



**POPULATION, ENVIRONMENT AND POVERTY LINKAGES
OPERATIONAL CHALLENGES**



POPULATION AND
DEVELOPMENT
STRATEGIES

NUMBER **1**



UNFPA

United Nations
Population Fund

220 East 42nd Street
New York, N.Y. 10017
ISBN: 0-89714-546-1

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NUMBER 1 | 2001



POPULATION AND
DEVELOPMENT
STRATEGIES
SERIES

**Forthcoming in this new *Population and Development Strategies* series:
Globalization, Population and Poverty: Implementing the Millennium Declaration
*Population Ageing and Poverty: Operational Challenges***

First Published August 2001
New York, NY 10016

NOTES:

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Graphic Design and Production: Andy Musilli
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FOREWORD

In the Millennium Declaration, adopted by 147 Heads of State in September 2000, world leaders pledged to *spare no effort to free all of humanity, and above all our children and grandchildren, from the threat of living on a planet irredeemably spoilt by human activities, and whose resources would no longer be sufficient for their needs*. The Declaration also marked a strong commitment to the right to development, to gender equality, to the eradication of the many dimensions of poverty and to sustainable human development.

The largest population increases and most fragile environmental conditions are occurring among poor countries. These countries also usually have limited financial resource margins and the least adequate political and managerial resources. At the same time they are subjected to pressures of globalization and challenging market conditions that tend to be oblivious to their existing domestic inequities. The world's growing consumption of scarce resources, including support of the high living standards of a small proportion of the world, is unprecedented in human history. Contemporaneously there are the growing gaps in consumption, and increasing consumption needs to meet the basic living standards of the poorest.

Many current patterns of consumption and production - both over-consumption among the wealthy, and under-consumption among the poor - are unsustainable. Access by all on a sustainable basis to unpolluted air, uncontaminated food, safe water, clean energy and other basic necessities of life, is a continuing challenge.

Continued growth of populations and economies threatens food and water security, forest resources and biodiversity, and increases pressure on limited natural resources. Without the realization of the goals of the Programme of Action of the International Conference on Population and Development (ICPD), especially universal access to quality reproductive health services, stabilization of global population and more sustainable patterns of production and consumption will remain elusive. And further, countries will find increasing difficulty in resolving issues of poverty and environmental degradation.

This report provides an overview of the complex interrelations between population and the environment, and underscores the importance of considering mediating factors, such as the policy context, institutional constraints, technological impacts, and cultural norms and values.

The report documents the United Nations Population Fund (UNFPA) support for a number of programme initiatives in the area of population, the environment and sustainable development, with information sourced from its country and inter-country programmes. UNFPA undertakes this role in its capacity as the lead agency for the implementation of the Programme of Action of the ICPD and as Task Manager for Chapter 5 of Agenda 21 of the United Nations Conference on Environment and Development (UNCED).

For example, in India, where water scarcity is already acute in many parts of the country, the Fund is supporting a research project that is looking into the effects of population growth on village water supply for agricultural and domestic use, as well as its consequences for land use, housing, sanitation and common property resources. In South Africa, the Fund is supporting an environmental project on water resources that has created jobs for the poor, especially women, whose reproductive health needs are being addressed simultaneously through a community-based reproductive health programme.

As the report illustrates, in Azerbaijan UNFPA is supporting local efforts to strengthen national capacities to plan, implement and monitor effective policies that take into account, and mainstream, population and gender concerns in environmental planning and management. The Fund also helps build local capacities by promoting policy dialogue and undertaking policy analysis and research on issues related to popula-

tion and environmental linkages. It supports regional policy dialogue among parliamentarians from developed and developing countries on cross-border issues covering *inter alia* population, environment and sustainable development.

The report also draws attention to the many capacity constraints facing developing countries in identifying environment, population and poverty linkages, and in framing policies and programmes to promote sustainable human development. These include the lack of data and adequate models, existing administrative arrangements that often are not conducive to policy coordination, and limited human and financial resources. The report calls for the need to reinvigorate the spirit of the Rio and Cairo conferences through, among others, renewed national commitments and broader partnerships involving governments, civil society and the private sector, with support from the international community.

I would like to sincerely thank UNFPA Country Office Representatives, as well as the other Divisions within UNFPA headquarters, for helping to supply the source material on which a significant part of this report is based. I would also like to thank the Population and Development Branch of the Technical Support Division, especially the small team listed below, for the hard work and commitment in preparing this report. I sincerely hope that this paper will prove to be useful in the context of the ongoing dialogue on population, environment and poverty.

Mari Simonen



Director
Technical Support Division

MEMBERS OF THE REPORT TEAM

Richard Leete | Manager

Vivien Ponniah | Senior Technical Officer

Rene Desiderio | Consultant

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EXECUTIVE SUMMARY

The world population numbered 6.1 billion in 2000 and is currently growing by a net increment of some 77 million people per year. By 2050, the United Nations Population Division, in its 2000 Revision of the world's population prospects, estimates that total world population will be of the order of 9.3 billion. The impact of this growth will be focused mainly in less developed countries, where currently some 1.2 billion people, the majority of whom are women and children, are living in extreme poverty. By mid-century, the 80 per cent share of the world's population in less developed countries in 2000, will have expanded to 88 per cent. The bulk of the population growth will thus accrue in the regions of the world least able to absorb large increments of people, threatening sustainable development and producing further deterioration in levels of living and quality of life. Without the realization of the goals of the Programme of Action of the International Conference on Population and Development (ICPD), especially universal access to gender sensitive and quality reproductive health services, it will be difficult to achieve a more favourable balance between population and available resources.

Fifty per cent of the world's population will be urban by 2010. This indicates, not only that high levels of rural to urban migration are expected to continue, but that the issues of population growth will have to be dealt with in two distinct contexts. The **urban** environments are often characterized by overcrowding, substandard housing, underemployment and unemployment, and an undeveloped infrastructure, especially in relation to the provision of basic social services. The **rural** environments are frequently characterized by landlessness, inequitable land-tenure systems, subsistence or lower incomes, and paucity of basic social services. Both create their own particular versions of poverty and deprivation which constitute a major challenge to governments and agencies in the provision of a reasonable living environment.

Life expectancy is increasing worldwide, except in those countries that are most seriously affected by the HIV/AIDS pandemic, and complements fertility as an important factor contributing to population growth. The implications of this trend are significant because of the changes they will produce in the composition of the population. As fertility declines and people survive longer, the composition of the population matures, increasing the share of adults in relation to the child component, and eventually increasing the proportion of older persons in relation to children and working-age adults. Accompanying this shift in age structure there is a change in the gender balance: because women survive longer than men on average, they will comprise an increasingly large proportion of total and especially older populations.

Women fulfill a crucial role as guardians of sustainability. Appropriate support, in line with the recommendations of the Programme of Action of ICPD and ICPD + 5, can facilitate women's choices regarding reproduction and reproductive health, education, community participation and their role as resource managers in sustainable development. Women, together with their children, are particularly susceptible to deterioration in the natural and built environments to which ever-larger numbers are being exposed. Furthermore, because of sheer population size, less developed countries have the largest numbers of older persons and, especially where coresidence is less commonly practiced or where shared poverty precludes adequate family or community support, the well-being of women in these age groups is most at risk and indigence and destitution are an increasingly common occurrence.

Environmental degradation takes many forms, but the elements of most immediate consequence to the bulk of the world's population simply for day-to-day survival relate to land, air and water. Shortage of usable land gives rise to acute problems of income and shelter. In the rural environment, land fragmentation, eroded slopes and degraded soils, contribute to poverty, undernutrition and out-migration, while in the urban context, overcrowding, high rents and high-risk locations promote unhealthy or hazardous living conditions, often in poor areas lacking the main elements of physical infrastructure. The two most serious infrastructural deficiencies in both the rural and the urban contexts are contaminated water supply and heavily polluted air.

Food and water security are becoming increasingly critical issues in many developing countries, especially where poverty and environmental degradation are

endemic. Pressure of population numbers creates a demand for increased food production which local rural communities in many poor countries attempt to meet themselves, threatening delicate environmental balances and the natural resource base by overproduction through intensification or expansion into forested or marginal areas. Undernutrition and malnutrition are also prevalent in many urban areas, emphasizing the necessity to enable access and affordability to preferred foods in order to achieve healthy and productive lives.

The widespread extreme poverty of populations in many less developed countries is being exacerbated by rising population pressure on accessible resources and the deterioration of the natural and built environments which, in turn, impacts on the resource base and prospects for work and income. The efforts of governments and agencies are therefore becoming progressively more important for the opportunities they can create, the enhanced security only they can offer, and the empowerment they can bestow on these large, poor, highly vulnerable populations in order to improve their living conditions, maintain their physical and social environments and uphold their dignity.

The roles of communities, governments, international agencies, NGOs and the private sector are crucial in supporting and facilitating the inseparable elements of population stabilization, sustainable development, maintenance of the environment, and the diminution of poverty. UNFPA, recognizing the integrated nature of these components, provides support for in-country initiatives aimed at exploring local linkages between population, sustainable development and the environment, and transforming findings into practical policies and plans. This entails actively supporting programmes ranging from advocacy and public awareness initiatives to environment and population-related education and training. All these efforts aim at building and strengthening national capacities.

UNFPA is the lead agency for the implementation of the Programme of Action of ICPD, as well as a key contributor to the development goals of the Millennium Declaration. UNFPA supports key population, poverty and environment activities at global, regional and national levels. These include policy dialogue and planning in relation to population and development, as well as reproductive health concerns and gender mainstreaming. UNFPA provides support for institutional capacity building for implementing, monitoring and evaluating policies and programmes to improve data collection, analysis, research and dissemination, and promotes population education and advocacy.

CHAPTER 1 INTRODUCTION

It is generally well accepted that population, poverty and the environment are inextricably linked. The interrelationships between global population growth, other demographic dynamics, the environment and sustainable development were emphasized in the 1994 Programme of Action of the International Conference on Population and Development (ICPD) (United Nations, DESIPA, 1995) and in Agenda 21 adopted at the 1992 United Nations Conference on Environment and Development (UNCED, also known as the Earth Summit) (United Nations, 1994). The Millennium Declaration building on the outcomes of the international conferences of the 1990s, and their plus five reviews, mainstreamed concerns for population, poverty and the environment into the global development agenda.

The largest population increases and most fragile environmental conditions are occurring among poor countries. These countries usually have limited financial resource margins and the least adequate political and managerial resources. At the same time they are subjected to pressures of globalization and imperfect market conditions that ignore their existing domestic inequities. The world's growing consumption of scarce resources, including support of the high living standard of a small proportion of the world's population, is unprecedented in human history. Contemporaneously there are the growing gaps in consumption, and increasing consumption needs to meet even the basic living standards of the poorest.

Many current patterns of consumption and production - both over-consumption among the rich, and under-consumption among the poor — are unsustainable. Access by all on a sustainable basis to unpolluted air, uncontaminated food, safe water, clean energy and other basic necessities of life is a continuing challenge.

Continued growth of populations and economies threatens food and water security, forest resources and biodiversity, and increases pressure on limited natural resources. Without the realization of the goals of the Programme of Action of the ICPD, especially universal access to quality reproductive health services, stabilization of global population and more sustainable patterns of production and consumption will remain elusive. And further, countries will find increasing difficulty in resolving issues of poverty and environmental degradation.

Problems of environmental degradation and resource depletion are often caused, or at least exacerbated by demographic factors, especially when these are combined with poverty. High rates of natural increase together with large-scale migration produce rapid population growth. These, occurring together as they often do in the context of accelerated urbanisation, create pressures on the environment, particularly where they occur in ecologically vulnerable ecosystems.

Excessive consumption practices and wasteful production patterns have an even more far-reaching impact. In both rich and poor countries, the negative effects on the environment are combined with inadequate development policies and mismanagement of resources. Achieving sustainable development requires steady economic growth based on equity, and enhancement of the social well-being of all groups, combined with protection of the environment and slower population growth.

United Nations Global Conferences and the Millennium Declaration

The ICPD Programme of Action and Agenda 21 are mutually reinforcing and together provide a comprehensive account of what needs to be done about the interface between population, environment and sustainable development (**Box 1**). While Agenda 21 contains the initial statement of intent, the Programme of Action may be seen in part as a reaffirmation of and a follow-up to Agenda 21, and a breakthrough for the population and development component of sustainable development.

The five-year post-conference reviews of UNCED in 1997 (United Nations, 1998) and ICPD in 1999 (United Nations, 1999) re-emphasized the necessity for effectively balancing and managing these three disparate components. The conferences affirmed the need to moderate and eventually eliminate unsustainable patterns of production and consumption, reduce poverty, improve environmental protection and adopt population and development policies that meet current needs without compromising the prospects of future generations.

Other United Nations global conferences and their plus five reviews, such as the Fourth World Conference on Women in Beijing in 1995, the World Summit for Social Development in Copenhagen in 1995 and Habitat II in Istanbul in 1996, identified the essential elements of a sustainable development strategy which is consistent, accelerated, equitable and environmentally sustainable. These conferences noted and progressively elaborated the links between environmental issues and population, gender, poverty and social equity.

Taken together with the ICPD recommendations, they strongly advocated the need for stabilization of global population numbers at a level that will permit sustainable development. Such a goal is attainable only if efforts are maintained to expand and improve the quality of reproductive health programmes in tandem with the greater empowerment of women and increased investments in human capital, particularly in the form of more widespread education of girls.

ICPD placed human beings at the centre of concern for sustainable development. All individuals are entitled to a healthy and productive life in harmony with nature. People are the most important and valuable resource of any nation and they have a right to freedom from poverty and to adequate food, clothing, housing, water and sanitation. The right to development must be exercised in a way that accords equitably with the development and environmental needs of present and future generations. The interrelationships between population, resources, the environment and development should be fully recognized, properly managed and brought into a harmonious but dynamic balance. If sustainable development is to be achieved, environmental protection must be part of the development process, and the human rights of individuals must be recognized.

Box 1**Population and Environment - Agenda 21, ICPD Programme of Action, Their + 5 Reviews and the United Nations Millennium Declaration*****Agenda 21***

The growth of population and production combined with unsustainable consumption patterns places increasingly severe stress on the life-supporting capacities of our planet (para 5.3).

Policies should... combine environmental concerns and population issues within an holistic view of development whose primary goals include the alleviation of poverty... (para 5.16).

Special attention should be given to the critical role of women in population-environment programmes and in achieving sustainable development (para 5.48).

Earth Summit + 5

The impact of the relationship among economic growth, poverty, employment, environment and sustainable development has become a major concern. There is a need to recognize the critical linkages between demographic trends and factors and sustainable development (para 30).

ICPD

Meeting the basic human needs of growing populations is dependent on a healthy environment. These human dimensions need to be given attention in developing comprehensive policies for sustainable development in the context of population growth (para 3.24).

...actions to ensure population and environmental integration, including integrating environmental factors into planning and decision making, modifying unsustainable consumption and production patterns so as to foster sustainable resource use and prevent environmental degradation, and the implementation of policies to address the ecological implication of demographic dynamics (paras 3.29-3.30).

ICPD + 5

Governments of developing countries, with the assistance of the international community and donors, should intensify efforts to equip planners and decision makers with a better understanding of the relationships between population, poverty, the environment, resources and development; and to improve the methodologies required for formulating policies, and for monitoring their implementation (para 30e).

Millennium Declaration

We must spare no effort to free all of humanity, and above all our children and grandchildren, from the threat of living on a planet irredeemably spoilt by human activities, and whose resources would no longer be sufficient for their needs (para 22).

The Millennium Declaration, adopted unanimously by 147 world leaders in September 2000, set a number of interconnected goals to create an environment conducive to development and the elimination of poverty. The Declaration called for prudence in the management of the environment in accordance with the precepts of sustainable development, and for the elimination of unsustainable patterns of production and consumption in the interests of the welfare of current and future populations (United Nations, 2001a).

Population, Poverty and the Environment

The complex relationship between population, poverty and the environment has received substantial attention over recent decades, especially in the context of the simultaneous occurrence of population growth and environmental degeneration. Despite rapid, large-scale, human-induced environmental change, the world's population continues to grow and extreme poverty persists – more than 1.2 billion persons exist on less than \$1 a day.

The United Nations 2000 Revision of population estimates and projections indicates that global population reached 6.1 billion in mid-2000 and is currently growing at an annual rate of 1.2 per cent, or 77 million per year (United Nations Population Division, 2001a). Although the rate of population growth is projected to slow down in the early decades of the twenty-first century, there will still be significant increases in absolute numbers, especially in less developed and poorest countries.

In the context of sustainability of the world's resource base, the environmental implications of rapidly growing population remain far-reaching for these countries which, unfortunately, also have the least environmental resilience and face the greatest resource constraints. Many developing countries already face severe air pollution, water contamination and scarcity, land degradation, deforestation and other environmental ills.

Views of Civil Society on the Environment

Gaining a better understanding of the public's attitudes and expectations of environmental issues has become an integral part of public policy-making. Findings from recent international surveys, point to the environment being a pressing concern of citizens in both the more developed and less developed parts of the world (United Nations

Population Division, 2000a). The belief that high environmental standards pertain only to the consumers' agenda in wealthy countries is not supported by recent public opinion polls where results have shown that environmental concerns have also been steadily rising in developing countries.

Although environmental concern is becoming universal, there are significant cross-regional differences in people's assessment of the overall state of their local and national environment. In all countries of the European Union, inhabitants express satisfaction with the current state of their environment, although they worry about a serious deterioration of the environment in the future. By contrast, close to 80 per cent of inhabitants of Eastern European countries express major dissatisfaction with the current state of their environment. In the less developed regions, similar levels of dissatisfaction are also observed.

Concerns over the health consequences of contaminated water and air pollution play a major part in shaping the public's perception of the environment and policy expectations. In many less developed countries, a sizeable proportion of people consider that local pollution has affects their health and will harm the health of their children. Similarly, concerns over the impact of water and air pollution on the future health of the population are also driving opinion in the more developed regions. A striking regional feature, influenced by the aftermath of the Chernobyl catastrophe, is the serious concern expressed by approximately one inhabitant in two in Eastern Europe over the health impact of accidents with nuclear energy. In Ukraine, nearly 3.5 million people, including 1.5 million children, were directly affected by the catastrophic accident in Chernobyl (OCHA, 2000).

In many countries, the public seems to perceive that the environmental protection efforts of both the public and the private sectors are insufficient. People look forward to governments' and businesses' renewed and strengthened action on the issues of priority concern, especially pollution. This expectation is conveyed with a sense of urgency for immediate policy action. Enforcement of stronger environmental laws and regulations and, to a lesser extent, strict application of the 'polluter-pays principle' are widely considered the best ways to reduce industrial pollution.

Scope of the Report

This report reviews population, environment and poverty linkages. It also provides an analysis of the operational implementation of the aims set out in Chapter III of the ICPD Programme of Action on the interrelations between population, sustained economic growth and sustainable development, and Chapter 5 of Agenda 21 on demographic dynamics and sustainability. The study draws from examples of UNFPA programme experience, and consultations and information exchanges between UNFPA and other United Nations agencies and non-governmental organizations (NGOs) in the field of population, environment and development. It also draws from various reports and information provided to the United Nations Population Fund (UNFPA) as task manager for Chapter 5 of Agenda 21 and from the reports of the 34th session of the Commission on Population and Development held in New York from 2-6 April 2001.

This report is divided into five chapters. Following the introduction, a simple framework is presented to identify the links between population and the environment, including the mediating factors that influence those interrelationships. The third chapter focuses on population and demographic dynamics, including urbanization, migration and ageing, as well as poverty and environmental degradation, and food and water security.

Chapter four of the report highlights country experiences and some of the initiatives of UNFPA in the area of population and environment, since the Rio and the Cairo conferences. The final chapter discusses the opportunities and capacity constraints encountered at the national level, and concludes by identifying some operational challenges that need to be met to achieve the mutually reinforcing goals of UNCED and ICPD.

The IPAT Model

An understanding of the way population and the environment interact is important in programming and formulating policies. While there is no consensus on an overarching theory of population-environment linkages, most theorists agree that overall human pressure on the environment is a product of three factors: population, *per capita* consumption and technology. These determine total resources used and the amount of waste or pollution produced for each unit of consumption. The three major elements are linked in the well-known formula introduced by Ehrlich and Holdren, namely, $I = P \times A \times T$, or Impact = Population x Affluence x Technology¹. This expression is simply summarizing and re-stating the environmental impact as the product of population, consumption *per person*, and resources utilized (or wastes created), in the course of producing each unit of consumption (AAAS, 2001).

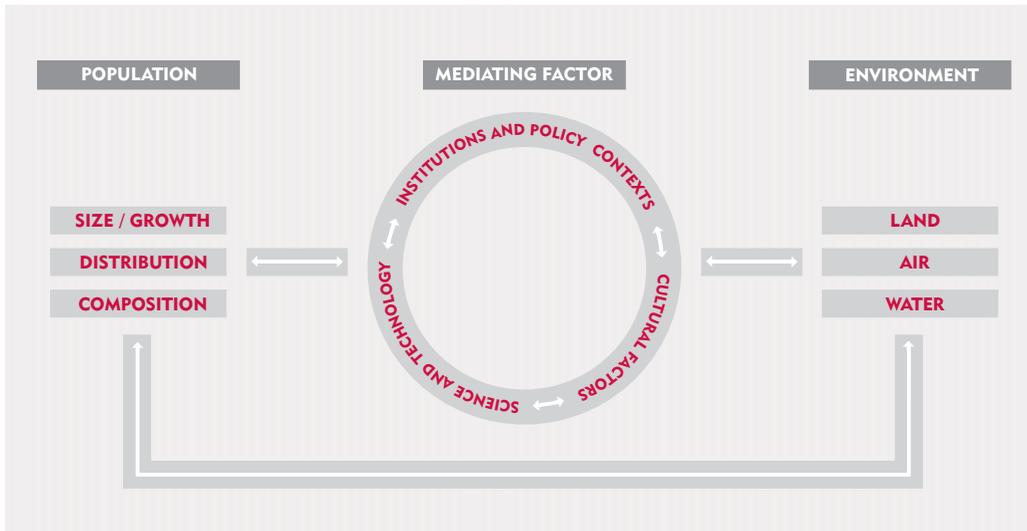
Although the IPAT model assumes the independence of each of the PAT components, in reality they interact with each other. Moreover, while the formula was used to demonstrate that population growth is the dominant factor in environmental damage, in practice, the relative importance of each of the three factors may vary from time to time and from place to place. Also, there are many other factors which affect each element. For example, population change is determined by fertility, mortality and migration, and each of these in turn is affected by a host of other factors such as the status and education of women, availability and adoption of contraception, and child health.

And, of course, just as population factors affect the environment, the reverse is also true. For example, environmental degradation leaves populations, especially the poor, more vulnerable to natural disasters. In 1998, it was estimated that for the first time the number of refugees from natural disasters exceeded those displaced as a result of war (DFID, 2000a).

A Conceptual Framework

A simple but dynamic conceptual framework describing the links between population factors and the environment, including mediating factors that ultimately shape the association between the two, is outlined in **Figure 1**. 'Population' relates to the size, distribution and composition of the population while 'environment' encompasses qualities of the air, water and land on which the population depends. 'Mediating influences' on the population-environment relationship include technological, political and cultural factors. Based on the conceptual framework, a brief discussion focuses on the influence of demographic factors on the environment; the reciprocal aspects of the link that identify the demographic repercussions of environmental change are mentioned elsewhere.

FIGURE 1: Framework for Population and Environment Linkages



SOURCE: Adapted from MacKellar et al. (1998) and Hunter, (2001).

Although there is widespread cognition that important relations exist between population, development and environment, there is little agreement about the nature and magnitude of the links (United Nations, 2001b). However, it is apparent that population *size* is linked to the environment as a result of individual resource needs and individual contributions to pollution. As world population continues to grow, the sheer number of people will put pressure on such global resources as arable land and potable water.

The increasing unavailability of land in the latter half of the twentieth century became a potentially limiting factor in global food production. Assuming constant rates of production, per capita land requirements for food production will approach the estimated limits of available cultivable land in the foreseeable future. Similarly, continued population growth is occurring in the context of an accelerating demand for water. Global water consumption rose sixfold between 1900 and 1995 at more than double the rate of population growth (Hunter, 2001).

Population *distribution* affects the environment in terms of the uneven concentration of populations in both the more and less developed regions, as well as the steadily increasing number of people living in urban areas of the world. As pointed out by Hunter (2001), the global distribution of people has three main implications for environmental change. First, as less developed regions cope with an increasing share of world population, pressures intensify on already dwindling resources within these areas. Secondly, the redistribution of population through migration shifts the relative pressures exerted on local environments, easing the strain in some areas while increasing it in others. Thirdly, rapid urbanization poses particularly complex environmental challenges, including the introduction of regulatory mechanisms for coping with pollution and other environmental hazards.

Population *composition*, such as socio-economic and age composition, have environmental implications because different population sub-groups behave differently. Migration propensities, for example, vary by age. Young people are more likely than older adults to migrate in search of job opportunities in large urban areas. While the influx and high concentration of large number of people provide opportunities for economic activity, they also contribute to the worsening of the cities' environmental problems. At the household level, environmental pressures can be

greatest at the highest and lowest income levels. While higher income tends to correlate with increased levels of production and consumption, the population growth and poverty of low income groups often interact to produce unsustainable levels of resource use (Hunter, 2001).

Several factors mediate the links between the various population factors and the natural environment. These include characteristics of society that relate to technology, policy, institutions, politics and culture. Technological advancements, for instance, greatly influence the relationship between population dynamics and environmental change.

In the twentieth century, technological changes profoundly affected the interactions of population and the environment through the worldwide diffusion of new varieties of agricultural plants and animals, nitrogenous fertilizers, pesticides and modern contraceptives, among others (Cohen, 2001). Another set of technological changes that has strongly affected environmental conditions relates to energy use. While industrialized countries were responsible for most of the consumption of oil, natural gas and coal until about 1960, since then, less developed countries have experienced increasing levels of industrialization that have resulted in greater reliance upon resource-intensive and highly polluting production processes (Hunter, 2001).

Institutions, politics and policy responses are mechanisms through which individuals or groups of people react to environmental change whether good or detrimental. For example, policy actions can ameliorate environmental decline as in the case of emissions standards for chlorofluorocarbons (CFCs), which cause ozone depletion². By contrast, policies can exacerbate environmental degradation as in the case of the Aral Sea basin in Central Asia, which has shrunk 40 per cent since 1960 and has become increasingly contaminated, in large part due to past irrigation policies and practices (Hunter, 2001).

Politics can significantly affect the environment as well. For example, politics can influence deforestation through government subsidies for logging, land clearing, and road building in forests. The construction of dams to extend irrigation, control floods and generate electricity also often serves larger political purposes. These examples demonstrate the ability of states to manipulate nature for their perception of the social good (Cohen, 2001).

Cultural factors also play an important role in the impact of population on the environment. For example, cultural variations in consumption patterns and attitudes toward conservation influence environmental strategies, since public support for various policy interventions reflects societal values. The importance of culture in the modifying of fertility is apparent in the dramatic change in the cultural and economic roles of women, which coincided with the significant fall in global fertility from the early 1970s. The underlying values and the choices made by influential members of national and global cultures will continue to affect population, environment and development and the links among them (Cohen, 2001).

CHAPTER 3 POPULATION, ENVIRONMENT AND POVERTY

Population and Demographic Dynamics

Over the next 15 years almost all of the projected 1.1 billion increase in global population, from 6.1 billion in 2000 to 7.2 billion in 2015, will occur in less developed regions, and especially in the poorest countries (United Nations Population Division, 2001a). And looking further ahead to 2050, when global population is projected to reach 9.3 billion, the additions to population in less developed regions will total 3.3 billion.

Population growth rates are slowing in all regions. But there are big differentials between more developed and less developed countries, as well as among less developed countries themselves (Figure 2). In more developed countries growth rates are, and are expected to remain, close to stabilization level - that is zero population growth. By contrast growth rates in less developed regions will remain above stabilization for the foreseeable future, despite the transition from high to low fertility. This is because of demographic momentum whereby population continues to grow long after countries attain replacement level fertility reflecting age-structure effects. Particularly rapid growth is expected to continue among the group of 48 countries classified as 'least developed', whose combined population is expected nearly to triple between 2000 and 2050, rising from 658 million to 1.8 billion.

As a result of the contrasting growth patterns, global population will not only grow significantly larger, it will become progressively more concentrated in less developed countries, rising from an 80 per cent share

of the world's population in 2000 to 83 per cent in 2015, and reaching 87 per cent in 2050 (Figure 3). Over the corresponding period, the proportion of the population living in the least developed regions is projected to rise from 11 per cent to 20 per cent.

Urbanization

The urban share of the world's population has grown from 30 per cent in 1950 to an estimated 47 per cent in 2000 (United Nations Population Division, 2000b). The urban proportion is projected to rise to 53 per cent in 2015 and reach 58 per cent in 2025 (Figure 4). Urbanization levels are rising particularly rapidly in less developed regions. The proportion of the world's urban population living in less developed regions is projected to increase from 32 per cent in 2000 to 45 per cent in 2025 (Figure 4). Looked at in another way, in 2000 some 40 per cent of people living in less developed regions were urban: by 2025 this figure is projected to grow to 54 per cent.

Megacities – agglomerations of 10 million or more inhabitants – are becoming ever-more prominent. The increasing concentration of population and economic activity in large cities in developing countries tends to increase poverty, expand the informal sector of economic activity, and proliferate inadequate housing in the form of slums and squatter settlements. Urbanization creates intense pressure on local resources, ecosystems and environments, creating, *inter alia*, a need for well-organised and efficient social services, transportation, waste management and pollution control.

Large movements of people from rural to urban areas continue in most developing countries. Rapid urbanization has led to a growing number of megacities that have in many cases overwhelmed the environmental resources and spawned huge peri-urban slums. Urban authorities are striving to provide, *inter alia*, infrastructure and basic social services to cope with the development and environmental implications of growing numbers of people. The challenges they face are often compounded by the large numbers of the urban poor living in slums and unplanned settlements (Habitat, *et al.*, 2001).

The policy approach taken by a majority of countries favours integrated urban and rural development programmes that adapt to, rather than attempt to modify, population dynamics. Unlike policies adopted in the

FIGURE 2: Estimated and Projected Annual Average Growth Rates, 1950/55-2045/50, World, More Developed, Less Developed and Least Developed Countries

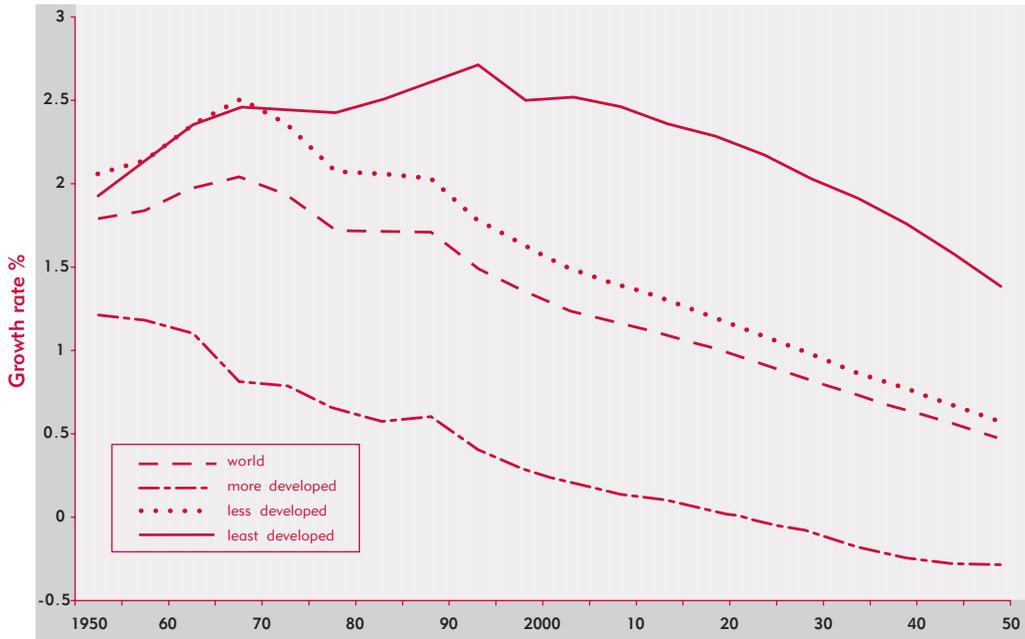
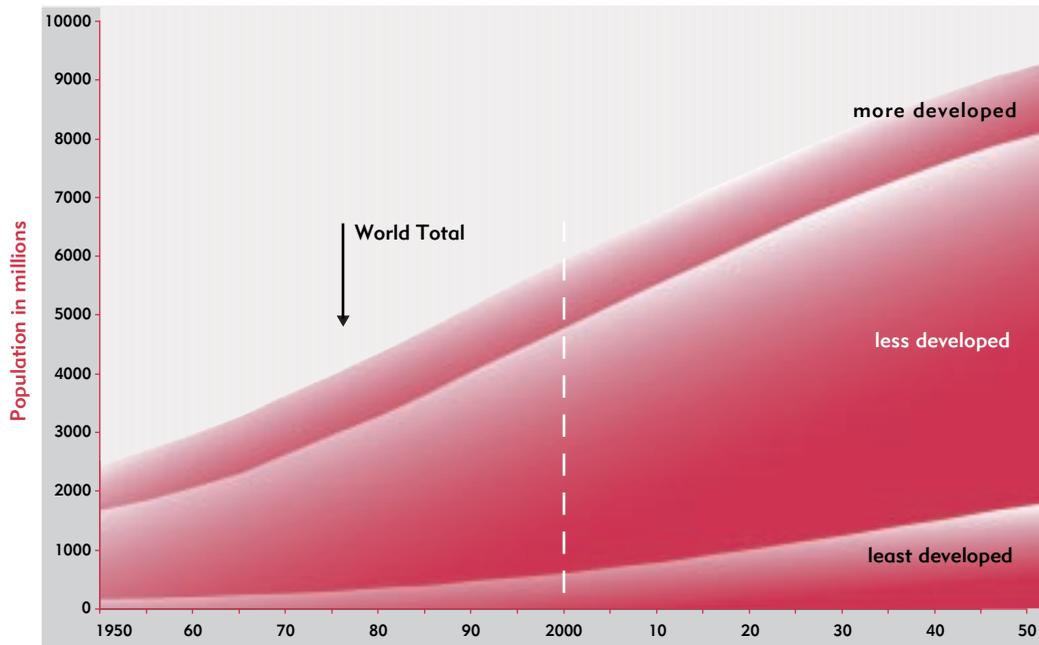


FIGURE 3: Estimated and Projected Population Size, 1950-2050, World, More Developed, Less Developed and Least Developed Countries



1970s and 1980s, there are very few attempts being made to contain urban growth and to relocate population to new, secondary cities. Land management policies and human settlement programmes typically include measures to upgrade infrastructure and services, control the location of new housing and, in general, ensure sound land use. Most such programmes are designed to mitigate the negative effects of an earlier lack of planning.

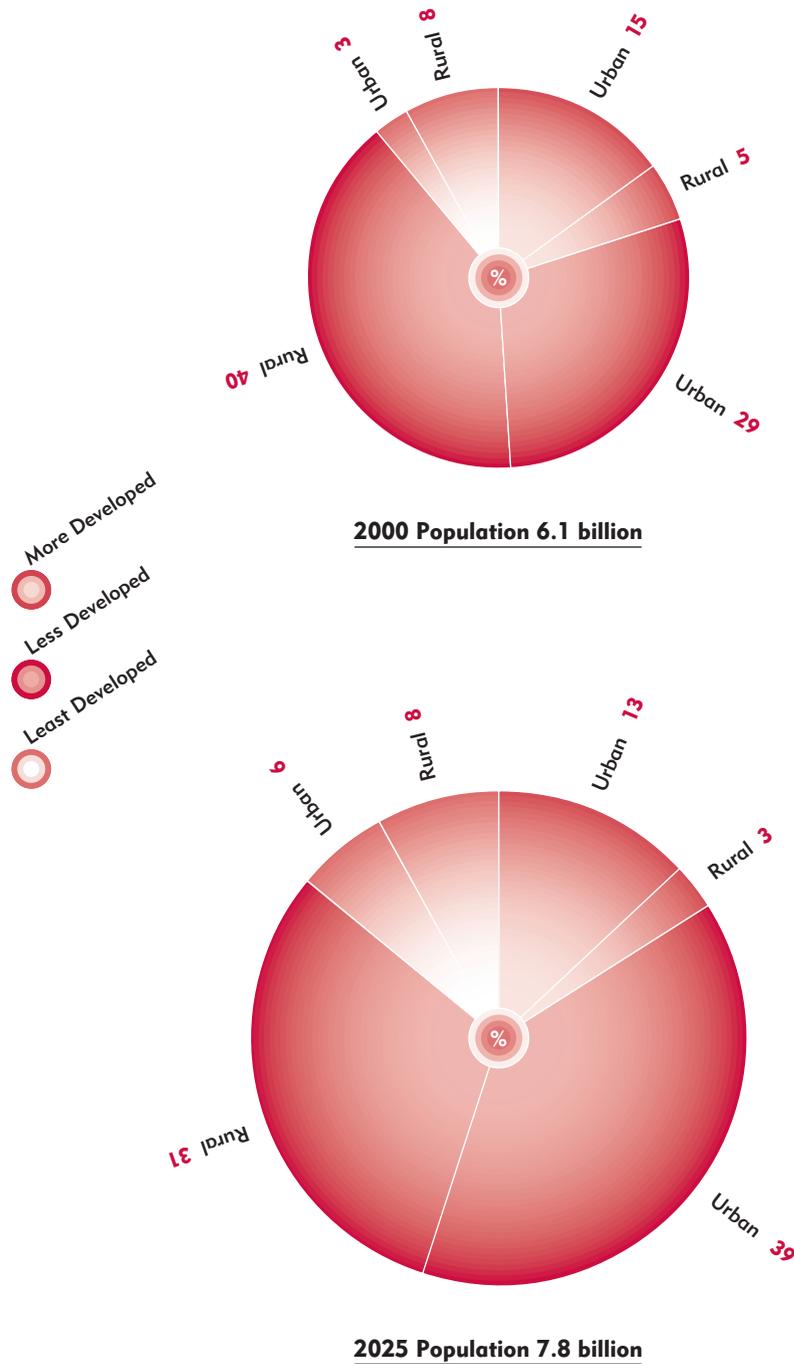
Migration

Some three quarters of the 1.2 billion people living in extreme poverty are in rural areas where the poverty situation is compounded by isolation from markets and centres of social service provision (IFAD, 2001). The combination of poverty, population pressures and environmental degradation is a powerful destabilizing factor driving both rural out-migration and international migration. This is most marked in parts of sub-Saharan Africa, but can also be seen in South Asia and some Latin American countries.

In order to contain rural-urban migration, some countries have developed policy measures to offset the urban bias and equalize development opportunities throughout the country. Strategies for poverty alleviation in agriculture focus on reforming land tenure systems and ensuring access to land, as well as on diversifying agricultural production and promoting sustainable farming practices while avoiding encroachment on environmentally sensitive areas. Increasingly, property regimes are seen both as cause of, and a solution to poverty-driven environmental degradation. For example, Bolivia adopted a land redistribution policy in 1996 to ensure access of small farmers to land and avoid concentration of property in a few hands. In Ecuador, the Agrarian Development Law in 1996 adopted aims at redistributing and creating a market for land.

Frequently, cross-border movements are associated with the spread of the HIV/AIDS pandemic, particularly in less developed countries. HIV/AIDS has raised mortality; lowered fertility; created imbalances in the age and sex composition of populations; and left millions of orphans in its wake. Because AIDS takes its greatest toll among young adults, it cuts deeply into the fabric of societies and has a devastating impact on human resources, economic productivity, management of natural resources, and social and economic development in general. The contin-

FIGURE 4: Estimated and Projected Distribution of Global Population by Urban and Rural Residence, 2000 and 2025



uing spread of HIV/AIDS represents a major obstacle to future economic growth and sustainable development, especially in sub-Saharan Africa. In some areas in Africa, for example in Uganda, refugees outnumber the local population. The environmental impact of massive refugee resettlement has been severe in some instances and manifested in the form of deforestation, uncontrolled tapping of ground water resources, over-exploitation of land and strain on the social infrastructure (UNHCR, *et al.* 1996).

The effects of environmental changes on the population are also increasing in scope. For example, it is estimated that globally there are at least 25 million 'environmental refugees' – individuals who have migrated because they can no longer secure a livelihood from the land because of deforestation, desertification, soil erosion and other environmental problems. This environmental exodus has occurred mainly in sub-Saharan Africa, the Indian sub-continent, China, Mexico and Central America (Myers, 1995).

Population Ageing

Population ageing is increasingly being recognised as a process of major significance for all societies as they move into the twenty-first century. Reductions in mortality and consequential increases in life expectancy have been virtually universal. The trend towards expanding numbers in the adult population has been strongly reinforced by the decline in fertility that has been reducing the relative size of the child component of most populations in recent decades. The early years of the twenty-first century are therefore characterized by steadily increasing numbers and proportions of older people in virtually all countries of the world.

Although the increasingly large proportions of the population in older age groups has featured prominently in more developed regions, much greater numbers, and indeed an increasingly larger majority of older persons, are living in less developed countries. Furthermore, the scale and speed of growth at these older ages is exceptional, mirroring the more rapid fertility transitions that have taken place. Because of the persistent differentials in survivorship between men and women, there is an increasing gender imbalance in older populations which necessitates particular attention to the needs of older women. The very old and frail, a majority of whom are women, are a sizeable segment of the poor for whom care, support and well-being often do not exist outside of the

family. They tend to suffer disproportionately from environmental degradation.

There are also important spatial variations and circumstantial nuances in the conditions in which older populations find themselves. For instance, in many countries, rural communities tend to age rapidly as a result of internal migration of young people to the towns and cities. In developing countries especially, this can have major, debilitating effects on social organization, the availability of labour, production and income patterns, and poverty levels. Population ageing is also inherently relevant to long-term development programmes, such as environment-related activities, which cannot be successful without taking into account the needs and capabilities of older populations.

Poverty and Environmental Stress

The majority of the rural poor have increasingly become clustered on low-potential land. Some 60 per cent of the world's poor live in fragile and highly vulnerable areas – on arid and semi-arid lands, on steep slopes and in forests. This outcome has resulted from a combination of factors which vary in importance from one country to another. These factors include land expropriation, demographic pressures, intergenerational land fragmentation, privatization of common lands, and consolidation and expansion of commercial agriculture with reduced labour inputs. Demographic pressures in particular continue to play an inextinguishable underlying role in the geographical, economic and social marginalization of the poor in most countries where there is a high incidence of poverty (United Nations, 1995a).

Because they have been pushed or squeezed out of high-potential land, the rural poor often have no choice but to over-exploit the marginal resources available to them through low-input, low-productivity agricultural practices such as overgrazing, soil-mining and deforestation, with consequent land degradation. Not that land degradation has been primarily instigated by poor farmers. Most deforestation has been caused by logging interests and/or rich farmers with substantial, favourable concessions. Soil erosion, waterlogging and salinization, which have resulted in desertification in many parts of the world, have commonly been caused by wealthy landowners with considerable financial resources.

The relationship between the environment and poverty is complex, and varies according to the local socio-economic and larger macroeconomic policy contexts. **Figure 5** illustrates aspects of the relationships by showing how various environmental factors can influence different dimensions of poverty. The purpose in conceptualizing the relationships in this way is not to attempt to be comprehensive but to stimulate insights for possible intervention strategies. The model draws on the 2000/2001 World Development Report (WDR) framework for understanding poverty in terms of opportunity, security and empowerment (World Bank, 2000a). The WDR also includes capabilities (or human capital) within the concept of ‘opportunity’.

Long-term poverty reduction and sustainable economic growth can be undermined by the degradation of the natural resource base, lack of access to, and increasing scarcity of water, and air pollution that directly affect people’s health and livelihoods. Opportunity declines when poor people who depend on natural resources for their livelihoods can no longer support themselves because natural resources have been damaged and they lack alternative livelihood opportunities.

Capacity is impaired when poor people’s health is damaged by contaminated water, polluted air, or diseases related to the environment. Environment-related diseases are among the most deadly killers and causes of sickness among the poor. Sixty per cent of all malaria deaths, for example, occur among the poorest 20 per cent of the world’s population. Similarly, half of all deaths from diarrhoea occur among the poorest 20 per cent of people.

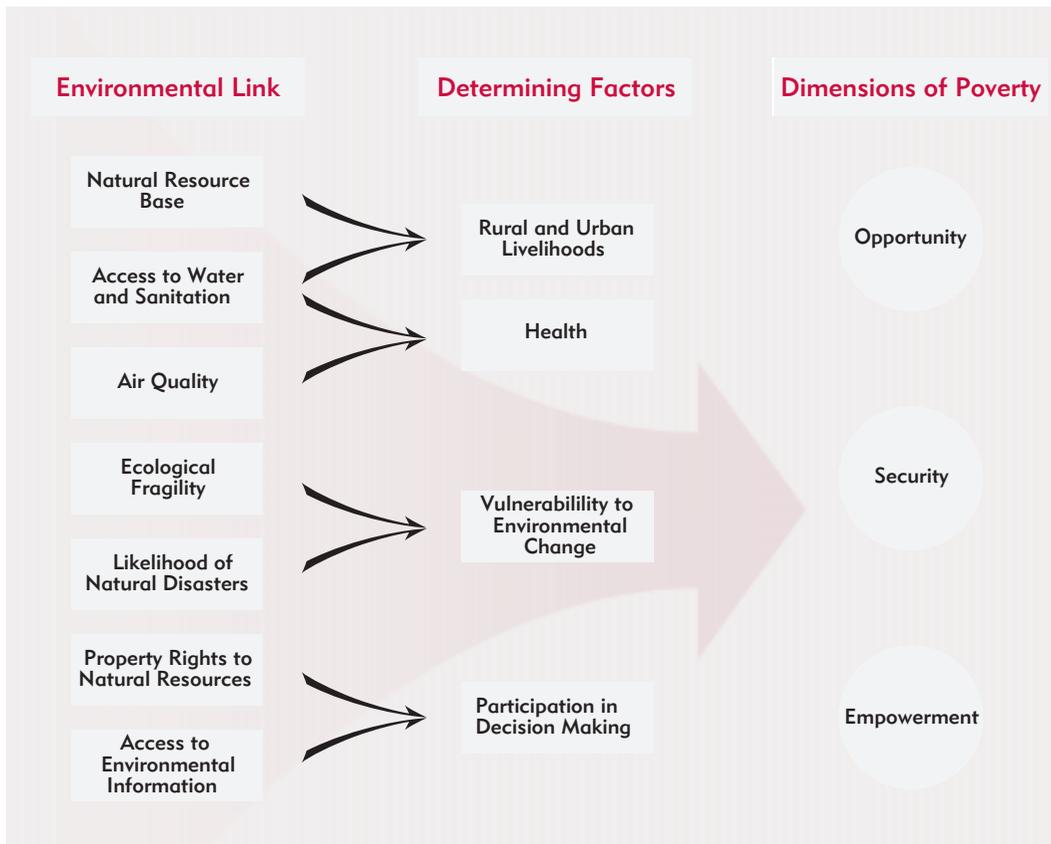
In addition to traditional environmental health risks, people in less developed countries are increasingly exposed to emerging environmental hazards such as agro-industrial chemicals and waste, including occupational exposure to hazardous chemicals and heavy metals. Overall, the environmental health-hazard burden as a percentage of the total disease burden is highest in the regions that are home to the majority of the world’s poor – 27 per cent in Africa and 18 per cent in Asia (World Bank, 2000b).

Poor people’s security is threatened by the deterioration and destruction of ecosystems and by natural disasters, especially since they tend to be more vulnerable to natural disasters and their capacity and ability to

predict, prevent and respond to adverse impacts is limited. Natural disasters such as floods, storms, droughts, and landslides, have a disproportionate affect on poor people who tend to live in precarious housing often located in environmentally vulnerable areas.

The issue of empowerment has particular relevance with regard to the environment since the poor often lack control over local natural resources. In addition, inequity in land ownership often consigns the poor to marginal and hilly lands, which are prone to erosion and flood damage. The poor often have the weakest voice in achieving or maintaining access to, and the management of, local natural resources. Hence, empowering local communities by granting them secure usage

FIGURE 5: Poverty and Environmental Linkages



SOURCE: World Bank, (2001).

Box 2

Population, Poverty and Environmental Linkages in Tanzania

People affect the environment, and vice versa. But the rich have a disproportionately higher impact and the poor tend to be the most vulnerable to the effects of environmental hazards and degradation. Most adverse environmental trends have detrimental impacts on the health and livelihoods of the poor. Reducing poverty and simultaneously protecting and improving the environment is central to sustainable development.

Tanzania, with an annual *per capita* income of approximately \$250, is one of the poorest countries in the world. The United Nations population estimates and projections (2000 Revision) shows that its population was about 35 million in 2000 and is growing at 2.2 per cent per year. It is expected to reach 55 million in the year 2020. The economy, and most of the population, is heavily dependent on agriculture and, as such, the economy is vulnerable to climatic conditions, notably floods and droughts, with some regions being particularly drought-prone.

Since the early 1990s, Tanzania has made progress in developing a strategy for sustainable development. In 1997, a National Environmental Policy was adopted. However, despite the strong policy framework, reversing the loss of its environmental resources will remain a challenge unless significant progress is made in the reduction of poverty levels, and progress is made in the implementation of the population programme.

While the country has a rich natural endowment, over the years the natural resources have come under increasing pressure. Widespread poverty, combined with a rapidly growing population, particularly in rural areas, has compelled people to over-exploit their surrounding natural resources in order to survive. Activities such as deforestation and extensive agricultural practices have contributed to increased soil erosion. Overgrazing, ground fires and felling of trees for various uses (some 91 per cent of the population relies on traditional fuels for energy use) are reducing the regeneration of plants and animals. Some 60 per cent of the land total is classified as dry lands, threatened by desertification. The result is a negative spiral: while poverty contributes to environmental degradation, environmental degradation contributes to the intensification and perpetuation of poverty, and rapidly increasing population adds further pressures.

The widespread support and awareness from the highest to the grassroots level of the ways in which natural resources can be harnessed in a sustainable manner represents part of a strong supportive environment for Tanzania's efforts to protect and preserve its environmental assets. To fully realize these efforts, however, will require increased capacity at all levels for effective environmental planning and management, as well as enhanced capacity to mainstream population and environmental issues within poverty reduction strategies.

SOURCES: United Nations (2001b) and United Nations Population Division (2001a).

rights to natural resources and ensuring that they have access to environmental information, can pay dividends in terms of alleviating poverty and optimizing environmental outcomes.

Real and lasting reduction in poverty can be achieved by enhancing environmental quality and protecting human health from the adverse effects of pollution; maintaining ecosystems and improving natural resource management; securing people's access to resources; reducing people's vulnerability to environmental risks such as natural disasters; and empowering the poor by giving them a voice in decision-making (**Box 2**).

Environmental Degradation and the Health of the Poor

The *rural* poor suffer from ill health mainly on account of undernutrition and/or malnutrition. Their health is further undermined by various forms of pollution and agricultural hazards. These include water pollution (reliance for drinking water on heavily polluted water bodies); lack of sanitation facilities; indoor air pollution from the use of biomass fuel for cooking and heating; and inadequate shelter.

The *urban* poor are victims of all forms of environmental degradation. Over 130 million of the developing world's poor live in the worst parts of urban areas. Whether due to the absolute shortage of land or to high rents on serviced urban lands, these people cluster in slums and squatter settlements, often on the urban periphery. The settlements are commonly in areas prone to hazardous natural and man-made environmental conditions such as flood plains, hill slopes or on land adjacent to dangerous industries, railway lines or rubbish dump sites. Residents have to contend with bad sanitation, contaminated water, floods, landslides and chemical pollution. According to WHO, an estimated 600 million urban dwellers in the less developed world live in what might be termed life-threatening and health-threatening circumstances (United Nations, 1995a). The most vulnerable are those in absolute poverty.

Environmental Threats to Women's Health

Just as population factors affect the environment and exacerbate poverty, so too an unhealthy environment affects the well-being of populations. Adverse environmental factors are responsible for a substantial proportion of deaths and diseases in developing countries, especially among the poor. Women and children are often most affected by envi-

ronmental problems. The most important hazard, particularly for urban populations in less developed countries, is contaminated water and food due to poor or non-existent sewerage disposal systems and inadequate hygiene, compounded by unreliable and unsafe domestic water supplies.

In many countries, WHO has found that traditional environmental health hazards, such as water and air pollution, are compounded by new threats of chemical pollution, pesticide contamination and radiation hazards that pose clear health risks (WEDO, 1999) (Box 3). Poor women have the heaviest burden of exposure and are often those with the most limited access to health care services. In several countries,

Box 3**Interlinkages between Nuclear Radiation and Reproductive Health**

Nuclear tests were conducted at the Semipalatinsk test site in Kazakhstan during the time of the Cold War and continued for more than 40 years. Between 1949 and 1963, all 116 tests were undertaken at atmospheric and ground levels, while the remaining tests were underground. The tests increased radioactive contamination and disturbed ecology. Another repercussion is the psychological consequences on the people, who learned about the potential hazards of the testing in the 1990s, such as chronic stress syndrome, suicide and great fear of fetus abnormalities. A crucial question was the relationship between nuclear radiation and reproductive health.

In 1999, UNFPA, in collaboration with WHO and London School of Hygiene and Tropical Medicine undertook the preparatory phase of a research project with the objective of clarifying the relationship. The project had three aims: (i) to establish a liaison network with institutions and agencies conducting research relevant to a better understanding of the interlinkages between RH and nuclear radiation; (ii) to complete a literature review and analysis of scientific articles and reports published on topics related to the hereditary and genetic effects of radiation; and (iii) to formulate a research protocol to further investigate the evidence of nuclear radiation in the Semipalatinsk region in respect to infertility, spontaneous miscarriages, congenital malformations, stillbirth and maternal and infant mortality, and other genetic abnormalities and continuing risk for the offspring. The results of the projects will not only be very useful in understanding the consequences of nuclear radiation on the population of Semipalatinsk, but also in other parts of the world with similar problems.

SOURCE: UNFPA (2001).

women have experienced reproductive health disorders as a result of exposure in the workplace to chemical and other occupational hazards (Box 4).

Women's Role as Resource Managers

In many less developed countries, increasing attention is being given to the critical role of women in population and environment programmes and in achieving sustainable development (Box 5). Women grow a substantial proportion of the world's food, and there is considerable evidence that their labour-intensive food production practices tend to be environmentally sound, and are contributing substantially to food production while at the same time protecting the resource base.

Women make vital contributions to resource management and conservation. As resource managers, women perform various roles as:

Box 4

Environmental Conditions and Women's Reproductive Health

The global drive for rapid economic growth and increased productivity has led to increasing numbers of women filling jobs in labour-intensive industries that are sometimes operating with insufficient regulatory protection. While there is increasing recognition of the need for preventing adverse environmental factors impacting on health, a number of countries have reported cases of harmful impacts on women's reproductive systems as a result of exposures to industrial chemicals, pesticides and other toxins in the environment. Examples of relatively contained, albeit serious, incidents noted in the 1990s include:

- Pollutants discharged from a fertilizer factory in a village in East Asia resulted in an alarmingly high number of stillbirths and miscarriages.
- Water pollution along some areas of the Volga, Moskva and Upa rivers led to doubling bladder and kidney disorders in pregnant women.
- Studies in Northern Africa found a link between pesticide exposure and perinatal mortality. The relationship was significantly higher among women farmers.
- Women with long-term pesticide exposure in parts of Eastern Europe reported high rates of reproductive health problems, including fibromyomas and inflammation of the uterus.
- Pollution, mainly caused by agro-industry and mining activities along the Amu Darya River in Central Asia, has led to some increases in pregnancy complications and birth defects, and a higher incidence of anemia, kidney and liver diseases in women.

SOURCE: WEDO (1999).

Box 5**Gender-Sensitive Policies and Programmes for Sustainable Development in Azerbaijan**

Strengthening national capacities to plan, implement and monitor effective policies that take into account, and mainstream, population and gender concerns into environmental planning and management is critical to sustainable development. Special efforts are being taken in country programming processes to build capacity. Thus, for example, UNFPA is working to increase the capacity of the Azerbaijan government to incorporate population into its development and environmental planning, as well as promote gender-sensitive policies and programmes for population and sustainable development.

Key components of this initiative, launched in 2000, include: building research and planning capacities; improving training facilities; and mobilizing national and local leaders as advocates for ICPD goals on population, including reproductive health and rights, and the environment. Efforts are focused towards mainstreaming population and gender into development and environmental planning, including conducting baseline socio-economic research, and the creation of a set of indicators to measure progress in achieving ICPD goals. In the next phase the government plans to prepare a comprehensive national population policy for Azerbaijan, with explicit reference to population and environmental linkages.

providers of food, fuel, fodder and water; caretakers of their family's health; and conservationists (by safeguarding forests, soils, water and grazing areas). In India and China, for example, women have elaborated upon traditional methods designed to conserve the soil. Similarly, in Nepal, women have been responsible for reforestation of denuded slopes, greatly reducing soil erosion.

Food Security

At the turn of the century some 800 million people were undernourished owing to poverty, political instability, economic inefficiency and social inequity. The persistence of undernutrition and food insecurity in many less developed countries and the increasing scarcity and unsustainable utilization of agricultural and other environmental resources have dominated the global assessment of food and agriculture prospects.

While world food production is projected to meet consumption demands for the next two decades, long-term forecasts indicate persistent and possibly worsening food insecurity in many countries, especially

in sub-Saharan Africa. FAO estimates that to meet the needs of a projected world population of eight billion or more in 2020, food production will have to double and it is uncertain whether that can be achieved with conventional agricultural technologies (DFID, 2000b).

Between 2000 and 2050, the world's population is likely to increase by some three billion people (United Nations Population Division, 2001a). Almost all of this increase will be in countries currently classified as less developed, many of them with very low *per capita* incomes. During this five-decade period, the world community faces the enormous challenge of simultaneously confronting the issues of food security, poverty, environmental degradation and erosion of genetic resources.

Food security requires not only ever-increasing food production. Access to preferred foods and their affordability are equally essential for a healthy and productive life. This implies an ability to grow as well as to purchase food as and when required. Appropriately implemented this would mean that people are not totally reliant only on staples such as rice, wheat, potatoes and cassava, but could enjoy more diversity and choice. Consequently, food security focuses on related issues such as income, markets, and sustainable use of natural resources (Shah and Strong, 1999).

In the most disadvantaged countries the need for increased food production is already threatening delicate environmental balances and the essential natural resource base as people strive to extract as much as possible from land already in production either by intensification or by expansion into forested or marginal areas. Constraints on expanding cultivated land include the scarcity of high-quality agricultural land, competition from alternative land uses, and the risk of environmental degradation of marginal cultivated lands and forests.

The damage is increasingly evident: seriously disturbed water balances, water shortages, water pollution, and water rights problems; eroded arable land lost to production; nitrogen leaching, and encroachment of salinity, desertification and urbanization; widespread loss of natural forests together with the consequent diminution in biodiversity.

The situation is likely to be further worsened by the potential impacts of global warming and climate change. The poor, food insecure, less devel-

oped countries, especially those located in the tropics, can be predicted to have to bear the brunt of the negative impacts of climate change on the viability and utility of agricultural and forest ecosystems.

Despite all of these problematic issues, increases in food production in some regions of the world over recent decades, suggest that the challenges of achieving food security throughout the world can be met. The rapid developments in the better understanding of natural resource management, combined with actual and anticipated discoveries and innovations in agricultural science, including those in biotechnology and similar areas of the knowledge revolution, offer powerful mechanisms with which to meet the on-going challenges of food security.

Water Resources

Access to Water

Many countries facing water scarcity are low-income societies that have rapidly growing populations, and are generally unable to make costly investments in water-saving technologies. Estimates indicate that over one billion people lack access to safe drinking water, and two and a half billion lack adequate sanitation. The provision of safe drinking water becomes a greater challenge as economic development and population growth place increasing demands on limited water resources. The Millennium Declaration target is to halve the proportion of people unable to reach or afford safe drinking water, between 1990 and 2015.

Women and children, especially those living in rural areas, are disproportionately affected. Rural women can spend hours everyday collecting and carting water, either from communal taps or directly from streams and rivers. Long cartage distances pose particular difficulties for elderly people and those with disabilities. Poor communities are often unable to afford the costs of maintaining pumps and boreholes, or lack the skills to do so.

Ill health is often closely associated with the lack of access to clean water. Urban populations tend to be better served than rural, but even piped water from municipal supplies may be contaminated by disease-bearing organisms (IMF *et al.*, 2000). Many poor people suffer from diseases, such as dysentery and cholera, as a result of drinking contaminated water. In India alone, nearly 1 million people die annually due to water-borne diseases (World Bank 2000a). These factors contribute to

the deaths of more than five million people annually, of whom more than half are children. Many national and local initiatives are being implemented to help ameliorate this situation. For example, in north-eastern Brazil, water contamination is being addressed by a programme, initiated in the mid-1990s, that includes gender sensitive hygiene promotion and environmental education activities to help reduce urban environment contamination (United Nations Division for Sustainable Development, 2000).

Availability of Water

The shortage of water is becoming one of the most serious obstacles to food security, poverty reduction and protection of the environment. Many developing countries with growing populations, for example, India and Nigeria, face water scarcity or shortages (**Box 6**). The problem is worsened by deteriorating quality of water, polluted by industrial wastes and sewage discharges that spread water-related diseases. Even countries with an adequate water supply suffer regional or seasonal shortages, often on a recurrent basis, and growing public concern over the protection of the natural environment has made the building of new storage dams politically sensitive and difficult.

Box 6

Impact of Population Growth and Distribution on Water Resources in India

India's agriculture relies on a comprehensive system of irrigation. However, water tables are falling as groundwater is currently being extracted at twice the recharge rate. Eventually the shortfall will impact on harvests. Because the general scarcity of water is already so acute in many parts of the country, UNFPA is supporting a two-year policy research project being carried out by the Tata Environmental Research Institute in New Delhi, on the relationship between population growth and distribution, and water availability. The project, that began in 2000, is being undertaken in eight villages and four districts in the states of Rajasthan, Karnataka, Pradesh and Kerala. The research is looking into the effects of population growth on village water supply for agricultural and domestic use, as well as its consequences for land use, housing, sanitation and common property resources. Since the task of fetching water for household consumption often falls on women, the research will examine the extent to which water scarcity affects women's health. It will also analyze the impact of water quality and availability on the quality of life of households, particularly women and children.

SOURCE: UNFPA Field Office, New Delhi, India.

An adequate and dependable supply of fresh water is essential for health, food production and socio-economic development. The size of a country's population and the speed at which it grows help determine the onset and severity of water scarcity. Although recent reductions in the rates of population growth have improved the outlook for future water availability, the problems associated with water scarcity will continue to mount as the size of the world's population increases. At the Millennium Summit, world leaders resolved that the unsustainable exploitation of water resources should be stopped by developing water management strategies which promote both equitable access and adequate supplies at the regional, national and local levels.

Currently, humans are using about half the fresh water that is readily available. Fresh water is distributed unevenly over the globe, and already nearly half a billion people are affected by water stress or serious water scarcity, while many more are experiencing moderate stress. Given current trends, by 2025 up to two-thirds of the world's population may be subject to moderate-to-high water stress.

A summary of current global and regional population, poverty and environment indicators, including water resources per capita circa 2000, is given in **Table 1**.

TABLE 1: Indicators of Population, Poverty and the Environment, World and Regions, Circa 2000

Region	Population in millions 2001	Annual Growth Rate (%) 2000-05		GDP per capita PPP \$ 1998	% Under-nourished 1996-98	Water Resources per capita in cubic meters 2000	Carbon Dioxide Emissions per capita 1997
		Urban	Rural				
Africa	812.6	3.7	1.2	1,905	27	5,157	1.1
Asia	3,720.7	2.5	0.4	3,798	na	na	2.5
Western Asia	192.4	2.8	0.3	6,079	na	na	5.4
Europe	726.3	0.3	-1.0	14,063	na	na	8.0
Eastern Europe	302.6	0.2	-1.3	6,274	6	na	8.4
Latin America & Caribbean	526.5	1.9	0.0	6,572	12	27,354	2.7
Northern America	317.1	1.0	-0.3	28,998	na	16,801	19.6
Oceania	30.9	1.2	1.2	17,423	na	53,711	12.2
World	6,134.1	2.0	0.4	6,380	na	7,113	4.2

SOURCE: United Nations Population Division (2001c)

CHAPTER 4 SUMMARY OF POPULATION AND ENVIRONMENT INITIATIVES SINCE UNCED AND ICPD

Some 85 countries have formulated either national Agenda 21 or national strategies/plans on environmental and sustainable development (United Nations DESA, 1999). However, many of the plans do not explicitly integrate population and environment policies and there is little discussion on the environmental implications of demographic dynamics. One notable strategy, however, is the participation of relevant stakeholders, at all levels of population and environmental decision-making to achieve sustainable management of natural resources.

Although many developing countries have prepared national Agenda 21, the series of adverse shocks during the 1990s affected the implementation of national plans. These included: natural disasters (such as prolonged drought in sub-Saharan Africa); devastating storms in Central America and the Caribbean; large-scale floods in Asia; the severe financial crises in many countries that began in Asia in mid-1997 and affected countries with economies in transition and parts of Latin America (UNFPA, 1998); continued economic stagnation in many poor countries; a steep drop in the prices of oil and other commodities; and social instability and conflict in all regions. These situations have commonly diverted government attention and resources away from addressing population and environmental concerns. In poor countries, competing demands on limited resources have curtailed government efforts to expand access to basic social services.

Reports and statements produced by governments for the first quinquennial review and appraisal of the implementation of Agenda 21 and

the ICPD Programme of Action provide a basis on which to assess how far countries have come in developing policies, and the salience of population issues in the context of those policies (United Nations Population Division, 2000a). For example, in national environmental strategies and action plans prepared by countries in the more developed regions, little reference is made to demographic dynamics and emphasis is given to sustainable consumption and production patterns. In contrast, national policy frameworks in the less developed countries call for the prevention of poverty-driven environmental degradation in the context of rapid population growth. Policies and programmes that address human settlements and land management show that public authorities' concern over population dynamics in relation to environmental degradation essentially arises from high demographic concentration and growth in specific geographical zones.

While problems with data have held back efforts to develop population-poverty-environment models, some progress has been made in work done by the Economic Commission for Africa (ECA) on the PEDDA (Population, Environment, Development and Agriculture) model and with the application of the Millennium Institute's Threshold 21. Further, UNFPA is supporting a two-year project, initiated in 2001 by Colombia's Ministry of Environment and focusing on four geographic areas, to develop and apply a model for regional/territorial planning that incorporates population and environmental factors. The model will be used in other regions of the country as it moves to a nation-wide mandatory use of regional/territorial plans.

Developing Countries' Initiatives

Some of the most important programme initiatives at the country level since Rio and Cairo that have direct impact on the population, involve strengthening the legal basis for sustainable development through the **enactment of new laws and policies** to protect the environment. For example, in Malawi, two policies were passed in 1996 that directly benefit the population through the protection and better management of water resources and ensure access to safe water for domestic use. Rural-urban policy measures are being designed to minimize environmental degradation.

In several countries, **policy dialogue** is being conducted to increase awareness and to promote a deeper understanding of the relationship between population, environment and sustainable development. For

Box 7

Regional Policy Dialogue on Population and Environment

UNFPA has been supporting policy dialogue among parliamentarians from developed and developing countries on population, environment and sustainable development issues organized by various regional parliamentary groups. Thus, for example:

In March 2000, parliamentarians from 23 countries gathered in Bangkok, Thailand to review key population and sustainable development issues in the 20th century. Among the issues discussed were regional environmental problems, such as air and water pollution, water shortages and deforestation. Also highlighted were issues relating to poverty eradication and food security. The parliamentarians called for new legislations relating to these important concerns. Representatives from Japan underscored the important role of policy makers in forming a global and long-term perspective to sustain the earth's resources, and proposed new ethical standards and systems.

In May 2001, parliamentarians from several countries met in Auckland, New Zealand to discuss food security, water resources and population issues in Asia and the Pacific. They noted that while there has been progress in several countries in formulating policies related to food and water security, countries face capacity constraints in implementing the policies, including lack of suitable data and research, as well as a lack of resources. The participants also noted that despite significant gains in food production, there are large numbers of chronically malnourished people living in the region, especially in South Asia. Lack of access to safe drinking water and water pollution that threaten people's health was also pointed out. The parliamentarians recognized the important role they can play in enacting appropriate legislation to address population, environment and sustainable development concerns.

example, in Bangladesh, UNFPA is assisting the Centre for Policy Dialogue to strengthen its institutional and technical capabilities by promoting policy dialogue and undertaking policy analysis and research on issues relating to population and sustainable development. The aim is to sensitize policy-makers and planners on pertinent issues and mobilize their support for policy decisions through regular dialogue at the national and regional levels, undertake research studies on population and sustainable development, and prepare policy papers based on research findings and policy consultations. Important policy dialogue is also taking place at regional levels, including consideration of cross-border issues (Box 7).

Since the mid-1990s, several countries have reviewed, revised and amended existing laws and policies to make them consistent with the principles embodied, respectively in chapters III and 5 of the ICPD Programme of Action and Agenda 21. In Malaysia, for example, the government established an Environmental Law Committee which identified areas for improvement in existing environmental provisions dealing with toxic chemicals and hazardous wastes. In Mozambique, legislation regarding the integrated approach to planning and management of land resources was reviewed.

In Indonesia, efforts have been made to integrate population and environment into the development process. The government recognizes that designing and implementing integrated policies would require greater awareness and consensus among the key actors and effective partnerships between the government, the private sector and civil society. In 1999, with support from UNFPA, the State Ministry of the Environment executed a project aimed at strengthening the capacity of parliamentarians and policy makers to actively support and formulate policies related to human settlements, deforestation and pollution – three areas which have been identified as the country's priority concerns.

Desertification, particularly in Africa, affects populations who are among the poorest in the world. Many countries have prepared, revised or finalized *national plans* of action to manage fragile ecosystems by combating desertification and drought. Many Small Island States, such as the Bahamas, which face particular challenges, have taken steps consistent with Agenda 21, to encourage sustainable farming, forestry, tourism and urban development within the constraints of their fragile ecosystem. In India, a national environmental awareness campaign, conducted with the help of grassroots NGOs, has created greater interest in the application of science and technology in combating desertification (United Nations, 1995b).

Progress made in the area of population and environment has included the establishment of *institutional structures* such as a ministerial body or a high-level committee charged with addressing population concerns and, in particular, with integrating them into national development strategies and policies. Nepal, for example, undertook an extensive review of environmental and population issues after UNCED and the

ICPD. The Government established a separate Ministry for Population and Environment in 1995 with responsibility for formulating environmental and population policies, developing suitable programmes, conducting research and, in particular, coordinating population, reproductive health and environment-related activities with various governmental bodies and NGOs.

In Nigeria, the federal government has established a special ecological fund (two per cent of the federal account) for managing ecological problems such as desertification, soil erosion, and industrial waste. This initiative, together with the recent creation of a fully-fledged Federal Ministry of Environment and the establishment of State Environmental Protection Agencies (SEPA), is expected to provide a strong platform for sustainable management of the environment.

Training materials have been designed by countries and NGOs to make young people aware of the challenges in the area of population and sustainable development (Box 8). The inclusion of sustainable development issues in school curricula helps to foster an appreciation by young persons of the critical population and environment nexus.

Although many countries have taken steps to establish high-level mechanisms for policy-making and coordination in the field of population and environment, the effectiveness of the mechanisms depends on the priority governments accord the implementation of Agenda 21 and the ICPD Programme of Action. Also, the establishment of a high-level policy-making body does not guarantee successful integration of policy measures.

Institutional capacity in developing countries to adequately link population, environment and development in policy and programme formulation is still fairly limited. However, progress has been made in some countries in articulating and implementing environmental policies that encompass the linkages. These policies relate to quality of, and access to, safe water; curbing environmental pollution and hazardous wastes; constraining the degradation of the agricultural land base; regulating inappropriate land-use practices which are often accentuated by high levels of migration; and restraining the conversion of forests in upland areas to alternative uses reflective of demographic pressures among the poorest groups in society.

Box 8**Population and Environmental Education**

Countries recognize that awareness raising and education are critical for shaping people's perceptions, attitudes and behaviour towards population and the environment. The inclusion of sustainable development issues in school curricula helps to foster an appreciation of the critical population and environment nexus. For example:

In **Kenya**, an Environmental Education Centre has been established in Nairobi, and some of its activities include the introduction of action-oriented Environmental Action Learning in school curricula, production of demonstration materials and conduct of field trips and training workshops.

In **Malaysia**, in line with its commitment to Agenda 21, various government agencies, NGOs and private bodies have implemented environmental education, training and awareness programmes under the stewardship of the Ministry of Science, Technology and the Environment. The government has adopted a long-term strategy to carry out environmental education through a multi-disciplinary approach with a view to providing an holistic view and understanding of the environment. A population-environment-development training module is currently being used to train policy-makers and programme planners of relevant sectoral agencies in charge of development matters.

In **Malawi**, an environmental education and communication strategy has been developed to target curricula developers and school teachers.

In **Nepal**, environmental education is integrated into social sciences and health and population education at all levels.

In **Turkey**, environmental education is provided in school programmes and is offered by at least 21 universities. Courses such as ecology and environmental law and policies are offered at the undergraduate and graduate levels. Informal education programmes, attracting about one million people a year, also include some form of environmental education and training.

Many countries have been **monitoring progress** towards the goals and objectives of the Rio and the Cairo conferences, as well as progress in integrating population concerns into development strategies. They have charged specific ministries, subcommittees or departments with tracking trends in thematic development indicators. While most countries have continued to use traditional development indicators, some have supplemented these with environmental indicators, such as those relating to biodiversity, air quality, desertification and quantity and quality of water, among others.

South Africa's experiences and lessons learned in implementing population, environment and development policies has demonstrated that **community based initiatives**, which resonate with people's basic needs, can make a huge difference among poor communities. A community-based environmental and reproductive health programme in two rural districts was initiated in 1998 by the government, together with UNFPA, the Planned Parenthood Association of South Africa and the Working for Water Programme. What is notable about the programme is the overt linkage of population interventions to an environment and development programme with beneficial effects to the communities through the provision of clean water, job creation and promotion of reproductive health information and services, including HIV/AIDS. The project, which was undertaken to restore original water flows to rivers and streams, created many jobs, especially for women, and then became linked to the provision of project-based reproductive health services.

In four districts in India, UNFPA supported a study which explored how people at the community level maintained and managed their livelihood as increasing population imposed pressure on land, biomass and water - resources that the local "community" directly depends on for sustenance. Land provides both food and livelihood security, water is essential for irrigation and consumption, and biomass is sourced for fodder and fuelwood. An understanding of how local communities respond to and cope with pressures on these resources as a result of population increases, as well as institutional changes, is essential to formulating strategic and local-level interventions.

Environmental policies and programmes are increasingly designed and implemented through participatory processes that involve civil society. Most governments and donors believe that participatory management

through community involvement at the local level is essential to ensure sustainability and to build local capacity. Taking local knowledge and traditional technologies into account is also increasingly seen as necessary. The promotion of sustainable practices is therefore carried out primarily within the framework of community-based initiatives with international technical and financial assistance. Activities range from awareness creation to building local capacity in the management of natural resources and to support for non-agricultural supplemental income-generating activities.

UNFPA Supported Partnership Initiatives

UNFPA has undertaken and provided support for a number of initiatives aimed at exploring the relationships between population, sustainable development and the environment, and for supporting the integration of population and environment linkages into policies and plans. The Fund has supported, among others, various partnership initiatives relating to advocacy for population and the environment, community forestry, environmental refugees and research and training in support of agricultural extension services. In the field of population, poverty and sustainable development, the Fund continues to collaborate with, for example, the United Nations Department for Economic and Social Affairs, UNEP, UNCHS, UNESCO, FAO, UNDP and the United Nations Regional Commissions. It also provides support for programmes initiated by NGOs and academic and research institutions.

It is widely recognized that environmental degradation is one of the major causes of refugee flows. In recent years, 'environmental refugees' have become the single largest class of displaced persons in the world. Estimates of environmental refugees range from 10 to 25 million, many of them comprising those who have fled from the droughts of northern Africa and others who have been uprooted by earthquakes, floods and other environmental catastrophes (Myers, 1995). UNFPA works in partnership with various United Nations agencies, such as UNHCR, UNICEF and WHO, as well as International Strategy for Disaster Reduction, to provide support for refugees and displaced persons (**Box 9**).

Recognizing the need to address the close relationship and interaction between environment and population factors in sustainable development, UNFPA and UNEP have strengthened their collaboration and reinforced activities of common interest in order to maximize cooperation

Box 9

Populations Displaced by Natural Disasters and Other Environmental Pressures

Poor people, especially women and children, are susceptible to the impacts of natural disasters and other environmental pressures. For women in such situations, complicated pregnancies and deliveries can become life threatening if left untreated.

In El Salvador, the recent earthquake affected about one million people or one-sixth of the population. Consequently, access to reproductive health (RH) care, including family planning (FP), was severely hampered. To address emergency reproductive health concerns, as well as the spread of HIV/AIDS and other sexually transmitted diseases, UNFPA provided safe motherhood and RH supplies to cover the needs of the displaced population.

In the Democratic People's Republic of Korea, a series of natural disasters and erratic weather patterns in recent years, combined with economic difficulties, have adversely affected the well-being of vulnerable groups, especially women and children. Problems in the delivery of health services, including RH/FP, have contributed to maternal mortality, premature childbirth and low birth weight. UNFPA has provided emergency assistance, including supply of essential RH/FP drugs, equipment and contraceptives.

In Eritrea, the devastating effects of drought and war have led to over one million people displaced within the country or across international borders, the majority being women and children. United Nations organizations, including UNFPA, are collaborating to stabilize the situation of the most vulnerable groups and the re-integration of refugees and internally displaced persons through the provision of basic social and community services and infrastructure.

In Ethiopia, war and drought-affected populations numbering about 10 million, many of them women and children, require emergency assistance. Internally displaced persons, refugees and returnees are being assisted, among others, through the provision of RH services and counselling, including measures to control the spread of HIV/AIDS.

In Mongolia, the accumulation of damaging natural hazards since 1999, including severe widespread drought and unusually cold temperatures, has brought severe hardship and poverty, as well as huge loss of livestock. The natural disaster has further constrained the flow of resources into the already weak health-care system and people's access to health care. The United Nations agencies are ensuring that essential health and life saving services are provided to vulnerable groups, especially those living in remote and severely affected areas.

In Uganda, refugees, displaced persons and victims of drought lack access to potable water, food, shelter, income and other basic services. The United Nations agencies are cooperating to provide basic social services, re-integrate ex-combatants and returnees and restore livelihoods and infrastructure. UNFPA is focusing on primary health care service delivery for displaced persons, with emphasis on RH for women, men and adolescents.

and complementarity. Collaboration encompasses the broad areas of technical guidance and research, including scientific methodologies and operations research that support the development of policy and programme frameworks. An example is the development and wider use of GIS-based applications for global, regional or sub-regional assessments of population-environment links that may be used to assist early warnings of potential emergencies.

UNFPA and UNEP are undertaking greater advocacy and public awareness initiatives, environment and population-related education and training within existing and new coordination mechanisms and initiatives. UNFPA continues to serve as a partner in the United Nations Environmental Management Group (EMG) initiative, along with other key United Nations partners, for the coverage of population-environment concerns.

UNFPA has collaborated with FAO on a number of activities since Cairo and Rio, including a review of pilot activities in Africa, Asia and Latin America on the integration of population education into programmes for out-of-school youth, and the provision of advisory services on population and environment, especially on project formulation and implementation.

At the regional level, the United Nations Regional Commissions have implemented specific programmes in support of population, environment and sustainable development. The Economic Commission for Africa, for example, has continued to give priority to advocacy, awareness creation and capacity building at the national and sub-regional levels for better understanding of the interlinked issues of rapid population growth, food insecurity and degradation of the environment. To this end, with UNFPA support, the Population, Environment, Development and Agriculture (PEDA) model was further developed to demonstrate that demographic variables, the environment and modes of agricultural production interact in vital ways with great impact on food security.

Developed Countries' Sustainability Strategies

Several developed countries now recognize that unsustainable lifestyles of the people damage and exhaust natural resources. Thus, Germany's national sustainability strategy includes both technical innovation and changing awareness of values and behaviour of its citizens. Examples of new sustainability strategy include: ecological tax reform, which eases

the burden on the environment and creates jobs; targeted promotion of alternative forms of energy and the phasing out of nuclear power; setting up a national Sustainability Council whose tasks are to raise greater awareness of sustainability concerns in the population and to advance strategic development; a climate protection programme which is geared towards a 25 per cent reduction in national CO² emissions by 2005 as compared to 1990; and support to over 100 projects in the field of reproductive health worldwide.

De-linking economic growth from environmental damage (achieving eco-efficiency) is the major challenge facing Ireland in the context of its significant economic growth. The combination of strong economic growth coupled with more stringent environmental targets greatly magnifies the challenge now facing public authorities and the strategic economic sectors. Economic prosperity can, however, provide the financial resources that are needed to make inroads into many of these problems.

Developed countries, in partnership with affected developing countries, have continued to support programmes for desertification control and drought mitigation. The Nordic countries, for instance, have demonstrated a long-established interest in helping arrest land degradation. Denmark has established a new fund for international environment and emergency assistance, targeting an additional one-half percent of gross national product (GNP) for this fund by the year 2004 (United Nations, 1995).

Programmes related to desertification and land degradation have received more attention than previously, focusing on, among other issues, the implications for agricultural and population policy. For example, the Mediterranean Desertification and Land Use (MEDALUS) project, which is a component of the European programme for mitigating land degradation in southern Europe, has been investigating desertification processes in the Mediterranean area. The Assessment and Monitoring of Desertification in the Mediterranean (ASMODE) project, undertaken jointly by Dutch and Spanish institutions, on the other hand, aims at demonstrating the utility of remote sensing for monitoring desertification, preparing a desertification index and developing a geographic information system.

Non-Governmental Organizations

The recognition that Non-Governmental Organizations (NGOs) received for their contributions to the UNCED process was further demonstrated through their active and well-organized participation in the ICPD and other global conferences. Notable in follow-up, the World Conservation Union (IUCN), in collaboration with UNFPA and UNEP, and with financial assistance from the Government of Norway, has examined the policy and programmatic implications of the Population-Poverty-Environment (PPE) linkages and reviewed country experiences in South Asia, sub-Saharan Africa and Central America. Computer-based models and tools have been developed to better understand and address PPE linkages, such as the Population-Development-Environment model (PDE), THRESHOLD 21, Geographic Information System (GIS), overlay mapping and dynamic scenario analysis, ecosystem-based carrying-capacity assessments and ecological risk analysis (United Nations, 1999b).

The Women's Environment and Development Organization (WEDO) published an in-depth 50-country monitoring report in 1999 assessing the progress of governments in implementing commitments to women made since the ICPD and the Beijing Conference on Women in 1995 (WEDO, 1999). It has also conducted studies on the role and response of women to environmental threats in several countries, including Russia, Ukraine, Uzbekistan, Bangladesh and Nigeria. WEDO has published primers focusing on the impact of global economy on women and the environment.

After the ICPD, the World Wildlife Fund (WWF) undertook field-based population-environment activities in Africa, Asia and Latin America. As a result, for several years now, the Fund's Population Initiative has been assisting participants in its field projects to understand and address the effects of population dynamics on the conservation of biodiversity; to enhance women's participation in natural resource decision-making; and to respond to community requests for reproductive health services.

The National Council for Science and the Environment (NCSE), formerly CNIE, has been involved in the integration of population-related information resources, including POPIN and POPNET, into environmental databases and resources. The aim is to disseminate population and development data, as well as related policy and programme information, more widely to the global environmental community. NCSE has

assisted in establishing a number of country-level libraries on environmental resources, where population materials are readily available.

Private Sector Participation

The private sector is increasingly aware that it has an important role to play in mediating and balancing the often competing imperatives of economic growth, environmental protection and development. Growing corporate responsibility towards better environmental performance has led many companies to examine how environmental protection approaches can be incorporated into their activities (DFID, 2000). The World Business Council for Sustainable Development (WBCSD), a coalition of 150 international companies united by a shared commitment to sustainable development, aims to demonstrate best practice and business progress in environmental and resource management and corporate social responsibility, and to share leading-edge practices among its members (WBCSD, 2001).

In the Philippines, for example, more than 70 industrial firms signed up to Business Agenda 21 in 1998. The agenda stressed the business sector's vital role in pursuing sustainable development, and that paying attention to the environment 'makes good business sense'. The plan document, which was the result of a series of roundtable discussions and consultations, outlines the environmental concerns of industries and their perceived impacts on the community, the country and the long-term viability of businesses. These concerns include: the use of natural resources that deplete scarce or non-renewable natural resources; the process by-products and wastes that result in air, water and land degradation; and the occupational risks inherent in certain industries due to the use of hazardous materials.

CHAPTER 5 OPPORTUNITIES, CONSTRAINTS AND CHALLENGES

The United Nations Common Country Assessments (CCAs) and the United Nations Development Assistance Frameworks (UNDAFs) offer new country-level opportunities for United Nations partner agencies to work together with governments, civil society and the private sector to identify population, environment and poverty linkages, and to formulate strategies that promote sustainable development and improve the lives and livelihoods of the poor, especially the most disadvantaged groups such as women and children (Box 10). In Africa, for instance, the overarching goals in several UNDAFs are to ensure a healthy environment and poverty reduction. In South Africa, for example, the target is to mitigate the impact of disasters, especially on the poor and to enhance disaster management in the region. In Ghana, the challenge is to balance environmental concerns with increased opportunities for employment and improved livelihoods. In future preparation of CCAs/UNDAFs, more attention will be given to explicitly taking into account linkages between population dynamics, poverty and the environment.

Capacity Constraints

While national sustainable development plans and policies have been formulated in many countries, much remains to be done in terms of implementation. Countries have cited the following capacity constraints, among others: the lack of an agreed holistic multisectoral conceptual framework based on the complex interrelations between population, environment and sustainable development; lack of suitable data and research; and lack of financial and skilled human resources, placing severe limits on the range and scope of activities.

Box 10**Environmental Challenges Affecting the Populations in the Arab States and Countries with Economies in Transition as Reflected in the CCAs**

CCAs have identified environmental challenges which have a direct impact on population and poverty.

In **Lebanon**, environmental problems have resulted from the years of war. The main environmental challenges include disposal of huge contaminated containers thrown or buried on farmers' backyards, disposal of liquid and solid waste, improvement in the quality of potable water, utilization of cheap and renewable energy, specifically solar power, and the phasing out of lead pollution.

In **Sudan**, a primary environmental challenge is the over-exploitation of forests and marginal agricultural dry lands. Combined with frequent droughts, this has led to widespread land degradation and a decline in agricultural yields. Other priority concerns include desertification, sand dune encroachment control, use of pesticides on irrigated lands and marine life and wildlife protection.

In the **Syrian Arab Republic**, environmental degradation is considered as a major problem hampering economic and social development. The National Environmental Action Plan identified and ranked the country's environmental policy priorities as follows: soil degradation, contamination and depletion of water resources, poor air quality, inappropriate solid waste disposal and growth of illegal settlements.

In **Armenia**, past mass industrialization has resulted in significant damage to the environment. The current government has prepared two complementary environmental action plans aimed at alleviating the consequences and preventing further deterioration of the environment by reducing the negative impact of economic activities in the future. It is raising environmental awareness through environmental education and encourages the active participation of NGOs and the private sector in environmental activities.

In **Latvia**, a major environmental challenge has been to put into place the necessary legal and institutional frameworks and to build institutional capacities. Other challenges include wastewater treatment and municipal waste disposal.

In **Romania**, some 20 heavily industrialized and populated areas have been identified as sites where concentration of industrial pollution is considered a serious health hazard. Environmental concerns include industrial waste disposal and serious water quality problems, including microbial contamination, chemical contamination with organic matter and pesticides.

SOURCE: United Nations, Common Country Assessment documents for the given countries.

In terms of population, environment and sustainable development policy design, governments are striving to achieve coherence and synergy in their policy initiatives. There is still a need to adopt a multisectoral paradigm that can effectively guide efforts to design and execute policy measures in an integrated manner, taking into account the multiple objectives of sustainable development.

Several governments point to the lack of sufficient, accurate and up-to-date data as a serious constraint in designing evidence-based population and environmental policies. In many developing countries, the capacity to collect data for tracking progress towards population, environmental and poverty goals suffers from resource constraints. The data management infrastructure in many countries is weak and data reporting is fragmented. Environmental data remain scattered across many sectoral agencies. Different agencies report their data for different geographical areas, thus hampering comparability. It is necessary that support be provided for collection of relevant national and sub-national data on the population, environment and poverty, as well as for setting up and maintaining reliable databases.

Other factors also contribute to the lack of progress in integrating population and environmental policies. For example, in several countries existing administrative arrangements are not conducive to policy coordination. Many countries have a ministry in charge of environmental planning and at least one agency responsible for the coordination of population policies and programmes. However, few countries have located a population unit within the ministry of the environment. In a significant number of countries, population issues are the responsibility of the ministry of health. On the other hand, the ministry in charge of population issues does not, in many cases, participate in the national bodies for coordination and follow-up of environmental plans.

Challenges

Achieving sustainable development requires a combination of sustained economic growth based on equity, enhancement of the social well-being of the poor, protection of the environment and slower population growth. In many countries, environmental crises can be avoided if policy measures are implemented to conserve and manage natural resources while encouraging slower population growth by providing families and individuals with information and services needed to make informed choices about the number and spacing of their children.

Informed policy-making on environmental issues requires approaches that recognize the linkages among population dynamics, poverty and the environment. Increased efforts are needed to build and strengthen institutional capacity in developing countries to fully integrate population issues into environmental policy, planning and programming. Research is required to provide an improved understanding of the complex interaction between demographic processes, poverty and the environment. Research investigating the relationship between population and the environment at various levels of analysis can inform relevant policy-makers. For instance, microlevel studies of the ways in which local population trends impact the environment, or vice versa, can provide important insights into local processes and relevant policy. Macrolevel analyses of global processes, on the other hand, can provide critical information for use in the international policy context.

Multistakeholder participation in policy debate and dialogue on population and environmental issues is important to achieving successful outcomes. Communication at all stages between all parties is important, as well as the building of mutual trust among all participants. Rural development policies and programmes, especially in areas where rural resource shortages, or lack of opportunities, act as ‘push’ factors fuelling rapid urban growth, could reduce migration to cities and curb and ease pressure on urban infrastructures.

Policies directed to the promotion and enhancement of the status of women through better education and access to reproductive health services, especially family planning, can yield high environmental returns. The empowerment of women and their inclusion in policy-making and policy implementation should be an integral part of the policy initiatives for population, environment and sustainable development. Ensuring the basic rights, health and welfare of women is likely to create benefits in all three areas because of the pivotal role of women in resource management, income generation, childbearing and childcare, education, nutrition and health care.

During the 1990s, many countries made limited progress in putting in place population and environment-related policies and programmes designed to achieve the UNCED and ICPD goals. Nevertheless, much remains to be done, including the development of criteria for identifying population-poverty-environment (PPE) ‘hotspots’ – places where

poverty and environmental degradation have reached critical thresholds and where population pressures are important contributing factors.

Use of the mass media and information technology, especially internet technology, could help increase awareness and understanding of issues and policies relating to population, environment and sustainable development. The challenge is to make this technology available in settings where it is most needed, especially in the world's poorest countries. There is a need for more analytical documentation of lessons learnt, including factors that contribute to success or failure of policies and programme interventions. Development partners should be involved in improving access to population and sustainable development information through networking and knowledge sharing.

Role of UNFPA: An Operational Matrix

The Millennium Declaration and the United Nations conferences of the 1990s identified the linkages of the environmental, poverty and cultural dimensions of development, with an emphasis on people at the centre of that development. UNFPA has provided policy, advocacy and technical support at all levels to ensure the linking of population, environment and sustainable development concerns in all major fora of the UN system. UNFPA continues to contribute at all levels to strengthening key activities relating to: (i) *policy dialogue and planning*; (ii) *institutional capacity building for implementing, monitoring and evaluating policies and programmes*; (iii) *population education and advocacy*, and (iv) *partnerships*.

The Fund's approach towards its programmatic interventions in the area of population, poverty and environment can be summarized through an operational matrix (Figure 6). This matrix specifies explicitly the components that can be addressed in the context of advocacy and the policies to be conveyed; the key variables and issues, and the central questions regarding their interrelationships; and the outcomes achievable through adopting feasible programming options.

SUMMING-UP

In order to achieve the mutually reinforcing UNCED and ICPD goals, now mainstreamed in the Millennium Declaration, actions are required by both developed and developing countries. Excessive consumption and wasteful production patterns are unsustainable and have far-reaching impact. In both rich and poor countries, the negative effects on the environment are compounded by inadequate policies and mismanagement of resources. Global environmental problems require greater international co-operation. Developing countries who suffer most from the effects of environmental problems need a more effective voice in international environmental negotiations. And they need more support in assessing the implications of environmental degradation on the poor. Increased financial and technical assistance from developed countries is thus required, especially for low-income countries, to enhance capacity to deal with the population, environment and poverty challenge. Also required are broader partnerships involving governments, civil society and the private sector, with support from the international community, to create, in particular, an enabling international environment, supportive national policy frameworks and effective programme implementation.

FIGURE 6: UNFPA: An Operational Matrix for Population, Poverty and Environment

Advocacy and Policy Message	Key Issues and Questions	Programming Options
<p>1. Better understanding of the linkages between population, poverty and environment will lead to the formulation of more integrated policies and programmes that will help improve the lives of the poor</p>	<p>What are the linkages between population, poverty and environment?</p> <p>Are models and/or conceptual frameworks being used to assess the interrelationships between population, poverty and environment?</p> <p>How can these models/frameworks inform and help conceptualize national and local circumstances and issues?</p>	<p>Promote greater awareness and understanding of the critical linkages between population, poverty and environment among policy-makers and planners at national and local level</p> <p>Support studies focusing on the linkages between population, poverty and environment</p>
<p>2. A reliable database on population and environment is necessary for evidence-based policy making and designing programmes</p>	<p>Are suitable data available that link population, poverty and environment?</p> <p>What are the main sources of these data and are they sufficiently reliable to provide the basis for informative analytical tools?</p>	<p>Support the establishment of national and local database on population, poverty and environment</p> <p>Improve access to population, poverty and environment information through networking and knowledge sharing</p>
<p>3. Strengthening national capacity is important to address interlinked population, poverty and environmental issues</p>	<p>Is local expertise available in the area of population, poverty and environment?</p> <p>Are there training programmes focusing on the linkages between population, poverty and environment?</p>	<p>Support training in the area of population, poverty and environment</p> <p>Support educational programmes that focus on the interrelationships between population, poverty and environment</p>
<p>4. Environmental hazards and degradation affect the well-being of populations, often with detrimental impacts on the health and livelihoods of the poor and most vulnerable</p>	<p>Are there policies and regulations that protect individuals from the adverse effects of environmental hazards and degradation?</p> <p>Are there research studies on the effects of environmental hazards on people's health, especially on women's reproductive health?</p>	<p>Promote dialogue, policies and regulatory measures to protect individuals from the adverse impacts of environmental health hazards and degradation.</p> <p>Promote research on the effects of environmental hazards on the health of people, especially reproductive health</p>
<p>5. Awareness raising and education are critical for shaping people's perceptions, attitudes and behaviour towards population and sustainable development</p>	<p>Are population and environmental issues included in school curricula and out-of-school IEC and advocacy?</p> <p>Are there post-secondary courses or qualifications in population and environment issues?</p>	<p>Support population and environmental education and awareness raising initiatives</p>
<p>6. Population pressure, poverty and environmental degradation drive rural to urban migration and contribute to urban slums and rapid growth of unplanned settlements</p>	<p>Are the basic social service needs, including reproductive health, of rural migrants, especially the poor, being met?</p> <p>What are the effects on the urban environment of the influx of rural migrants to large urban areas and megacities?</p>	<p>Advocate and support the provision of basic social services, especially reproductive health information and services, for the poor and those living in slums and unplanned settlements</p> <p>Support research on the effects on the urban environment of large flows of migrants to urban areas and megacities</p>

NOTES

- 1 The impact measured in the IPAT formula is not the true environmental impact, but takes the amount of resources used or pollution produced as a proxy for environmental damage. In many situations an additional factor has to be added to assess the true damage: the sensitivity of the environment (AAAS, 2001).
- 2 Following the Montreal Protocol of 1987, limits were established for emissions of CFCs. As a result, CFC consumption has fallen by nearly 70 per cent, and the ozone layer, which protects humans from the sun's high-energy ultraviolet radiation, is expected to return to normal by the middle of the twenty-first century (Hunter, 2001).

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ISBN: 0-89714-546-1