it pursued an active emigration policy. Measures were taken to facilitate the movement of nationals who, on their own accord, had decided to settle in another country.

Portugal, the second European country that desires to increase emigration, has long considered out-migration to be a partial remedy for unemployment. In recent years, the Government's policy has been shaped by factors that arose from its former status as a colonial Power, as in the case of the Netherlands. Following the return of some 1 million persons from its former colonies of Angola and Mozambique, Portugal experienced unemployment of about 25 per cent. As a result,

the Government has encouraged the departure not only of displaced persons but of unemployed Portuguese nationals who desired to emigrate.

Turkey, the third country in this category in the ECE area, has long encouraged both temporary and permanent emigration of its nationals. Since the virtual closing of Western European labour markets to new contingents of Turkish workers, large numbers of Turks have attempted to enter such countries as the Federal Republic of Germany by claiming to be asylum-seekers. As the receiving countries have now adopted a less lenient position towards these asylum-seekers, the prospects of Turkey's achieving large-scale emigration appear to be poor.

Israel, on the other hand, has a policy to encourage permanent immigration, although it has experienced steady and continuing permanent emigration—mainly to the United States.

Economic and Social Commission for Asia and the Pacific

In the area of responsibility of the Economic and Social Commission for Asia and the Pacific (ESCAP), two countries have explicit policies to promote the emigration of their nationals. Pakistan has long sent skilled and unskilled migrants to such destinations as Canada, the United Kingdom and the United States; and, in recent years, it has been sending increasing numbers of semi-skilled and skilled workers to Western Asia. The Republic of Korea has made a concerted effort not only to export project packages but to promote permanent emigration. The Government reported in its reply to the Fifth Inquiry that it had "long recognized external migration as a potential avenue to relieve its population pressure". According to official estimates, 452,000 nationals of the Republic of Korea emigrated to a total of 72 countries between 1962 and 1981 (an average of about 40,000 per annum). The Government's goal is to gradually increase this outflow — from 32,800 departures in 1982 to 43,400 in 1986.

Economic Commission for Latin America

In the area of responsibility of the Economic Commission for Latin America (ECLA),[8] a majority of the Governments clearly desire selective immigration rather than emigration. Indeed, only two countries in the Latin American region — Barbados and El Salvador — have had significant emigration and consider it to be acceptable. Although El Salvador began to explore the possibility of concluding bilateral accords (with such countries as Bolivia) to promote the emigration of its nationals, this policy was suspended as a result of the country's unsettled political situation. Whereas Haiti has not explicitly promoted emigration, it has acknowledged that it has derived substantial revenue from the issuance of exit visas and that remittances from Haitians living abroad have been an important source of revenue. In its reply to the Fifth Inquiry, however, the Government reported that reducing emigration (and encouraging repatriation) was a high priority.

Economic Commission for Africa

In the area of responsibility of the Economic Commission for Africa (ECA), few Governments desire to promote the emigration of their nationals, although a number of countries that have had significant emigration desire to maintain these flows. These countries include Comoros, Malawi and Mozambique in Eastern Africa; Angola and Chad in Middle Africa; Egypt, Morocco and Tunisia in Northern Africa; Lesotho and Swaziland in Southern Africa; and Cape Verde, Mali, Mauritania and Senegal in Western Africa. One country, Rwanda, has had fairly insignificant emigration but now desires to increase the flow, as a means of reducing demographic pressure on the land and improving the well-being of the country's population.[9] The Government of Mauritius reported in the Fifth Inquiry that it desired to encourage permanent emigration — which was already significant — so as to reduce the demand for employment.

Economic Commission for Western Asia

Although interregional labour flows in the area of responsibility of the Economic Commission for Western Asia (ECWA) often resulted in permanent settlement during the 1950s and 1960s, the situation has changed significantly in recent years. Most workers from countries within the ECWA area are required to obtain visas and work permits for employment in other Arab countries and to return to their countries of origin upon completion of a project. Moreover, Asian workers, whose repatriation can be more closely supervised, are gradually displacing workers from within the ECWA area of responsibility. Two countries in Western Asia, Jordan and the Syrian Arab Republic, have had implicit policies over the years to promote the emigration of their nationals, although their Governments have not formulated any explicit policies in this regard.

C. Labour migration: developing countries

In the developing countries of Western Asia and Northern Africa in particular, the pattern of labour migration changed dramatically during the past decade. Whereas migration between Arab countries was generally of a long-term or permanent nature up to the early 1970s, the rapid development of the petroleum-producing countries during the 1970s resulted in massive inflows of temporary labour, which have already peaked in certain countries, and to the development of new types of labour management.

Labour migration policies have also changed significantly. Until the decade of the 1970s, the resource-rich countries in Northern Africa and Western Asia maintained a *laissez-faire* position with respect to their labour shortages, allowing migrant workers from neighbouring Arab countries to enter with a minimum of control. By the mid- and late 1970s, with the rapid growth of their construction sectors, the receiving countries needed increasingly large supplies of labour, which they obtained from a number of Asian countries — at first because the Arab supply States did not have

organized recruitment structures and could not mobilize labour rapidly enough. The preference for Asian labour increased, however, as the host Governments became increasingly concerned with keeping their expatriate populations at a politically and culturally tolerable level, and with enforcing the rotation process, since many of the migrants from various Arab countries (and a significant proportion of the earlier Asian migrants from India and Pakistan) had stayed permanently. Thus, on the grounds both of maximizing economic efficiency and of minimizing the social costs of immigration, the labour-importing countries began recruiting workers — mainly from South-eastern Asia — who worked for competitive wages, were racially or linguistically different (hence easily distinguishable) and were repatriated when their contracts expired.

The Asian countries have frequently entered labour markets in Western Asia through national and third-country contracting firms, which have brought in labour for their projects, settled them in work camps and repatriated them *en masse*. The foreign firms that have obtained contracts in the region by bidding low have had to reduce their manpower costs as much as possible. As a result, wages paid to immigrant workers have tended to draw progressively closer to those in their countries of origin, while the proliferation of manpower recruitment agencies in the labour-exporting countries has tended to further depress the level of pay offered to prospective migrants.[10]

In spite of the increasing emphasis on enclave projects and enforced rotation, most of the resource-rich countries have large expatriate populations as a result of past *laissez-faire* policies. A World Bank study[11] of labour migration in Northern Africa and Western Asia found that demographic settling — the process by which a migrant community composed almost entirely of single males of working age transforms itself into a more normally structured population — has occurred more rapidly than planners had envisaged. Moreover, this process has occurred in virtually all of the labour-importing countries, both among migrants from other Arab countries and among the Indians and Pakistanis who are now a fairly permanent element of the migration scene in Western Asia.

As a means of keeping down the social costs of immigration, most of the receiving countries now restrict family immigration and make naturalization very difficult — thereby preventing the likelihood of either assimilation or integration.[12] Indeed, there is a virtual freeze at present on the immigration of family members, except for those of highly paid professionals — who are typically from developed countries and also live in segregated compounds. Assimilation is not an option either, because it is difficult for expatriates to become citizens of most of the resource-rich States. One reason that naturalization is restricted is that citizenship confers substantial benefits upon the holder — such as benefits derived from the redistribution of oil revenues, guaranteed employment and the right to 51 per cent partnership in all enterprises involving foreign capital. Moreover, there are no minimum wage laws and no political rights for immigrants, since the receiving countries do not generally have representative forms of government.

A brief review of the policies of some of the major labour-importing countries, as well as labour-exporting countries, in the less developed regions is given below.

Economic and Social Commission for Asia and the Pacific

In China, the Construction Engineering Corporation (CCEC), which had completed some 500 engineering projects in more than 50 countries by 1978, has also begun to provide temporary manpower — mainly engineers, technicians, managers and other skilled workers — on a limited scale.

As the Republic of Korea reported in the Fifth Inquiry, the Government and the private sector have actively sought employment opportunities abroad for the country's growing labour force, particularly in Western Asia. (The Government estimated that the Republic of Korea had about 160,000 temporary workers abroad as of late 1980.) As the chief architect of the highly organized "project package" approach to labour migration, the Republic of Korea has treated its labour flows as part of the country's strategy of export-sector development. The various national contracting firms provide not only manpower trained in the use of Western technology but machinery and articles of consumption for the workers' daily needs (thus minimizing contact with the local population of the receiving countries). This fact, along with the systematic repatriation of workers, who rarely stay for more than a year, and their willingness to work for lower wages (as well as their reported efficiency and discipline), has led to growing demand for workers from the Republic of Korea throughout Western Asia.

The rapid development of Singapore into an industrial market economy has required a steady supply of foreign workers, mainly from Malaysia, Thailand and Indonesia, but also from India, Sri Lanka and Bangladesh. However, the Government now desires to free Singapore from any future dependence upon foreign workers and therefore will encourage workers to begin returning home in 1984 — as part of a programme to phase out foreign labour entirely by 1991.

Over the years, large numbers of Malaysians have sought employment in Singapore, where they have been drawn by higher wages. However, fewer Malaysians have been leaving the country in search of employment in recent years; indeed, there are labour shortages in certain sectors of the economy (for example, forestry), whereas labour has begun to be imported in some regions of the country (although the Government's policy permits employment only in cases where there are no Malaysian nationals available).

The Philippines has rapidly become one of the major labour exporters in South-eastern Asia. Whereas recruitment of Filipino workers was the responsibility of the private sector up to about 1974, the Government has since developed a highly organized system of labour

recruitment that differs from the model of the Republic of Korea in that it supplies workers for foreign firms, as well as professionals and merchant seamen. Given the importance of remittances to the balance of payments, the Government at first required seamen and construction workers to remit 70 per cent of their salaries and other workers to remit at least 30 per cent; in 1982, however, the Government tightened the existing rules, requiring proof that 50-70 per cent of the worker's base salary had been remitted before his annual permit could be renewed.

Thailand is another country in the subregion where the recruitment of migrant workers has increased significantly in recent years — from less than 1,000 in 1975 to as many as 100,000 currently in Western Asia alone. Whereas the Government formerly left recruitment largely in the hands of private firms, it is now becoming more involved in the recruitment process, as well as in the regulation of the various private agencies.

In its reply to the Fifth Inquiry, Indonesia reported that it encouraged temporary migration for employment, in order to better utilize the country's excess work-force and to earn foreign exchange.

The Government of Pakistan, which has long desired to increase emigration, has been taking a more active role in regulating the outflow of migrant workers. Unofficial estimates suggest that more than a million Pakistanis are now working abroad, half of them in Western Asia — where they are among the most sought-after migrants, largely as a result of their Islamic religion and technical training.

Although India has been developing project export to some degree, a majority of Indians have been recruited by third countries (such as Japan) that are actively involved in manpower recruitment (although this situation may be changing).

Bangladesh, which entered the Western Asian labour market in 1975, has provided manpower, rather than "project packages", to Western Asian employers or to third-country contractors.

In its reply to the Fifth Inquiry, Sri Lanka reported that the steady increase in emigration throughout the 1970s had been mainly due to the accelerating repatriation of Indian estate labour (with the repatriation of an average of 30,000 workers per annum over the period 1971-1981) and to the mostly temporary migration of Sri Lankan workers to the various Gulf States (with an average annual departure of 15,000 workers through official channels — and perhaps twice this number through other channels). Indeed, large numbers of Sri Lankan migrants have found employment abroad through unregistered foreign employment agencies, although the Government Labour Department has set up an official agency that both regulates and competes with the registered private agencies.

Economic Commission for Africa

The Libyan Arab Jamahiriya remains the major labour importer in Northern Africa, although there was a decline in the number of foreign workers in the country after 1977 (following the exodus of some 60,000 Egyptians). Although there has been an overall rechannelling of Northern African labour flows from Europe to other destinations, most of the Northern African migrants who now work in the Libyan Arab Jamahiriya are not the same migrants who formerly worked in Western Europe.

Algeria, on the other hand, has been one of the major labour exporters in the ECA area. Whereas France was long the traditional destination for Algerian migrants, Algeria suspended all new emigration to France after 1973 (as a result of attacks on some of its nationals in that country). Emigration of family members has continued, however; and Algeria has attempted to work out provisions for the renewal of permits, repatriation training etc. with the Government of France. Algeria now sends temporary workers to a number of new destinations, mainly in Southern Europe and Western Asia.

Morocco was severely affected by the closing of European labour markets to its migrant workers after 1973, a situation that was exacerbated by the closing off of employment opportunities in Algeria and Tunisia. The Government continued to encourage labour migration for its role in dampening unemployment and earning foreign exchange, although Moroccan workers have not made as significant inroads in Western Asian labour markets as have other Northern African migrants, mainly as a result of their relatively low skill levels.

Following the effective closing of European labour markets after 1973, Tunisia, which had a relatively short history as a labour exporter, officially discouraged migration for employment. However, the Government now has a new conception of its role as a labour exporter: namely, that of an active participant in a system of inter-Arab labour exchange. In its reply to the Fifth Inquiry, the Government reported that, given the specialized skills required in Western Asian labour markets, Tunisia was attempting not only to train its workers but to achieve a matching of skills with labour demand. To date, the Government has set up employment missions in several Arab countries and has signed bilateral conventions with Qatar and the United Arab Emirates.

Another country in the ECA area, Egypt, has been one of the major exporters of labour to the Arab world, with Saudi Arabia, the Libyan Arab Jamahiriya (prior to 1977), Kuwait, Algeria, the United Arab Emirates, Yemen and, increasingly, Jordan being the major recipients of Egyptian workers. Although the Government has not yet formulated an official emigration policy (a point that was reiterated in the Fifth Inquiry), it has adopted various measures — including relaxed import regulations for return migrants — that undoubtedly stimulated emigration. The future of Egyptian labour flows remains uncertain. Ministry of Planning officials anticipated that the number of Egyptians working abroad would increase to approximately 1 million by 1986 (from an estimate of 600,000 Egyptian workers abroad

in 1976) and to some 3.5 million in the year 2000 — targets that may turn out to be overly ambitious, given the policies now being adopted by the leading countries of destination.

The Sudan has encouraged migration for employment since the 1960s and had a significant outflow of workers to Saudi Arabia and the Libyan Arab Jamahiriya during the 1970s. Also an immigration country, the Sudan has received a continuing flow of pilgrims, of professionals from Egypt and of less skilled migrant workers from Cameroon,[13] Chad and several Western African countries — who are beginning to serve an increasingly important replacement function.

The South African labour system continues to operate by means of restrictions on locational and occupation mobility as well as on workers' rights. Lesotho, which is the poorest and most vulnerable of the enclave countries, and the one that has been most dependent upon labour export, reported in the Fifth Inquiry that its aim was to reduce emigration — mainly by means of developing employment-generating projects within the country, instead of relying upon South Africa for employment. The two other States, Botswana and Swaziland, are relatively small suppliers.

Economic Commission for Western Asia

Saudi Arabia remains the major country of employment in the ECWA area. It has a small indigenous work-force — due to a youthful age structure, a policy of restricting women to a limited number of occupations and the fact that a majority of Saudi nationals work in the traditional economy as farmers, part-time taxi drivers or landlords, or as informal participants in the modern sector.[14] The Government has been importing foreign labour since the 1950s to carry out its ambitious development plans and, in its current development plan, projected that the foreign labour force would not decline until after 1985, because reductions in unskilled construction workers would be offset by increases in technicians. The Government now desires to reduce its dependence upon foreign workers (in part because the country's spiritual values are perceived to be threatened by the presence of many non-Muslims in the labour force). Towards this end, the Government's current five-year plan gives manpower development the "highest national priority", whereas foreign firms are required to train citizens in what is known as "Saudization". In addition to its rigorous visa and sponsorship requirements, the Government has sought to control its foreign workers by relying less upon Arab labour and looking towards importing manpower "packages".

Kuwait, the country with the largest population and greatest oil reserves among the Gulf States, has developed rapidly in recent years, largely through the employment of large numbers of Jordanians and Palestinians, as well as Iraqis, Lebanese and Syrians. Kuwait is one of the few countries that have had formal legislation regulating the employment of immigrant workers. (A 1964 Act contained provisions concerning the employment of women and adolescents, working conditions, the organization of work, the termination of employment relationships and compensation for employment injuries.) In a further effort to monitor the employment of foreign workers, the Ministry of Social Affairs and Labour issued a decree in 1979, regulating work permits for foreigners employed in the private sector. Concerned by the fact that Kuwaitis constitute only 29 per cent of the total labour force, Kuwaiti nationalists have increasingly urged a policy of "Kuwaitization", by which nationals would eventually replace non-nationals in important occupations.

In the United Arab Emirates, where migrants make up 90 per cent of the active population, the Government reported in the Fifth Inquiry that it desired to increase the percentage of its citizens in the labour force to 50 per cent by 1990. This goal will probably be achieved as a result of a reduction in the number of foreign workers rather than by an increase in the participation rate among the country's limited pool of citizens (since levels of training are low and citizens who are employed are heavily concentrated in the bureaucracy or in traditional activities). As a means of reducing the size of the foreign work-force, the Government has tightened visa and immigration controls and has implemented a new law under which only citizens can hold commercial agencies. However, a reduction in the number of foreign workers will more likely be achieved as a result of market forces than of explicit policies. Indeed, the slow-down in construction in Dubai has already reduced its attraction to unskilled immigrants, and this trend may well continue.

Bahrain has not been able to afford the importation of foreign manpower on as large a scale as some of the other Arab countries. Moreover, the country has been relatively less able to compete for Arab labour and has employed growing numbers of Asian workers, although the Government's official policy remains that of "Bahrainization", i.e., gradually replacing expatriate workers by Bahrain nationals. Like other countries in the ECWA area, Bahrain has begun to impose stricter controls on the import of labour. Although the Ministry of Labour and Social Affairs has for some time required all new job-seekers, both nationals and non-nationals, to obtain work permits, it is only recently that this policy has been stringently observed.

Foreign workers made up over four fifths of the labour force of Qatar in 1970 and in 1975. Whereas migrants in the public sector were virtually all Arabs, largely from Egypt, the private sector has been dominated by non-Arabs, mainly Indians, Pakistanis and other Asians.

Oman has been an exporter of migrant labour since the 1950s. Rural Omanis have migrated abroad for decades to find employment in Saudi Arabia or the United Arab Emirates, although their numbers, and consequently their remittances, have fallen off in recent years. Although Oman is a relatively small petroleum producer, it has become an important receiving country in recent years. Ironically, much of the labour is unskilled — particularly that of the migrants from India

and Pakistan — and of a similar quality to that of the large numbers of Omani workers employed abroad.

Iraq, which maintained an open-door policy with respect to all Arab migrants from the mid-1970s, imposed visa formalities in 1981 on a number of Arab countries, including Bahrain. Iraq has attracted about 125,500 foreign workers in recent years, a relatively modest number in relation to its total population size. It has been speculated, however, that Iraq, which has a manpower deficit of the order of 860,000, may become one of the major labour-importing countries over the next two decades.[15]

Jordan, like Egypt, has had a tradition of supplying expatriate labour within the Arab world, although more Jordanians have been returning to Jordan than have been leaving in recent years. There has been a simultaneous trend among qualified migrants towards taking up permanent residence in countries of their employment, a trend that has reflected the Government's policy of placing no restraints on the outflow of labour — even though the economy began to suffer shortages both in skilled employment and in agriculture, where Egyptians have been employed as replacement migrants.[16] In its reply to the Fifth Inquiry, Jordan reported that it desired to maintain immigration, in order to fill in for workers who had gone to work in other Arab countries — a number projected to be about 70,000 over the period 1981-1985.

Another important sending country is the Syrian Arab Republic, whose nationals have been drawn to Jordan in large numbers to serve as replacements for Jordanians who have left — a movement that has led to domestic labour shortages. Since the Syrian Arab Republic is on the periphery of the Arab labour market, and its wage rates are comparatively low, it will be difficult to attract replacement migrants, and labour shortages are likely to remain critical.[17]

Yemen has experienced massive emigration, both temporary and permanent, since the 1950s; and it is widely believed that migration abroad has been undertaken at least once, and probably several times, by every working male. The Government's policy has been essentially one of non-intervention, in part as a result of the lack of a developed planning system. In its repiy to the Fifth Inquiry, Yemen noted that whereas workers' remittances constituted a major source of revenue, emigration had resulted in a loss of human capital and had had serious negative effects on the agricultural sector (since migrants had abandoned their lands, "with the effect of reducing national output from agriculture"). The Government reported that its main concern was to encourage return migration, especially of workers with needed skills.

Although data on the labour force of Democratic Yemen are difficult to acquire, it is known that substantial numbers of its nationals have returned from Saudi Arabia in recent years, although the rate of return has possibly been declining. Emigration has been drastically curtailed in recent years through a series of restrictive ordinances.[18]

Prior to the civil war in 1975, large numbers of unskilled workers from the Syrian Arab Republic and Egypt, as well as from the local population of Palestinian origin, were employed in Lebanon. The war had far-reaching effects on this labour market, forcing the repatriation of much of this foreign labour (including more than 200,000 Syrian workers). The Government's present policy is to restrict immigration, other than in highly specialized categories.

The future of the large numbers of foreign workers who remain in the receiving countries in the ECWA area remains uncertain. They are unlikely to be repatriated *en masse* in the immediate future. However, there are likely to be smaller increases in their incomes, stricter control over their spare-time activities and an overall deterioration of their current precarious economic and social situation.

The policies of the countries that export labour to the resource-rich countries have focused largely on recruitment, although they cover a broad range of approaches — from the highly organized "project package" approach to simple manpower export. The former approach has probably reached its most advanced stage in the Republic of Korea, where the Government is involved at all stages of planning and execution of a particular project. A number of other Asian countries, such as the Philippines, are moving towards the model of the Republic of Korea and are developing new institutional arrangements to facilitate manpower export. Relatively little attention has been given to such questions as reintegration of returning workers, the maintenance of family bonds and cultural ties and so forth, although it is true that the migration streams are not yet very mature.

Whereas many of the labour-exporting countries — both in the Mediterranean littoral and in regions that supply manpower to Western Asia — have shown resourcefulness in designing policies to capture remittances, they have given much less attention to the utilization of these remittances. Of course, remittances are ultimately tied to the future of labour migration flows, which are most uncertain. Whereas the outlook for increasing the migrant labour stocks in Western Asia in the short term (through 1985) may be slightly better than the outlook for Europe during the same period, in the longer term the prospects for substantial increases in the demand for migrant workers in this region are also limited.[19]

D. Labour migration: developed countries

Although European labour markets began to deteriorate during the 1960s, the halt in large-scale immigration to most Western European countries occurred around 1973 or 1974 — at about the time the World Population Plan of Action was being drafted and when it was still unclear whether the majority of workers would remain or be repatriated.

In Northern Europe and, particularly, Western Europe, the former immigration countries are now experiencing serious social strains as a result of their past

immigration policies. These policies, which were intended to be simply recruiting policies, were designed to control the inflow of foreigners, rather than their stock or return flow; and the numbers present or returning were expected to be regulated by the interplay of market forces and the return orientation attributed to migrants. However, the result has been the *de facto* permanence of some 12 million of these "temporary" guest workers. The permanence of the migrant pool has been partially due to the failure of policies designed to promote return migration, although it has been mainly related to the fact that economic conditions in many of the sending countries did not improve sufficiently to induce return.

As the size of the foreign population in and outside the labour force has continued to increase in most of the Western European countries, as a result of both family immigration and natural increase, one of the major challenges facing the host Governments has been devising policies to promote the integration of these workers and their families, without incurring domestic political resentment.

There has been slow and uneven progress in recent years in improving the economic and social position of foreign workers and in granting them limited political rights. To cite only a few areas of progress: restrictions on geographic mobility, which were put in force in the Federal Republic of Germany in 1974, were subsequently eased in 1979. Whereas family reunion was once considered a policy variable and making reunification difficult was expected to motivate workers to return,[20] restrictions on family reunion were gradually liberalized in most Western European countries, although several countries have recently been considering the reimposition of stricter requirements. Regulations governing the access of family members to the labour market have also been relaxed or abolished, even in a country like the Federal Republic of Germany, where wives and dependants were previously barred from working.

Of course, numerous issues remain to be resolved. Although a number of countries have granted foreign workers trade-union rights and political rights at the local or municipal level, no country has as yet awarded political rights at the national level — in societies where political rights are among the most important rights. Some of the more serious problems exist at the cultural level. In spite of the fact that most of the former immigration countries have developed language-training programmes, vocational, pre-school and various other training and remedial programmes, "double-exit" pilot programmes for women and for workers, native language-training programmes, cultural centres and so forth, the prospects for the upward social and professional mobility of the foreign population through existing training efforts are far from favourable. Moreover, women and children in the migrant populations continue to remain unduly isolated. This may to some extent be a transitional problem, because third and fourth generation migrants will be likely to have fewer choices (about whether to return or remain) and may be more easily assimilated.

As for the position of the sending countries, the labour-exporting countries of the Mediterranean littoral were generally cast in the role of passive participants rather than active decision-makers in regard to the migration of their nationals to seek employment. Although the sending countries entered into a number of bilateral agreements on recruitment and employment procedures, fewer than a third of migrating workers actually went through official channels. More significantly, the decision to halt migration after 1973 — which had profound effects on the sending countries — was a unilateral decision that was made by the immigration countries. As Kindelberger notes:

> "Restrictions on migratory flows have the effect of distorting both the optimal economic allocation of labour and the international distribution of income. Quite apart from considerations of efficiency, basic standards of international equity give rise to concern about a unilateral decision, the costs of which are borne not by the decision-maker but by someone else. It is precisely this kind of situation which international cooperation is designed to prevent, and the unilateral imposition of restrictions represents a breakdown in this cooperation."[21]

The sending countries have had equally little influence on the level and pace of return migration, which has been largely a function of individual decision-making and of the policies of the receiving countries, rather than of the needs and desires of the sending countries.

Sweden is widely considered to have one of the world's most liberal and comprehensive immigration policies. According to government statements, immigrants have the same rights and obligations as Swedish nationals and have the opportunity to retain their own language and culture; members of linguistic minorities can determine for themselves the extent to which they retain and develop their original cultural and linguistic identity. Moreover, co-operation between immigrant and minority groups and Swedish nationals has been broadened, and measures have been taken to increase the participation of these immigrant groups in trade-union activities and in political life.

In effect, a labour recruitment ban has been in force in Denmark nearly continuously since 1970, and work permits have been granted only in the case of family reunion and for certain designated occupations.

Norway reported in the Fifth Inquiry that, beginning in the mid-1970s, Norwegian immigration laws had gradually become more restrictive. A 1975 law temporarily halted the immigration of foreign workers and sought to improve conditions for immigrants already in the country; this law was extended in 1976 in the light of a report on problems confronting immigrants from foreign cultures. Whereas the immigration of foreign workers — except for workers in the petroleum industry — has now virtually ended, there has been a considerable increase in the immigration of close family members, a movement which, in the Government's words, "should encounter as few obstacles as possible".

Although Finland is primarily an emigration country, emigration has decreased steadily in recent years, while

immigration has remained virtually stable. The integration of foreign workers is not a major issue for the Government of Finland since foreigners constitute less than 1 per cent of the total population.

The United Kingdom, although experiencing significant emigration as well as immigration, has been essentially marginal to intra-European labour migration flows. A work permit scheme has been in force since January 1983, although permits are now given only to oversea workers with professional qualifications and to workers with a high degree of skill or experience.

Italy is the country that has made the most extensive use of the European Economic Community (EEC) freedom-of-movement provisions for the exportation of its surplus workers. In recent years, there has been significant migration to new destinations in Africa, Asia and Latin America, in part as a result of growing activity of Italian firms in these regions. At the same time, Italy is now host country for some 400,000 migrant workers (a majority of whom are undocumented) from a wide range of sending countries (including Algeria, Egypt, Ethiopia, Greece, the Libyan Arab Jamahiriya, Portugal, Somalia, Spain, Tunisia, Turkey and Yugoslavia.

The overall situation in Greece is similar to that of Italy. Greece has had a positive net migration balance in recent years, due to a decline in emigration and to a return movement of former labour migrants; however, in the past decade, Greece has also turned into a marginal labour-importer, attracting workers from various Northern African countries, particularly to fill low-ranking positions in its merchant fleet.

Spain has received a continuing flow of return migrants, although large numbers of its nationals remain abroad. Portugal, however, continues to experience a slight rise in emigration. Turkey has received a steady flow of return migrants in recent years. As a result of high unemployment, generally unfavourable economic conditions and a surplus of manpower of an estimated 2 million, pressure to emigrate is expected to persist. The large stocks of potential emigrants, most notably in Turkey but in Portugal and Spain as well, are significant factors in the consideration of their possible membership in EEC.

There have been no major changes in the Austrian international migration policy since 1976. Because most foreign workers in Austria are employed on annual permits and fewer than a quarter are accompanied by family members, problems related to the integration of these workers have been less severe than in some of the other Western European countries.

Belgium has maintained its liberal family reunion policy; in 1979, however, the Government tightened requirements for granting an "A" class work permit (a permit that is permanent and enables its holder to seek employment in any sector of the economy) to members of the families of immigrant workers.

In Luxembourg, where the foreign-worker population is large in relation to the country's total population size, work permits continue to be issued, subject to the state, trend or organization of the labour market; and the criteria for the employment of migrant workers' families are the same as those applicable to the migrant workers themselves.

The Netherlands currently has a slight migration surplus, as a result of a policy that permits reunion of the families of foreign workers. In 1979, a new Act on the employment of foreign workers took effect, under which no employer may hire a foreign worker without a work permit issued by the Ministry of Social Affairs. Applications for a work permit are to be submitted jointly by the employer and the worker, and one of the major innovations of the Act is that the permit is issued in the name of the employer, who is penalized in cases of infringement under the Economic Offences Act. To restrict future entry of foreign workers, the Act also introduced the concept of "permit quotas", that is, the maximum number of work permits that may be issued simultaneously in any enterprise.

During the period 1974-1977, France introduced a series of measures that were designed to reduce both stocks and flows of foreign workers. These measures, which included imposing a three-year ban of immigration, terminating the issuance of work permits, extending return assistance to all workers who had resided in France for a five-year period, suspending family immigration and offering a cash bonus to foreign workers who agreed to return to their countries of origin, were repealed as unconstitutional in 1978 by the Council of State. In 1979, the Government of France approved a new series of immigration measures that were geared to reducing the foreign population by about 150,000 persons per annum. This was to be achieved by not automatically renewing existing permits, something that the Government had done almost universally since 1974.

The immigration policies of the current Government of France are not substantially different from those of the previous Government. The rights of those residing in France have been reaffirmed, although foreigners still were not able to vote in the 1983 municipal elections. Moreover, return has been made entirely voluntary (as it was, in reality, under the previous Government).

Since the halting of primary immigration to the Federal Republic of Germany in 1973, the Government has pursued a policy of stabilization — that is, limiting new entries, maintaining the 1973 ban on the recruitment of workers from non-EEC countries, refusing to admit seasonal workers and limiting the number of family members allowed to join the foreign workers. Thus, at the end of 1981, the Federal Republic restricted family reunion for children aged 16 or over and imposed stronger checks on the identity of supposed family members. Such measures were seen as a means of protecting the job security and promoting the integration of foreign workers already resident in the Federal Republic. Indeed, as the Government reported in the Fifth Inquiry, integration was possible only if there were no further increase in the number of foreigners living in the Federal Republic.

Although the Government re-emphasized in its reply to the Fifth Inquiry that the integration of foreigners

living in that country was an important goal of its policy concerning foreign workers, it also stated that foreigners who wanted to return to their home country should be assisted to do so; they should have the right to decide for themselves, but they must decide whether they want to return to their home countries or to remain in the Federal Republic and be integrated into the society.

In a related step, in early 1983 the Government acknowledged plans to offer certain groups of unemployed foreigners $3,700 if they agreed to return home within a two-year period. The plan would cover some 40,000 foreign workers who had lost jobs because of factory shut-downs or bankruptcies, and workers who had been employed for six months or less; in addition, children legally residing in the Federal Republic since July 1981 would be offered $620 to induce return.[22]

As Switzerland reported in the Fifth Inquiry, the Government is attempting to ensure an equilibrium between the Swiss and foreign-born population, taking into account the political, economic, demographic, social and cultural interests of the country. Towards this end, an *ordonnance* annually limits the numbers of foreigners who may exercise a remunerative activity and defines the categories of workers who may be admitted outside these quotas. Given the trend of immigration in 1982, the Government reported that it had taken steps to restrict the intake of foreigners not subject to numerical limitations, although it had not changed its liberal family reunification policy.

In late 1982, Switzerland ruled that it would not increase the number of foreign work permits in 1983, but would keep to its 1982 quota permits.[23] This decision was related to growing concern over rising unemployment in Switzerland (which is still under 1 per cent and therefore among the lowest of any of the developed countries).

A new aliens law that would have liberalized the position of foreigners in Switzerland — by giving foreigners with five years' residence the right to have their residence permits renewed, allowing seasonal workers to become residents after 32 months' presence in four consecutive years and giving foreign workers the right to change jobs and, under certain conditions, to bring in dependants after only a six-month waiting period — was rejected in a referendum in 1982.[24]

To sum up: there seems little possibility of a return to the mass migration of the 1960s, since most Western European Governments appear to have made the decision that future economic growth should depend upon advanced technology rather than upon an abundance of labour. The movement of temporary labour to Western Europe might possibly resume on a smaller scale at some point in the future — particularly after 1985 — when the former labour-importing countries will experience a reduction in the number of new entrants into the labour force (as a result of earlier declines in fertility). However, given the unanticipated social costs of the previous "temporary" worker programmes, and the current context of rising domestic unemployment and latent or overt xenophobia, it is likely that the receiving countries will be more cautious in accepting foreign workers in future years.

E. Undocumented/illegal migration

During the past decade, there has been greatly increasing concern with illegal migration — matched by the adoption of more restrictive policies — in all world regions and in countries at various levels of development, reflecting the belief that stocks and flows of illegal migrants are increasing (especially as a result of the world-wide economic slow-down), and that they have generally undesired economic, political and social impacts. In some regions of the world, particularly in Africa and Latin America, undocumented migration is the dominant type. Even in some economically advanced countries, illegal migration has served the purpose of a *de facto* guest-worker system. Receiving Governments have sometimes chosen to ignore the presence of illegal workers in times of economic expansion and then tightened controls during an economic downturn. Although the major burden has fallen on the workers themselves, the receiving and the sending countries have also been faced with growing problems. Even countries with accurate data-gathering systems have little idea of the actual number of illegal residents and their longer term social and economic impacts.

In spite of an absence of hard data on illegal flows, there has been a tendency for a large number of Governments to be moving in the direction of stricter controls over illegal migration. Although policies vary greatly from one country to another, reflecting both the broad range of national legislation and how it is applied in practice, there are a number of similarities that cut across regional lines and levels of development. For example, in a significant number of countries, policies have varied — and changed over time — in relation to the assumed size and characteristics of the illegal migrant population. Governments have generally been more tolerant of the presence of small numbers of visa abusers, of undocumented workers who possess needed skills or of migrants who perhaps settle in an underpopulated area or one with manpower shortages than of a large influx of illegal migrants who duplicate the skills of the local population or settle in a densely populated area or one with high levels of unemployment.

Policies have often reflected the political, economic and social conditions of the receiving country as much as or more than the purely demographic character of the flow itself. For example, Governments' perceptions of illegal flows have sometimes changed following an upsurge of nationalistic sentiment, in response to fears over national security or after a war or other dispute with another country (which has often led to the expulsion of nationals of that country). Policy changes have frequently varied cyclically. Indeed, in some countries of attraction, enforcement has varied according to economic circumstances, with a lenient enforcement policy in times of economic prosperity and more vigorous enforcement during an economic downturn. Policies have also reflected and changed in response to perceived

negative social and cultural impacts, such as rising crime, domestic violence or the undermining of traditional values.

Expulsion or deportation — which is the most extreme policy response — has occurred in various circumstances. Some countries have resorted to expulsion only for certain categories of offences; others have deported all persons who contravene immigration laws. The conditions under which deportation has occurred have also varied widely. In many pluralist societies, illegal migrants have a right to a hearing before an immigration judge or other public official (although this right is often waived). In some societies, undocumented migrants have simply been rounded up by the police and forcibly expelled.

At the opposite extreme, amnesties — and subsequent regularizations of status — have been attempted in a number of countries, for varying motives and with varying success. Amnesties have sometimes been advocated on the grounds that to allow large numbers of persons to retain their illegal status would perpetuate a permanent under-class, subject to exploitation from various sources. Moreover, to deport persons who have lived in a country for extended periods and who have developed networks of interpersonal relations would be inhumane. In most instances, however, amnesties have been an attempt to establish some measure of control over ongoing illegal flows or to force persons to bring their situation into alignment with the laws of the receiving country. Amnesties have sometimes been employed to encourage persons to come forward so that some type of census could be taken (and their status regularized). In other instances, amnesties have been merely a pretext to round up and deport the undocumented workers who come forth. Ultimately, of course, amnesties have been adopted by Governments as a means of reducing as well as of controlling illegal flows.

Between deportation and amnesty, a whole range of measures — both *ex ante* and *ex post* — have been employed. Certain Governments have introduced more stringent requirements for granting visas or have increased documentary controls. A number of countries have focused primarily on documentary control to ensure that immigrants shall not violate the conditions of their admission or stay beyond the authorized time. (Efforts at documentary control have ranged all the way from non-counterfeitable documents to computerized data banks.) Border or frontier controls have also been employed, but not always effectively, especially in countries with long land frontiers.

Many countries have found, however, that strengthening frontier controls and co-operating with the major sending countries have not been sufficient, and that such measures have had to be supplemented by regulation of the labour market and/or action against those who employ illegal migrants. A safeguard against the employment of illegal immigrants employed in a growing number of countries has been the work permit system, by which the worker must typically have a work permit or the employer must obtain authorization to employ a foreign worker. Supplementary measures have included the requirement that the workers should have entered the country legally or that the contract between the employer and worker should not have been made through an illegal intermediary or unauthorized recruitment agency.

At the national level, institutions that deal with illegal migrants are typically limited in their mandate to a law enforcement role, and often have consisted only of the police or border authorities. For the most part, actions have been taken unilaterally by receiving countries; there have also been some attempts by groups of receiving countries (such as EEC) to work in concert, but less evidence of effective formal co-operation on this issue between sending and receiving countries.

Economic Commission for Europe

Illegal immigration was a common phenomenon in much of Europe during the 1960s, with a number of Governments tolerating the phenomenon and allowing clandestine migrants to legalize their status. Following the "freeze" on immigration that occurred in most European countries after 1973, a majority of Governments adopted tighter controls, although these did little to stem the continuing flow of illegal migrants. At present, strict policies to deal with undocumented migration are nearly universal among States members of EEC. There has been a growing tendency, particularly in the countries that formerly received large numbers of guest workers, to impose stricter penalties on the employers of illegal migrants, although most continue to impose penalties on the workers themselves.

Although the Nordic Common Market Agreement (1953) regulates the movement of labour between the Nordic countries, the Governments of Sweden and Finland have become concerned at the increasing proportion of spontaneous migration that is not channelled through the employment services of the two countries.

Although not a major receiving country, Denmark receives some illegal immigration and has adopted legislation requiring that employers reimburse the authorities for expenses incurred in relation to the illegal residence and expulsion of a worker. Norway, which similarly receives a small volume of immigration, requires employers to report the employment of foreigners prior to their commencing work, so that their credentials can be checked.

The United Kingdom receives a moderate amount of illegal immigration, chiefly from Commonwealth countries. Although the United Kingdom differs from the majority opinion of EEC members in that it opposes employer sanctions, there is strong sentiment in the United Kingdom in favour of imposing stricter controls. A campaign against overstayers and a tightening of controls at ports of entry was carried out in the late 1970s and new rules were adopted in 1979 that withdrew the automatic right of entry of husbands and fiancés of women settled in the United Kingdom.

Italy, which traditionally was a labour exporter, may now be host to as many as 500,000 illegal immigrants, reflecting the fact that it has been easier for migrants to

enter Italy without a work permit than most other European countries. Spurred by some acts of violence identified with undocumented entrants and by high unemployment, in January 1980 the Italian Government announced strict new controls on foreigners living and working in Italy.

In recent years, the Greek Ministry of Public Order has been expelling growing numbers of illegal migrants, who come chiefly from Africa and Western Asia, on the grounds that they cause unemployment and various social problems. Both Portugal and Spain, on the other hand, have mainly experienced illegal emigration to Venezuela.

Austria requires that an employer obtain a work permit to employ a foreigner, that checks be made by the Social Security Administration and that penal sanctions be applied against persons who employ foreigners unlawfully.

Under the most recent legislation in Belgium, illegal migrant workers may be expelled or denied right of abode, although there is a heavier penalty levied on employers.

An estimated 400,000 persons may reside in France illegally. With regard to sanctions, persons who employ illegal foreign workers must pay a fine that is about 500 times the standard rate of the guaranteed minimum tax per employee. The law is particularly strict with respect to intermediaries, stipulating that individuals or groups participating in the process of illegal recruitment are liable to from two to five years' imprisonment and/or a fine. France also approved new legislation in 1980 to facilitate deportation procedures. The previous major ground for expulsion, "threat to law and order or public security", was extended to cover use of a false residence permit, illegal entry and remaining in the country after the residence permit had expired. As an additional restrictive measure, the Government reintroduced visa requirements for nationals of certain countries.

Following the change of Government in 1981, the new Government announced a policy of "humanizing and controlling" illegal migration. It reported that expulsions would be suspended and that the situation of undocumented immigrants who had entered France before 1 January 1981 would be examined on a case-by-case basis. The Government emphasized, however, that it did not intend "to regularize unemployment" and would only regularize the status of migrants who were in stable employment. The regularization process commenced in August 1981 and was expected to involve as many as 300,000 illegal migrants. By mid-January 1982, only some 115,000 migrants had applied to regularize their status.

The Federal Republic of Germany had a sharp increase in its illegal migrant population following its decision to restrict the immigration of Turkish nationals. The Government's policy currently provides that persons working without a permit are subject to stiff fines, as are employers who temporarily or permanently engage a foreign worker who is not in possession of a valid work permit. As a means of preventing exploitation, if the working conditions of the person who is unlawfully employed are less favourable than those of lawfully employed workers, the employers are liable to up to several years' imprisonment.

The Netherlands, which has an estimated 20,000-40,000 illegal migrants, approved new legislation in 1979 that represented a significant liberalization of its previous policy. Work permits were henceforth issued to the employer, against whom both penal and administrative sanctions were increased (to up to six months' imprisonment and a fine), rather than to the worker, for whom the threat of punishment was removed.[25]

After 1973, the Swiss authorities tightened regulations to prevent workers from distant countries from entering Switzerland by posing as frontier workers from neighbouring countries.

Canada maintained a liberal policy of encouraging immigration during the 1960s, allowing students, tourists and other short-term visitors to adjust their status from non-immigrant to landed immigrant. By the early 1970s, large numbers of persons who had applied for Canadian visas overseas and had been rejected began arriving as tourists and attempting to remain. As a result, the Canadian Government decided to take steps to regain control over immigration.

The United States experienced periods of substantial illegal immigration earlier in this century, principally during the 1930s and the late 1940s, which were dealt with through existing law and enforcement practices. Beginning in the 1970s, the Government became concerned that illegal migration could no longer be controlled by existing law and practice, as it had been in the past; and it began to explore policy alternatives for regulating the flow of illegal migrants.

One such attempt was the Alien Adjustment and Employment Act of 1977; this legislation was allowed to expire, however, in the United States Congress. A later initiative was the creation of the Select Commission on Immigration and Refugee Policy, which was given the mandate to study and evaluate existing laws and procedures governing immigration and to report to the President and Congress. Following the change of administration in 1981, the Government began putting together the elements of a new policy designed to curb illegal immigration.

Economic and Social Commission for Asia and the Pacific

In recent years, one problem in the ESCAP area has been the growing numbers of Chinese nationals who have entered Hong Kong illegally, where they have been drawn by higher wages and, occasionally, family ties. By administrative convention, those who avoided detection long enough to reach a "base" — usually the house of a relative or friend — were allowed to stay. (During the period 1976-1980, it is estimated that some 400,000 Chinese migrants "touched base" and stayed). For a number of years, this situation was acceptable to both the Chinese and the Hong Kong administration. By the late 1970s, however, the pressure of the large Indo-

Chinese refugee influx was beginning to be felt. In 1979, a year in which some 90,000 Chinese nationals were arrested, the British Government began to exercise diplomatic pressure on China to curb illegal emigration, and the Chinese Government complied, instituting strict penalties.

In South-eastern Asia, as in other regions of the world, illegal migration has followed, or accompanied, legal flows. This is nowhere more evident than in Singapore, which has drawn large numbers of legal and illegal foreign workers, particularly from Malaysia.

The other major illegal flows affecting South-eastern Asia are outward flows, involving illegal employment in such regions as Western Asia. Typically, these movements occur with the complicity of illegal recruiters and other traffickers in manpower, due to the great distances and high transport costs involved. Concern among affected Governments derives not only from violations of their nationals' human rights but from the fact that the Governments are less able to control remittances.

There has been a significant rise in the number of illegal recruiters in the Philippines, with the practice becoming so widespread that in 1980 the Government declared illegal recruitment to be an act of "economic sabotage" that was punishable by execution.[26] Thailand has faced similar problems with illegal recruiters. Another important interregional flow of illegal workers has been that of Indonesian labourers to Malaysia.

Southern Asia has experienced a number of problems with illegal flows. With one of the highest incomes per capita in the region, Sri Lanka has attracted undetermined numbers of illegal immigrants. The view of Pakistan is that one of its major problems has been illegal emigration. As in the case of the Philippines and Thailand, Pakistan is concerned with the potential loss of foreign exchange if remittances do not go through normal channels. As a result, penal sanctions were laid down in the Pakistan 1979 Emigration Ordinance, as a means of reducing illegal emigration.

In India, problems have arisen over the presence of millions of Bengalis who are claimed to be illegal. Over 40 per cent of the 19 million inhabitants of the State of Assam are Bengalis. The contention that at least 5 million of these settlers are illegal aliens led to outbreaks of communal violence in 1983.

Australia has had some illegal immigration, consisting mainly of persons who enter with permission to remain temporarily but who overstay their visas. The Government of Australia announced an amnesty for illegal migrants in early 1976 and again in 1982. Another procedure adopted by the Australian Government to reduce the number of illegal migrants has been to tighten the screening procedures used to determine who may enter.

The 1970s were a period of unprecedented illegal immigration to New Zealand. The Government largely ignored the increasing number of overstayers until the onset of the 1970s recession.[27] During 1972-1974, there were numerous attempts to round up and deport illegal migrants, although the Government granted an amnesty to some 2,000 Tongan overstayers. At the request of various Pacific Island Governments, the Government of New Zealand opened an overstayers' register for several months in 1976 and again in 1977 to allow illegal migrants to legalize their status. Since 1976, a computer also has been used to check the departure of persons entering New Zealand on temporary permits, and since 1978, an amendment to the Immigration Act has not only required work permits but imposed employer sanctions.[28]

In conclusion, illegal migration will probably account for an increasingly large proportion of future international migration flows, as migration alternatives become increasingly restricted and because a significant proportion of illegal migration consists of movement from poorer to richer countries. In formulating effective policies to deal with illegal migration, Governments may find it useful to treat illegal movements as a type of labour migration — with essentially the same structural causes. In all regions, and in both developed and developing countries, there is a pressing need for data with which realistically to assess illegal migration trends and impacts and to formulate policies on a rational rather than on a reactive or emotional basis.

Economic Commission for Latin America

Traditionally, illegal migration between countries in the ECLA area has attracted little attention, because much of the movement occurred in frontier regions that are physically and culturally undifferentiated, and Governments regarded such movements as natural phenomena. The policies of the chief receiving countries have differed widely but appear to be gradually converging. The police are generally responsible for controlling immigration in most Latin American countries and work permits have seldom been required. While receiving countries have increasingly restricted the access of illegal migrants to the labour market, a majority of migrants continue to bypass frontier checks, leading a number of Governments to adopt stricter policies, for reasons that range from the displacement of native workers to concern over national security.

The population of the Caribbean has long been one of the most mobile in the western hemisphere. Since migration from the Caribbean to such countries as the United Kingdom and the United States has slowed considerably in recent years, the main outlets for both legal and illegal migration have been the most prosperous Caribbean countries. This trend now appears to be changing, as the major receiving countries in the subregion — e.g., the Bahamas and Trinidad and Tobago — have adopted more restrictive policies.

Central America has long been the site of significant intraregional migration flows, which are predominantly illegal. Some flows occur in contiguous border areas, such as across the border between Colombia and Panama, which once formed a single national unit. Other flows are largely seasonal (and spontaneous), such as the migration of Guatemalans to harvest coffee

and tobacco in southern Mexico and that of Nicaraguans to harvest cotton in Costa Rica.

Although much undocumented migration occurs within the ECLA area, outward flows have been increasing. Mexican nationals account for the greatest number of aliens who enter the United States of America without inspection, but a growing number of migrants from other Central American countries, who have travelled thousands of miles through Mexico to the border, have been apprehended by United States authorities.

Although economic growth has slowed considerably in Argentina in recent years, its attraction has not diminished for large numbers of undocumented migrants, and migration to Argentina from contiguous countries appears to be fairly widespread. In an attempt to achieve a measure of control over its undocumented migrant population, Argentina has granted amnesties on several occasions, in 1971 and 1974.

Chile receives seasonal and some permanent immigration, much of it undocumented, in the northern region bordering Bolivia and Peru, a movement that involves migrants of indigenous Aymara stock. At the same time, Chile has a long history of illegal emigration from its poorer southern provinces, where there is high unemployment.

Colombia, the principal source of undocumented migrants within the subregion, has been a net exporter of migrants for the past several decades, with its nationals emigrating in increasing numbers to Ecuador and Venezuela, as well as to Panama and the United States. The Government has developed an innovative programme to assist persons who choose to migrate in finding satisfactory employment both within and outside Colombia and has established five Border Offices for Employment and Labour Migration, which assist returnees and deported migrants in obtaining employment in Colombia.[29]

After years of heavy uncontrolled immigration and changing immigration policies that have followed fluctuations in the country's economic conditions, Venezuela is structurally dependent upon foreign manpower. However, as a result of a growing movement within Venezuela to safeguard the national identity and of pressure from the major sending countries to protect their nationals' basic rights, the Government decided to register all illegal migrants, as an initial step towards controlling the flows. Under the Government's 1980 Regulation for the Admission and Permanent Residence of Foreigners, all legal and illegal aliens who had entered the country before 25 May 1980 were required to register with the authorities. Implementation of the above-mentioned regulations proceeded slowly, as a result of the Government's requirement of official proof of residence, rather than the employer's testimony. (By 24 December 1980, some 350,000 illegal aliens, almost all Colombian nationals, had come forth to receive provisional identity cards.)

A country with a lengthy coastline and common borders with seven Latin American countries, Brazil has received large numbers of undocumented immigrants. The presence of these undocumented settlers in sparsely populated frontier areas was largely condoned, and Brazilian nationals also settled without formal authorization in frontier regions of Bolivia and Paraguay. In the summer of 1980, however, primarily in response to concern over the presence of political exiles from neighbouring Latin American countries, the Government drafted a strict new immigration law. Under the new law, any foreigner, whether or not in possession of a valid residence permit, may be expelled from Brazil for "harming national security or the political or social order", or merely if the authorities judge his or her presence "contrary to the national interest".[30]

Economic Commission for Africa

International migration in the ECA area has frequently been an extension of internal migration, with migrants crossing international boundaries without documentation, often in contiguous border areas or in regions that were artificially separated by colonial boundaries. Although there are few data on such flows, and even less information on policies, a number of broad policy developments can be observed.

A significant amount of illegal migration, both immigration and emigration, has arisen in connection with the rapid growth of the resource-rich countries of Northern Africa and Western Asia. The Libyan Arab Jamahiriya, which is the major labour-importing country in Northern Africa, as well as the primary country of attraction for illegal migrants, has sometimes dealt rather severely with such illegal movements.

In most of sub-Saharan Africa, national frontiers traditionally have been comparatively open. Indeed, migration across national boundaries, particularly in Western Africa, was common prior to the attainment of political independence, and the subsequent consolidation of boundaries had a minimal impact, with migrants moving quite freely and unhindered by artificial "frontiers".[31] Although large-scale undocumented movements across national frontiers are still common to much of the region, the trend is towards increasing the limitations on international movements, in spite of the fact that economic and socio-political inducements to move across national boundaries continue to be quite strong.

One safeguard against the employment of illegal migrants that has been taken in a number of countries, including Botswana, Gabon, Mauritius, Rwanda, Sierra Leone, the Sudan and Tunisia, is the requirement that all workers obtain a permit. In Zambia, employers are required to check on an immigrant's status before offering employment. In the United Republic of Tanzania, employers must transmit information to immigration officers on all migrant workers in their employ. Botswana and the Niger have labour inspection services that are responsible for ensuring that no migrant workers shall be employed illegally, while in Mali this function is performed by the labour authorities.

Economic Commission for Western Asia

Long, open and uncontrolled borders have made clandestine migration for employment relatively easy in

the ECWA area and have shaped the attitude of many Arab Governments towards migration. In recent years, however, Governments in Western Asia have been developing an elaborate system of controls for their large and rapidly expanding migrant populations. One measure that has been adopted is the tightening of controls over religious pilgrims, in order to prevent them overstaying and entering the labour force. Another has been the development of elaborate safeguards, whereby a migrant worker in a majority of countries now needs an entry visa, a residence permit, a work permit and a sponsor.

The increasing emphasis on importing Asian manpower, particularly in "project packages" in which the workers are repatriated at frequent intervals, is now one of the primary means of controlling illegal flows.

F. Refugees

Refugees are by conventional and formal definition different from other categories of migrants (whether permanent or temporary, legal or illegal), since refugees are persons who leave their countries of origin as a result of a well-founded fear of persecution on the basis of race, religion, nationality, political affiliation or social group. However, given the large absolute size of current refugee movements, it is becoming increasingly difficult for Governments to treat refugees as a special category, outside the scope of their broader international migration policies, because refugees have become an increasingly important component of international migration flows and have, in many instances, been competing with more traditional migrants for the limited number of places in the major countries of resettlement.

Refugee problems have emerged as one of the most characteristic features of the present decade (although the magnitude of total flows is not as great as the massive dislocations of population following the Second World War). The nature of the current resettlement process is very different, however, since the burden of refugee resettlement has fallen largely on developing rather than developed countries — in contrast to the situation after the Second World War, when a majority of refugees were resettled in industrialized countries.

The developed countries have rarely received direct refugee arrivals in recent years and have generally been in a position of being able to select and process refugees overseas. Although humanitarian concerns have played a part in refugee admissions, refugees have been admitted on a highly selective basis in most developed countries. Preference has been given to refugees with relatives living in the country of resettlement or to those with ties to a previous colonial (or wartime) administration. Moreover, refugees with assets and/or skills have moved fastest through the resettlement process, while poorer, less skilled refugees and those from rural backgrounds have been disproportionately in the holding centres and have been among the last to be resettled.

A brief review of the refugee situation in the less developed regions is given below.

Economic and Social Commission for Asia and the Pacific

In Asia as a whole, refugee camps in countries or areas of first asylum have been the major response to most of the larger refugee flows, accommodating about 90 per cent of the total refugee population as of 1979. Although the Office of the United Nations High Commissioner for Refugees (UNHCR) and other organizations have given their financial support and technical assistance, refugee camps have generally not been international shelters but camps under Malaysian, Thai or another authority, and the Governments have remained responsible for the protection of refugees and displaced persons in the camps.

Asian refugees have rarely been considered a potential labour force or utilized as such. Exceptions have occurred in China; in Hong Kong, where refugees were allowed to leave the camps and seek employment in factories while awaiting resettlement; and in Malaysia, where some of the 90,000 Filipino Muslim refugees were able to find employment.

To date, substantial numbers (but a small proportion of the total) of Asian refugees have been resettled outside the region, although the process has been gradually slowing down and there have been actual or proposed reductions in admissions in several of the major countries of resettlement.

China has accepted large numbers of refugees for permanent resettlement in recent years. The Government's humane policy towards the more than a quarter of a million refugees who fled across the border from Viet Nam during 1978 was largely motivated by the fact that the refugees were regarded as returned oversea Chinese. Rather than confining them to camps, the Chinese policy has been to integrate the refugees, along with other oversea Chinese who returned voluntarily, into state farms, fishing villages and other existing work units.[32]

The Republic of Korea temporarily harboured very small numbers of refugees — mainly those who were rescued at sea and brought to their ports. Hong Kong was also a major receiving area for refugees.

Thailand has been the principal receiving country of refugees in the subregion. Unlike the earlier waves of Vietnamese and Laotians, who were granted refugee status upon arrival in Thailand, those arriving from Democratic Kampuchea were at the outset considered illegal migrants and were confined to camps, although the Government subsequently accepted large numbers of Kampuchean refugees, confining them to holding centres and requesting international assistance.

The policy of Malaysia has varied considerably over time, although a constant feature was that no Indo-Chinese refugee who landed by sea could expect to become a settler. The Government at first categorized the boat refugees as illegal migrants and confined them to camps, although the heavy exodus in 1979 put this policy under strain and Malaysia came to the forefront of world attention following its decision to refuse additional refugee arrivals.

The Government of Indonesia followed the Malaysian model of isolating the refugees from the general population, establishing camps first in the remote Anambas Islands and later in the more accessible Paku Islands. Although the Philippines received a much smaller influx of refugees than other countries in the region, in June 1979, the Government joined with those of Indonesia, Malaysia, Singapore and Thailand in announcing that it could not accept additional refugees. In line with the policy of Malaysia and Indonesia, the Philippines decided to hold refugee arrivals in areas separate from the local population. At the Meeting on Refugees at Geneva in 1979, the Philippines extended this concept, offering UNHCR an island to serve as a processing centre for refugees who would be resettled in third countries of asylum.

One of the major refugee situations in the subregion, which involved 200,000 Burmese Muslims who fled to Bangladesh in the spring of 1978, has been resolved, because most of the refugees were repatriated to Burma as of late 1979. A "refugee" problem of longer standing involves the Bihari refugees, non-Bengali-speaking residents of Bangladesh who claim to be citizens of Pakistan. Although Pakistan accepted more than 100,000 Biharis, many of whom were former soldiers or had close relatives in Pakistan, the Government of Pakistan no longer grants the Biharis asylum. During 1980, India was seriously affected by communal violence involving Bengali immigrants, some 243,000 of whom were placed in refugee camps.

The most serious refugee situation in the subregion involves the very large-scale influx of refugees into Pakistan, a country that has long attempted to stimulate emigration to relieve its population pressures. By late 1980, Pakistan had received an estimated 1 million refugees from neighbouring Afghanistan, about 7 per cent of that country's total population. By 1981, the figure had climbed to 1.4 million and, according to estimates of the Government of Pakistan, to 2.8 million in 1983. The plight of these refugees from Afghanistan is similar to that of refugees in Africa. Except for small groups of skilled, middle-class refugees, the vast majority of Afghan refugees — who are mainly unskilled nomadic tribesmen from a country that has no close historical ties to the developed countries — are unlikely to be resettled elsewhere and will need continuing international assistance.

Economic Commission for Latin America

In the ECLA area, refugees have been something of a special case. In the past, they tended generally to be political refugees (highly skilled and middle class) who were resettled in the developed countries, either alone or in family groups, and who were assimilated relatively easily. The more recent large-scale refugee movements in the Caribbean and in Central America pose a different type of problem. Several Central American countries (such as Costa Rica) have responded generously to recent refugee movements, although they have reached a saturation point. Moreover, there is little likelihood that developed countries in the vicinity will expand their admissions, given large-scale immigration in recent years from other sources and of other types.

Economic Commission for Africa

Refugee movements have been occurring on a comparatively massive scale in the ECA area. However, few African refugees have been settled outside the region, mainly due to lack of close political ties to the developed countries, high transportation costs, the refugees' low skill levels and the high proportion of vulnerable groups among the refugee populations. Moreover, it is a situation that is unlikely to change in the foreseeable future.

Repatriation has occurred more frequently in Africa than in the other less developed regions, in part because refugees have usually had no particular incentive to make their stay more than a temporary one (except in some cases where the refugee movements overlap with established migration patterns, that is, those involving labour migrants). A few African countries — for example, Uganda and Zimbabwe — had successful experiences with repatriation during 1979 and early 1980. The most noteworthy example of return movement involved the large-scale repatriation of Zairian refugees from Angola and other countries during 1979.

When there has been no possibility of repatriation, most African Governments have willingly resettled large refugee populations. Indeed, many host Governments in Africa have recognized that refugees constitute a potentially active labour force. Whenever possible, African Governments have planned and, to some extent, implemented refugee programmes within the context of national and regional development strategies and have sought to integrate refugees into the economic structures of the host communities. Of course, many of the receiving countries in Africa have been in the unique position of having large amounts of unsettled land; their experience is not, therefore, easily transferable. Moreover, conditions in Africa may change due to modernizing pressures, a situation that is perhaps foreshadowed by the plight of Africa's urban refugees and the appearance of the "refugee in orbit" who wanders from country to country seeking asylum.[33]

In order for the African Governments to maintain their present generous attitude toward refugee resettlement, they will need large-scale international assistance. Although there has been growing recognition in the international community of the plight of African refugees, as demonstrated by the convening of the International Conference on Assistance to Refugees in Africa at Geneva in April 1981, in a context of slowing world-wide economic growth and reduced development assistance, it will grow more difficult to assist refugees in first countries of resettlement, many of which are among the world's poorest countries.

Economic Commission for Western Asia

In the ECWA area, the plight of the Palestinians, the major refugee group, is particularly critical, because

many of the refugee camps have recently been destroyed.

Conclusion

To conclude, there is little evidence to suggest that, at the global level, refugee movements will not continue and could possibly increase. Unlike earlier situations, refugees are likely to come increasingly from developing countries and to find first asylum as well as durable solutions within their respective regions. The movements will almost certainly continue to be mass flows rather than moves of individuals. Moreover, as a result of rising settlement costs, increasing concern over absorptive capacity and ease of assimilation, only a small minority of future refugees will be accommodated in the developed countries.

Since it is clear that a majority of future refugees will be helped within the regions in which they live, there is an obvious need to move beyond a relief orientation and to develop innovative approaches that are linked to overall development, similar to what is being attempted in Africa. In all regions, there is a need to engage in long-term planning. Refugee flows are, of course, difficult to predict, but probably no more so than fluctuations in labour migration.

More than any other aspect of international migration, refugee problems offer an opportunity for multilateral solutions. Governments have joined together in providing international support and funding for such bodies as UNHCR and have participated in various international conferences on refugee problems — sometimes exerting pressure on one another to provide increased financial assistance or to offer a greater number of places for refugee resettlement.

However, in spite of pledges of financial assistance and resettlement places, Governments have sometimes reverted to a unilateral position, lowering quotas, contributing less or even completely revising their refugee policies. Such action has usually been taken in response to rising resettlement costs, high unemployment or other domestic economic problems, political tensions over refugee admissions, social friction etc., or it has sometimes been related to the perception that the Government no longer has "responsibility" in regard to a particular refugee flow or that the refugees are really economic migrants.

This leads to a final important point. In a context of strong pressure from would-be migrants in the developing countries, increasingly restrictive policies in both the traditional receiving countries and the countries that import temporary labour, and greater controls on illegal migration, the problem of distinguishing political refugees from economic migrants, who are often fleeing intolerable economic conditions, is likely to become more and more difficult.

TABLE 115. GOVERNMENTS' PERCEPTIONS OF THE ACCEPTABILITY OF CURRENT INTERNATIONAL IMMIGRATION, BY LEVEL OF DEVELOPMENT, AREA OF RESPONSIBILITY OF REGIONAL COMMISSIONS AND GEOGRAPHICAL REGION, 1983

Immigration significant			*Immigration not significant*		
Too low (1)	*Satisfactory (2)*	*Too high (3)*	*Immigration desired (4)*	*Situation satisfactory (5)*	*Total (6)*
		World			
5	21	32	6	104	168
		Developing countries			
4	15	23	6	81	129
		Developed countries			
1	6	9	—	23	39
		A. AREA OF RESPONSIBILITY OF ECONOMIC COMMISSION FOR EUROPE			
		Eastern Europe			
—	—	—	—	Bulgaria Czechoslovakia German Democratic Republic Hungary Poland Romania	6
		Northern Europe			
—	Sweden	United Kingdom	—	Denmark Finland Iceland Ireland Norway	7
		Southern Europe			
—	—	Greece Italy	—	Albania Holy See	9

TABLE 115 *(continued)*

Immigration significant			*Immigration not significant*		
Too low (1)	*Satisfactory (2)*	*Too high (3)*	*Immigration desired (4)*	*Situation satisfactory (5)*	*Total (6)*
		A. AREA OF RESPONSIBILITY OF ECONOMIC COMMISSION FOR EUROPE *(continued)*			
		Southern Europe (continued)			
		San Marino		Malta Portugal Spain Yugoslavia	
		Western Europe			
—	Austria Liechtenstein Monaco Switzerland	France Germany, Federal Republic of Luxembourg Netherlands	—	Belgium	9
		Western Asia (part)			
Israel	—	—	Cyprus	Turkey	3
		Northern America			
—	Canada	United States of America	—	—	2
		Union of Soviet Socialist Republics			
—	—	—	—	Byelorussian SSR Ukrainian SSR USSR	3
		TOTAL			
1	6	9	1	22	39
		B. AREA OF RESPONSIBILITY OF ECONOMIC AND SOCIAL COMMISSION FOR ASIA AND THE PACIFIC			
		China			
—	—	—	—	China	1
		Japan			
—	—	—	—	Japan	1
		Other East Asia			
—	—	—	—	Democratic People's Republic of Korea Mongolia Republic of Korea	3
		South-eastern Asia			
—	Singapore	Malaysia Thailand	—	Burma Democratic Kampuchea Indonesia Lao People's Democratic Republic Philippines Viet Nam	9
		Southern Asia			
—	Bhutan Sri Lanka	Iran (Islamic Republic of) Nepal Pakistan	—	Afghanistan Bangladesh India Maldives	9
		Australia-New Zealand			
Australia	—	—	—	New Zealand	2
		Melanesia			
—	—	—	—	Fiji Papua New Guinea Solomon Islands Vanuatu	4

TABLE 115 *(continued)*

Immigration significant			*Immigration not significant*		
Too low (1)	*Satisfactory (2)*	*Too high (3)*	*Immigration desired (4)*	*Situation satisfactory (5)*	*Total (6)*
B. AREA OF RESPONSIBILITY OF ECONOMIC AND SOCIAL COMMISSION FOR ASIA AND THE PACIFIC *(continued)*					
		Micronesia-Polynesia			
—	Nauru	Samoa	—	Kiribati Tonga Tuvalu	5
		TOTAL			
1	4	6	—	23	34
C. AREA OF RESPONSIBILITY OF ECONOMIC COMMISSION FOR LATIN AMERICA					
		Caribbean			
—	—	Bahamas Dominican Republic	—	Antigua and Barbuda Barbados Cuba Dominica Grenada Haiti Jamaica Saint Lucia Saint Vincent and the Grenadines Trinidad and Tobago	12
		Central America			
—	Belize Honduras Mexico	Costa Rica	—	El Salvador Guatemala Nicaragua Panama	8
		Temperate South America			
Argentina	—	—	Uruguay	Chile	3
		Tropical South America			
—	—	Ecuador Venezuela	Bolivia Guyana Paraguay	Brazil Colombia Peru Suriname	9
		TOTAL			
1	3	5	4	19	32
D. AREA OF RESPONSIBILITY OF ECONOMIC COMMISSION FOR AFRICA					
		Eastern Africa			
—	Uganda	Djibouti Somalia Zimbabwe	—	Burundi Comoros Ethiopia Kenya Madagascar Malawi Mauritius Mozambique Rwanda Seychelles United Republic of Tanzania Zambia	16
		Middle Africa			
Equatorial Guinea	Zaire	Gabon	—	Angola Cameroon[a] Central African Republic Chad Congo Sao Tome and Principe	9

TABLE 115 *(continued)*

Immigration significant			*Immigration not significant*		
Too low (1)	*Satisfactory (2)*	*Too high (3)*	*Immigration desired (4)*	*Situation satisfactory (5)*	*Total (6)*
		D. AREA OF RESPONSIBILITY OF ECONOMIC COMMISSION FOR AFRICA *(continued)*			
		Northern Africa			
—	—	Sudan Libyan Arab Jamahiriya	—	Algeria Egypt Morocco Tunisia	6
		Southern Africa			
South Africa	—	—	—	Botswana Lesotho Swaziland	4
		Western Africa			
—	Liberia	Gambia Ghana Ivory Coast	—	Benin Burkina Faso[b] Cape Verde Guinea Guinea-Bissau Mali Mauritania Niger Nigeria Senegal Sierra Leone Togo	16
		TOTAL			
2	3	9	—	37	51
		E. AREA OF RESPONSIBILITY OF ECONOMIC COMMISSION FOR WESTERN ASIA			
		Western Asia[c]			
—	Jordan Oman Qatar Saudi Arabia Yemen	Bahrain Kuwait United Arab Emirates	Iraq	Democratic Yemen Lebanon Syrian Arab Republic	12
		TOTAL			
—	5	3	1	3	12

Sources: Compiled from replies to "Fifth Population Inquiry among Governments: monitoring of government perceptions and policies on demographic trends and levels in relation to development as of 1982"; and from information in the Population Policy Data Bank maintained by the Population Division of the Department of International Economic and Social Affairs of the United Nations.

[a] Formerly called the United Republic of Cameroon.
[b] Formerly called the Upper Volta.
[c] Excluding Cyprus, Israel and Turkey.

TABLE 116. GOVERNMENTS' POLICIES WITH RESPECT TO INTERNATIONAL IMMIGRATION, BY LEVEL OF DEVELOPMENT, AREA OF RESPONSIBILITY OF REGIONAL COMMISSIONS AND GEOGRAPHICAL REGION, 1983

Government policies in favour of:				
Higher rate	*Maintaining current rate but subject to strict control*	*Curbing immigration in future but maintaining already established immigration population*	*Immigration perceived to be not demographically significant and desirable or not desirable*	*Total*
		World		
9	22	28	109	168
		Developing countries		
7	20	16	86	129
		Developed countries		
2	2	12	23	39

TABLE 116 *(continued)*

Government policies in favour of:				
Higher rate	*Maintaining current rate but subject to strict control*	*Curbing immigration in future but maintaining already established immigration population*	*Immigration perceived to be not demographically significant and desirable or not desirable*	*Total*
		A. AREA OF RESPONSIBILITY OF ECONOMIC COMMISSION FOR EUROPE		
		Eastern Europe		
—	—	—	Bulgaria Czechoslovakia German Democratic Republic Hungary Poland Romania	6
		Northern Europe		
—	—	Sweden United Kingdom	Denmark Finland Iceland Ireland Norway	7
		Southern Europe		
Italy	—	Greece San Marino	Albania Holy See Malta Portugal Spain Yugoslavia	9
		Western Europe		
—	—	Austria France Germany, Federal Republic of Liechtenstein Luxembourg Monaco Netherlands Switzerland	Belgium	9
		Western Asia (part)		
Israel	—	—	Cyprus Turkey	3
		Northern America		
—	Canada United States of America	—	—	2
		Union of Soviet Socialist Republics		
—	—	—	Byelorussian SSR Ukrainian SSR USSR	3
		TOTAL		
2	2	12	23	39
		B. AREA OF RESPONSIBILITY OF ECONOMIC AND SOCIAL COMMISSION FOR ASIA AND THE PACIFIC		
		China		
—	—	—	China	1
		Japan		
—	—	—	Japan	1
		Other East Asia		
—	—	—	Democratic People's Republic of Korea Mongolia Republic of Korea	3

TABLE 116 *(continued)*

Government policies in favour of:				
Higher rate	*Maintaining current rate but subject to strict control*	*Curbing immigration in future but maintaining already established immigration population*	*Immigration perceived to be not demographically significant and desirable or not desirable*	*Total*
	B. AREA OF RESPONSIBILITY OF ECONOMIC AND SOCIAL COMMISSION FOR ASIA AND THE PACIFIC *(continued)*			
		South-eastern Asia		
—	Singapore	—	Burma Democratic Kampuchea Indonesia Lao People's Democratic Republic Malaysia Philippines Thailand Viet Nam	9
		Southern Asia		
—	Bhutan Sri Lanka	Nepal Pakistan Iran (Islamic Republic of)	Afghanistan Bangladesh India Maldives	9
		Australia - New Zealand		
Australia	—	—	New Zealand	2
		Melanesia		
—	—	—	Fiji Papua New Guinea Solomon Islands Vanuatu	4
		Micronesia-Polynesia		
—	Nauru Samoa	—	Kiribati Tonga Tuvalu	5
		TOTAL		
1	5	3	25	34
	C. AREA OF RESPONSIBILITY OF ECONOMIC COMMISSION FOR LATIN AMERICA			
		Caribbean		
—	Bahamas Dominican Republic	—	Antigua and Barbuda Barbados Cuba Dominica Grenada Haiti Jamaica Saint Lucia Saint Vincent and the Grenadines Trinidad and Tobago	12
		Central America		
—	Belize Honduras Mexico	Costa Rica	El Salvador Guatemala Nicaragua Panama	8
		Temperate South America		
Argentina Uruguay	—	—	Chile	3
		Tropical South America		
Bolivia Guyana	Ecuador	Venezuela	Brazil Colombia Paraguay Peru Suriname	
		TOTAL		
4	6	2	20	32

TABLE 116 *(continued)*

Government policies in favour of:				
Higher rate	*Maintaining current rate but subject to strict control*	*Curbing immigration in future but maintaining already established immigration population*	*Immigration perceived to be not demographically significant and desirable or not desirable*	*Total*
		D. AREA OF RESPONSIBILITY OF ECONOMIC COMMISSION FOR AFRICA		
		Eastern Africa		
—	Djibouti Uganda	Somalia Zimbabwe	Burundi Comoros Ethiopia Kenya Madagascar Malawi Mauritius Mozambique Rwanda Seychelles United Republic of Tanzania Zambia	16
		Middle Africa		
Equatorial Guinea	Zaire	Gabon	Angola Cameroon [a] Central African Republic Chad Congo Sao Tome and Principe	9
		Northern Africa		
—	—	Libyan Arab Jamahiriya Sudan	Algeria Egypt Morocco Tunisia	6
		Southern Africa		
South Africa	—	—	Botswana Lesotho Swaziland	4
		Western Africa		
—	Liberia	Gambia Ghana Ivory Coast	Benin Burkina Faso [b] Cape Verde Guinea Guinea-Bissau Mali Mauritania Niger Nigeria Senegal Sierra Leone Togo	16
		TOTAL		
2	4	8	37	51
		E. AREA OF RESPONSIBILITY OF ECONOMIC COMMISSION FOR WESTERN ASIA		
		Western Asia [c]		
—	Jordan Oman Qatar Saudi Arabia Yemen	Bahrain Kuwait United Arab Emirates	Democratic Yemen Iraq Lebanon Syrian Arab Republic	12
		TOTAL		
—	5	3	4	12

Sources: Compiled from replies to "Fifth Population Inquiry among Governments: monitoring of government perceptions and policies on demographic trends and levels in relation to development as of 1982"; and from information in the Population Policy Data Bank maintained by the Population Division of the Department of International Economic and Social Affairs of the United Nations Secretariat.

[a] Formerly called the United Republic of Cameroon.
[b] Formerly called the Upper Volta.
[c] Excluding Cyprus, Israel and Turkey.

TABLE 117. GOVERNMENTS' PERCEPTIONS OF THE ACCEPTABILITY OF CURRENT INTERNATIONAL EMIGRATION, BY LEVEL OF DEVELOPMENT, AREA OF RESPONSIBILITY OF REGIONAL COMMISSIONS AND GEOGRAPHICAL REGION, 1983

Emigration significant			*Emigration not significant*		
Too low (1)	*Satisfactory (2)*	*Too high (3)*	*Emigration desired (4)*	*Situation satisfactory (5)*	*Total (6)*
		World			
8	25	34	2	99	168
		Developing countries			
5	24	28	2	70	129
		Developed countries			
3	2	5	—	29	39
		A. AREA OF RESPONSIBILITY OF ECONOMIC COMMISSION FOR EUROPE			
		Eastern Europe			
—	—	—	—	Bulgaria Czechoslovakia German Democratic Republic Hungary Poland Romania	6
		Northern Europe			
—	—	Ireland	—	Denmark Finland Iceland Norway Sweden United Kingdom	7
		Southern Europe			
Portugal	Malta Italy	Greece Spain Yugoslavia	—	Albania Holy See San Marino	9
		Western Europe			
Netherlands	—	—	—	Austria Belgium France Germany, Federal Republic of Liechtenstein Luxembourg Monaco Switzerland	9
		Western Asia (part)			
Turkey	Cyprus	—	—	Israel	3
		Northern America			
—	—	—	—	Canada United States of America	2
		Union of Soviet Socialist Republics			
—	—	—	—	Byelorussian SSR Ukrainian SSR USSR	3
		TOTAL			
3	3	4	—	29	39
		B. AREA OF RESPONSIBILITY OF ECONOMIC AND SOCIAL COMMISSION FOR ASIA AND THE PACIFIC			
		China			
—	—	—	—	China	1
		Japan			
Japan	—	—	—	—	1

TABLE 117 (*continued*)

Emigration significant			Emigration not significant		
Too low (1)	*Satisfactory* (2)	*Too high* (3)	*Emigration desired* (4)	*Situation satisfactory* (5)	*Total* (6)
B. AREA OF RESPONSIBILITY OF ECONOMIC AND SOCIAL COMMISSION FOR ASIA AND THE PACIFIC (*continued*)					
			Other East Asia		
Republic of Korea	—	—	—	Democratic People's Republic of Korea Mongolia	3
			South-eastern Asia		
Thailand	Democratic Kampuchea Viet Nam	—	Malaysia	Burma Indonesia Lao People's Democratic Republic Philippines Singapore	9
			Southern Asia		
Pakistan	Nepal Sri Lanka	Afghanistan	—	Bangladesh Bhutan India Iran (Islamic Republic of) Maldives	9
			Australia-New Zealand		
—	—	New Zealand	—	Australia	2
			Melanesia		
—	—	Fiji	—	Papua New Guinea Solomon Islands Vanuatu	4
			Micronesia-Polynesia		
—	Tonga	—	—	Kiribati Nauru Samoa Tuvalu	5
			TOTAL		
4	5	3	1	21	34
C. AREA OF RESPONSIBILITY OF ECONOMIC COMMISSION FOR LATIN AMERICA					
			Caribbean		
—	Barbados Cuba Grenada Jamaica	Dominican Republic Haiti Trinidad and Tobago	—	Antigua and Barbuda Bahamas Dominica St. Lucia Saint Vincent and the Grenadines	12
			Central America		
—	Mexico	Belize El Salvador Honduras Nicaragua	—	Costa Rica Guatemala Panama	8
			Temperate South America		
—	—	Argentina Uruguay	—	Chile	3
			Tropical South America		
—	—	Bolivia Colombia Paraguay Suriname	—	Brazil Ecuador Guyana Peru Venezuela	9
			TOTAL		
—	5	13	—	14	32

TABLE 117 *(continued)*

Emigration significant			*Emigration not significant*		
Too low (1)	*Satisfactory* (2)	*Too high* (3)	*Emigration desired* (4)	*Situation satisfactory* (5)	*Total* (6)
D. AREA OF RESPONSIBILITY OF ECONOMIC COMMISSION FOR AFRICA					
		Eastern Africa			
Mauritius	Comoros Malawi	Mozambique Seychelles Somalia	Rwanda	Burundi Djibouti Ethiopia Kenya Madagascar Uganda United Republic of Tanzania Zambia Zimbabwe	16
		Middle Africa			
—	Angola Chad	Gabon	—	Cameroon[a] Central African Republic Congo Equatorial Guinea Sao Tome and Principe Zaire	9
		Northern Africa			
—	Egypt Morocco Tunisia	Nigeria	—	Libyan Arab Jamahiriya Sudan	6
		Southern Africa			
—	Swaziland	Botswana Lesotho	—	South Africa	4
		Western Africa			
—	Burkina Faso[b] Cape Verde Mauritania Senegal	Benin Guinea Mali	—	Gambia Ghana Guinea-Bissau Ivory Coast Liberia Niger Nigeria Sierra Leone Togo	16
		TOTAL			
1	12	10	1	27	51
E. AREA OF RESPONSIBILITY OF ECONOMIC COMMISSION FOR WESTERN ASIA					
		Western Asia[c]			
—	Democratic Yemen	Jordan Syrian Arab Republic Yemen	—	Bahrain Iraq Kuwait Lebanon Oman Qatar Saudi Arabia United Arab Emirates	12
		TOTAL			
—	1	3	—	8	12

Sources: Compiled from replies to "Fifth Population Inquiry among Governments: monitoring of government perceptions and policies on demographic trends and levels in relation to development as of 1982"; and from information in the Population Policy Data Bank maintained by the Population Division of the Department of International Economic and Social Affairs of the United Nations Secretariat.

[a] Formerly called the United Republic of Cameroon.
[b] Formerly called the Upper Volta.
[c] Excluding Cyprus, Israel and Turkey.

TABLE 118. GOVERNMENTS' POLICIES WITH RESPECT TO INTERNATIONAL EMIGRATION, BY LEVEL OF DEVELOPMENT, AREA OF RESPONSIBILITY OF REGIONAL COMMISSIONS AND GEOGRAPHICAL REGION, 1983

Government policies in favour of				
Higher rate	*Maintaining current rate*	*Curbing emigration in future*	*Emigration perceived to be not demographically significant and desirable or not desirable*	*Total*
		World		
8	23	34	103	168
		Developing countries		
5	22	28	74	129
		Developed countries		
3	1	6	29	39
		A. AREA OF RESPONSIBILITY OF ECONOMIC COMMISSION FOR EUROPE		
		Eastern Europe		
—	—	—	Bulgaria Czechoslovakia German Democratic Republic Hungary Poland Romania	6
		Northern Europe		
—	—	Ireland	Denmark Finland Iceland Norway Sweden United Kingdom	7
		Southern Europe		
Portugal	Malta	Greece Italy Spain Yugoslavia	Albania Holy See San Marino	9
		Western Europe		
Netherlands	—	—	Austria Belgium France Germany, Federal Republic of Liechtenstein Luxembourg Monaco Switzerland	9
		Western Asia (part)		
Turkey	Cyprus	—	Israel	3
		Northern America		
—	—	—	Canada United States of America	2
		Union of Soviet Socialist Republics		
—	—	—	Byelorussian SSR Ukrainian SSR USSR	3
		TOTAL		
3	2	5	29	39
		B. AREA OF RESPONSIBILITY OF ECONOMIC AND SOCIAL COMMISSION FOR ASIA AND THE PACIFIC		
		China		
—	—	—	China	1
		Japan		
Japan	—	—	—	1
		Other East Asia		
Republic of Korea	—	—	Democratic People's Republic of Korea Mongolia	3

TABLE 118 *(continued)*

Government policies in favour of				
Higher rate	*Maintaining current rate*	*Curbing emigration in future*	*Emigration perceived to be not demographically significant and desirable or not desirable*	*Total*
B. AREA OF RESPONSIBILITY OF ECONOMIC AND SOCIAL COMMISSION FOR ASIA AND THE PACIFIC *(continued)*				
		South-eastern Asia		
Thailand	Viet Nam	Democratic Kampuchea	Burma Indonesia Lao People's Democratic Republic Malaysia Philippines Singapore	9
		Southern Asia		
Pakistan	Nepal Sri Lanka	Afghanistan	Bangladesh Bhutan India Iran Maldives	9
		Australia-New Zealand		
—	—	New Zealand	Australia	2
		Melanesia		
—	—	Fiji	Papua New Guinea Solomon Islands Vanuatu	4
		Micronesia-Polynesia		
—	Tonga	—	Kiribati Nauru Samoa Tuvalu	5
		TOTAL		
4	4	4	22	34
C. AREA OF RESPONSIBILITY OF ECONOMIC COMMISSION FOR LATIN AMERICA				
		Caribbean		
—	Barbados Grenada Jamaica	Cuba Dominican Republic Haiti Trinidad and Tobago	Antigua and Barbuda Bahamas Dominica Saint Lucia Saint Vincent and the Grenadines	12
		Central America		
—	Mexico	Belize El Salvador Honduras Nicaragua	Costa Rica Guatemala Panama	8
		Temperate South America		
—	—	Argentina Uruguay	Chile	3
		Tropical South America		
—	—	Bolivia Colombia Paraguay Suriname	Brazil Ecuador Guyana Peru Venezuela	9
		TOTAL		
—	4	14	14	32

TABLE 118 *(continued)*

Government policies in favour of				
Higher rate	*Maintaining current rate*	*Curbing emigration in future*	*Emigration perceived to be not demographically significant and desirable or not desirable*	*Total*
	D. AREA OF RESPONSIBILITY OF ECONOMIC COMMISSION FOR AFRICA			
		Eastern Africa		
Mauritius	Comoros Malawi Seychelles	Mozambique Somalia	Burundi Djibouti Ethiopia Kenya Madagascar Rwanda Uganda United Republic of Tanzania Zambia Zimbabwe	16
		Middle Africa		
—	Angola Chad	Gabon	Cameroon[a] Central African Republic Congo Equatorial Guinea Sao Tome and Principe Zaire	9
		Northern Africa		
—	Egypt Morocco Tunisia	Algeria	Libyan Arab Jamahiriya Sudan	6
		Southern Africa		
—	Swaziland	Botswana Lesotho	South Africa	4
		Western Africa		
—	Burkina Faso[b] Mauritania Senegal	Guinea Mali	Benin Cape Verde Gambia Ghana Guinea-Bissau Ivory Coast Liberia Niger Nigeria Sierra Leone Togo	16
		TOTAL		
1	12	8	30	51
	E. AREA OF RESPONSIBILITY OF ECONOMIC COMMISSION FOR WESTERN ASIA			
		Western Asia[c]		
—	Democratic Yemen	Jordan Syrian Arab Republic Yemen	Bahrain Iraq Kuwait Lebanon Oman Qatar Saudi Arabia United Arab Emirates	12
		TOTAL		
—	1	3	8	12

Sources: Compiled from replies to "Fifth Population Inquiry among Governments: monitoring of government perceptions and policies on demographic trends and levels in relation to development as of 1982"; and from information in the Population Policy Data Bank maintained by the Population Division of the Department of International Economic and Social Affairs of the United Nations Secretariat.

[a] Formerly called the United Republic of Cameroon.
[b] Formerly called the Upper Volta.
[c] Excluding Cyprus, Israel and Turkey.

Notes

[1] Annual gross immigration to the United States of America has been about 600,000 (excluding refugees); that to Canada, 100,000; to Australia, 90,000; and to New Zealand, 40,000-70,000.

[2] Although the number of immigrants admitted in the unrestricted category is theoretically unlimited, only a little over 100,000 have been admitted annually in recent years.

[3] *World Population Trends and Policies: 1979 Monitoring Report,* vol. II, *Population Policies* (United Nations publication, Sales No. E.79.XIII.5), p. 59.

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[6] "Australia slashes intake of skilled immigrants", *Financial Times,* 11 January 1983.

[7] *International Migration Policies and Programmes: A World Survey* (United Nations publication, Sales No. E.82.XIII.4), p. 14.

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[14] J. S. Birks and C. A. Sinclair, "The Kingdom of Saudi Arabia and the Libyan Arab Jamahiriya: the key countries of employment", World Employment Programme working paper WEP 2-26/WP.39, Geneva, International Labour Organisation, May 1979, p. 4.

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[19] Gurushri Swamy, "International migrant workers' remittances: issues and prospects", World Bank Staff Working Paper No. 481, Washington, D.C., August 1981, p. 48.

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