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ISSUES IN HEALTH, ENVIRONMENT AND SUSTAINABLE DEVELOPMENT: AN OVERVIEW

In this chapter, an introduction is given to issues in health, environment and sustainable development which are of worldwide concern today. Countries face a myriad of problems relating on the one hand to poverty and a lack of basic services, and on the other to large-scale, rapid industrialization, urbanization and technological development. Problems are often simultaneously local and global. Key milestones which have shaped recent thinking and approaches to dealing with health and environmental problems in the context of sustainable development are highlighted, and the challenges faced by the health sector are outlined.

1.1 THE CHANGING NATURE AND SCOPE OF CONCERNS

The spectrum of health, environment and development hazards has changed considerably over the millennia of human existence. In the past 50 years in particular, the world has seen considerable health gains. For example, childhood mortality and morbidity have been greatly reduced by better control and prevention of infectious diseases. People are living much longer. Between the 1950s and the 1990s, average life expectancy increased from 46 to 65 years, and the gap in life expectancy between rich and poor countries narrowed considerably, from 25 years in 1955 to 13.3 years in 1995 (1).

There have been major advances in science and technology and health and medicine, infrastructure has expanded, literacy has increased, education has improved and incomes and opportunities have increased, especially for women. Yet, despite all this, in many instances the health gaps between and within countries are widening. Not all regions of the world have shared equally in improvements to health. Sub-saharan Africa, the world’s poorest region, still has average life expectancies far below those of the wealthiest countries. Underlying much of this unequal burden of disease is the fact that environmental factors are a major contributor to sickness and death throughout the world, especially in the poorest regions (2).

Old and New Problems Occurring Simultaneously

Age-old public health hazards such as inadequate and unsafe food and water, microbiological contamination of the environment and poor sanitation and environmental hygiene are still prevalent. In addition, new environment and
development problems have emerged, some of which appear to threaten the entire ecosystem. While factors associated with the development process and the changing use of technology have resulted in considerable gains to people throughout the world, they have also presented additional threats to people’s health.

Many of the “newer” hazards associated with chemical contamination of the environment are as significant for developing countries as they are for industrialized countries. Countries nevertheless differ with respect to the spectrum of health, environment and development problems with which they have to deal and to which they give priority. The level of economic development and the policy choices of individual countries are important factors determining the nature of the problems faced and the ways in which they are addressed.

In industrialized countries, typical health and environmental problems include outdoor air pollution, radon in homes and schools, the “sick building” syndrome, toxic chemicals in drinking-water, non-ionizing electromagnetic radiation and pesticide residues in food. In developing countries, health and environmental problems are often related to poverty and arise largely as a result of such factors as rapid, uncontrolled urbanization and agricultural and land-use practices. In addition to hazards related to pollution, vector-borne environmental diseases may be prevalent as well as health and environmental problems associated with a lack of proper shelter, water and sanitation or poor food hygiene.

Developing countries thus have to deal simultaneously with problems due to a lack of basic services and facilities, with the impact on health of large-scale, rapid industrialization, urbanization and technological development. Indeed, it is often difficult to distinguish traditional risks from new and emerging ones. For example, pesticides and faeces may contaminate the same water supplies and air pollution may stem simultaneously from burning dirty household fuels and industrial use of fossil fuels. Rapid population growth makes it more difficult to solve this load of problems, which outstrips a country’s economic development, retards social development and makes excessive demands on services, resources and the capacity of the increasingly fragile environment (3).

It is becoming readily apparent that the capacity of the environment to meet growing human needs is limited. This makes it crucial to improve our understanding of the complex relationships between the development process, environmental capacity and human health.

From Local to Global Dimensions

Virtually every aspect of the environment may affect physical or mental health in some way, either positively or negatively. This is true regardless of the level of development at which problems manifest themselves. Problems may be related to both the direct pathological effects of various chemical, physical and biological agents and the more indirect effects on health and well-being of the broad physical and social environment (4), which includes housing, urban development, land use, transport, industry and agriculture.
Chapter 1. Issues: An Overview

Health concerns associated with air and water pollution, water supply and sanitation, waste disposal or chemicals and food may be particularly relevant at the local or micro-level (for example, lead in household dust or environmental tobacco smoke), or may be important at the regional or global level (for example, depletion of the ozone layer, global climate change, long-range transport of air pollution or marine pollution).

The problems to be dealt with are often simultaneously global and local. Global economic activities, escalation of travel and trade and the changing use of technology all have significant implications for health and the environment. Indeed, erosion of life-support systems at the global level has become a serious, pressing public health issue which should be addressed at various tiers of government in an overall framework of sustainable development.

From Rural to Urban Dimensions

Problems may differ in urban, as opposed to rural, environments. With massive urbanization occurring on a global scale, international interest and concern has centered increasingly on the state of the environment and human health in cities. It is estimated that by the year 2025 over five thousand million people will be living in cities. In the developing countries of the world, already more than 200 cities have populations of one million or more (5).

It has become evident that, although living in cities has many positive benefits, related, for example, to increased job opportunities and the provision of essential services and facilities, many environment, health and development problems have reached near-crisis dimensions in cities all over the world. Urban growth has exposed populations to serious environmental hazards and has outstripped the capacity of municipal and local governments to provide even basic health services. In 1990, at least 600 million people in the urban areas of developing countries were living under life- and health-threatening conditions (6).

Cities have a significant impact on the broader hinterland and global environment. While the lines that separate a city, country or region are becoming increasingly blurred, it is also clear that the fate of cities will have a major influence on the fate of nations and of the planet (5).

Poverty

Despite the unprecedented creation of wealth world-wide in the past two decades, the number of people living in absolute poverty is growing steadily (1). Poverty remains the number one killer, with the poor bearing a disproportionate share of the global burden of ill-health. The poor live in unsafe and overcrowded housing, often in underserved rural areas or peri-urban slums which lack access to safe water or to sewerage. They are also more likely than the wealthy to be excessively exposed to pollution, traffic and industrial and other risks at home, at work or in their communities. They are more likely to consume insufficient food or food of poor quality.

Even in rich countries, the poor suffer worse health than do the better-off (2). Poor
children are particularly affected – in the poorest regions of the world, one in five children dies before his or her first birthday, mostly from environment-related diseases such as acute respiratory infections, diarrhoea and malaria (7). Not only are children more heavily and frequently exposed to threats to their health in the environment, but they are also more vulnerable to the ill-effects on health. For example, in the USA and parts of Europe, lead poisoning illustrates the unequal burden of risk borne by poor inner-city children, who are more heavily exposed to sources of lead in and around the home and are also more affected by the toxicity of lead.

Some of the major factors that affect health in the twenty-first century are highlighted in Box 1.

**Box 1**

**FACTORS AFFECTING HEALTH IN THE TWENTY-FIRST CENTURY**

- Widespread absolute and relative poverty
- Demographic changes: ageing and the growth of cities
- Epidemiological changes: continuing high incidence of infectious diseases, increasing incidence of noncommunicable diseases, injuries and violence
- Global environmental threats to human survival
- New technologies: information and telemedicine services
- Advances in biotechnology
- Partnerships for health between the private and public sectors and civil society
- Globalization of trade, travel and spread of values and ideas.

Source: WHO (1)
1.2 ESTIMATING THE HEALTH RISKS

While the many hazards present in the environment today may have various effects on human health, the global burden of disease attributable to these hazards cannot be quantified with any degree of confidence. In many parts of the world, the infrastructure for monitoring and for health surveillance is poorly developed, so that the numbers of people at risk are largely unknown. In the case of environmental pollution, the links to health are often uncertain and are masked by other effects, such as social deprivation and lifestyle.

Over the years, several incidents of severe poisoning or accidents have occurred, including water pollution by heavy metals such as mercury and cadmium which led to outbreaks of Minimata disease and Itai Itai disease. Episodes of air pollution, too, have resulted in large numbers of deaths, such as the famous London smog episode of 1952, in which an excess of 4000 people died. Accidents such as those that took place in Bhopal (India) and Chernobyl (Ukraine) also resulted in widespread death and disease, including psychosocial ill-health effects. Similarly, the forest fires in South-East Asia in the 1990s resulted in high levels of air pollution and associated mortality and morbidity.

It is currently estimated that around 1.5 million deaths in children under the age of five occur annually as a result of diarrhoeal disease, and that there are several thousand million diarrhoeal episodes each year. Diarrhoeal diseases are five to six times more common in developing countries than in developed countries (7). Such diseases are closely related to poor sanitation and hygiene and to the resultant contamination of food and water. It is estimated that over one billion people are without access to improved water supply, and that about two-and-a-half billion people lack access to improved sanitation. Today, in some 20 countries, mostly in Africa, three-quarters or more of the population do not have access to basic sanitation (7).

People may be exposed to high levels of air pollution in developing countries where burning of biomass and use of fuels such as coal and kerosene for cooking and heating still prevail. This is particularly true of China, India and sub-saharan Africa. Indeed, the overwhelming proportion of the some three million deaths from air pollution which result globally each year occurs in developing countries, mainly due to indoor air pollution associated with domestic fuel use (7).

Acute respiratory infections are a leading cause of death among children under the age of five, killing more than four million people per year and accounting for over 8% of the global burden of disease (7). The indoor environment is an important risk factor in this regard, particularly pollution from domestic fuel-burning and overcrowding.

Large numbers of people are affected by various other diseases which have their roots in the environment. For example, several hundred million people are infected with malaria each year (resulting in over one million deaths), and several thousand million are infected with intestinal parasites.

Table 1 gives an indication of the relative contribution of environmental exposures to the global burden of disease and injury. These estimates are based on the concept of
disability-adjusted life years (DALYs), which expresses the health loss due to a combination of death, disease and disability. Each DALY indicates the loss of a year of healthy life, i.e. the time lived with a disability or time lost through premature death (8). It is estimated that about 23% of the world’s total DALY burden is associated with environmental factors. This is a rough estimate, however, and more work is needed to gain a better understanding of the links between environment, health and development and to quantify the contribution of various environmental and development factors to death, disability and ill-health.

Table 1

<table>
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<tr>
<th>PROPORTION OF GLOBAL DALYS ASSOCIATED WITH ENVIRONMENTAL EXPOSURES - 1990</th>
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<tbody>
<tr>
<td><strong>Global DALYs (thousands)</strong></td>
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<tr>
<td>Acute respiratory infections</td>
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<tr>
<td>Diarrhoeal diseases</td>
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<td>Vaccine-preventable infections</td>
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<td>Tuberculosis</td>
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<td>Injuries - unintentional - intentional</td>
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<td>Mental health</td>
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<td>Cardiovascular diseases</td>
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<td>Cancer</td>
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<td>Total these diseases</td>
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<td>Other diseases</td>
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<td>Total all diseases</td>
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N.E.: Not Estimated

Source: WHO (7)
1.3 LINKING HEALTH WITH ENVIRONMENT AND DEVELOPMENT

Irrespective of the precise contribution of the environment to ill-health in the world, concerted action is needed to reduce the health impacts. The factors that contribute to problems of health and the environment are manifold and complex, but fundamental are inadequate attention to health in development policy and practice, lack of coordinated management and insufficient inter-sectoral collaboration (9). The root causes of problems are often related to the way in which development at large has proceeded, with little attention paid to the effects on the environment and health of policies, plans, strategies and projects.

From recent international meetings held since Rio '92, it has become evident that health issues are an increasingly important item on the broad environment and development agenda, and that environmental issues are receiving more prominence on the public health agenda (10).

In 1987, the World Commission on Environment and Development linked the issue of environmental protection to the topic of economic growth and development. The urgency of environment and development problems led subsequently to the United Nations Conference on Environment and Development (UNCED), held in Rio de Janeiro, Brazil, in 1992. This Earth Summit, attended by representatives from 179 countries, was the largest gathering of Heads of State in world history and led to the adoption of Agenda 21, a global programme of action for achieving sustainable development in the twenty-first century and beyond (11).

Sustainable development has been defined as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (12). Agenda 21 highlights, among many aspects, the need for more appropriate management of human settlements, and places particular emphasis on the need to take health considerations into account in planning for sustainable development.

The theme of human settlements was re-emphasized at the Habitat II meeting held in Istanbul, Turkey, in June 1996 (13), which focused attention on cities, highlighting their importance in the light of the rapid urbanization prevailing throughout the world. Indeed, several international conferences have drawn attention to the importance of urban environments and sustainable development, including the 1994 Global Forum meeting held in Manchester, United Kingdom. In parallel with these developments, several movements have emerged over recent years focusing on the need to examine local environmental conditions and the way in which local environmental initiatives can contribute to improved environmental management and health.

A growing awareness of the links between development, health and the environment is also evident from the recent history of the public health movement. In 1986, with the launch of the Ottawa Charter on Health Promotion (14), the need to develop supportive environments for health was highlighted, and emphasis was placed on viewing health in a broader development perspective. In particular, the Charter stressed
the need to look at the various elements known to improve health as part of an integrated whole and to look outside as well as within the health sector when devising strategies for improving health.

This theme was expanded at the Sundsvall Conference on Supportive Environments for Health held in Sweden in 1991, which examined the role played by various sectors in influencing environment and health conditions and linkages, viewing how health and environmental considerations could best be incorporated in sectoral planning (15). The need to consider the settings in which health is created, such as housing and the work environment, was held to be vitally important.

The WHO Commission on Health and the Environment was convened in 1990 (16) and provided key input for the subsequent Earth Summit. The central relevance of the human factor to the concept of sustainable development was stressed in the preamble to the Rio Declaration, as follows: “Human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature” (11). Chapter 6 of Agenda 21 takes this principle further by emphasizing the fundamental commitment within sustainable development of “protecting and promoting human health”.

There is thus growing recognition that economic development, management of the environment and protection of public health must be addressed together in an integrated way. While the environmental movement has highlighted the aspect of sustainability, the health movement has laid special stress on the issues of social justice, equity and human development. Not only are healthy people needed to ensure development, but also health is not possible without development.

1.4 NEED FOR HOLISTIC APPROACHES

The above discussion demonstrates an increasing need to form partnerships, to work across sectors such as the environment, transport, energy and housing, to involve communities more closely in decision-making and to devolve decision-making to the lowest possible level. Inter-sectoral efforts are particularly important for addressing complex, interrelated problems, the determinants or solutions of which may lie beyond the direct control of the health sector (9). Optimal use must be made of limited resources, and the expertise, knowledge and experience of all relevant sectors of society must be used in order to develop solutions that are sustainable and implementable.

While some problems are shared globally and transnationally, each country, region and community also faces its own unique problems, the solutions to which will be affected by factors such as resources, customs, institutions and values (17). This implies a need for harmonized global, national and local strategies. The strategies to be created should address underlying systemic problems rather than symptoms and incorporate economic, health and environmental dimensions in the design of projects and services, fully engaging all relevant interest groups and service users (18).
Chapter 6 of Agenda 21 specifies that countries should set priorities for actions based on cooperative planning by various levels of government, non-governmental organizations and local communities. Such planning, orientated to the prevention of health and environmental problems and involving all levels and sectors of communities, is essential for achieving “Health for All” and sustainable development.

**Role of the Health Sector**

Although much progress has been made in recent years in the development of comprehensive health and environmental policies and strategies, it is also true that many countries throughout the world have been relatively slow to develop these. This has been due partly to the fact that there are many gaps in knowledge and perceptions of insufficient evidence on which to act. It is also due to the very real challenges to the health sector of addressing policy needs with respect to new and expanded areas such as energy, agriculture, industrialization and advanced technology. Nevertheless, there is a growing appreciation of the key role that the health sector can play in helping to ensure that the policies and strategies of various sectors and organizations contribute positively to health protection and promotion.

Agenda 21 presents an opportunity for health authorities to strengthen their influence in both national and local planning and to reverse the trend of environmentally damaging and health-threatening development. A number of countries have taken initiatives since the Earth Summit to include a stronger health focus in national planning for sustainable development (see Chapter 5). Measures for incorporating health and environmental issues in national plans and programmes have varied from country to country, depending on planning mechanisms, the current status of the sustainable development programme and the way in which planning responsibilities are divided. In some countries, plans for health and the environment have been prepared for inclusion in national plans for sustainable development, while in others sectoral plans have been reviewed and modified to address health and environmental concerns. Agenda 21 also attached great importance to the role of local governments in fostering sustainability. Indeed, Agenda 21 called upon local governments to enter into a dialogue with their citizens, local organizations and private enterprises and to adopt a “Local Agenda 21” plan of action.

The emergence of complex environmental and health systems has made it necessary to define more clearly the responsibility of the health sector in helping to ensure that the activities of all sectors and organizations contribute positively to health protection and promotion. Although environment, health and development concerns should form part of the responsibility of all sectors, the health sector has special responsibilities, which are highlighted in the box below.
Box 2

HEALTH SECTOR RESPONSIBILITIES

- Monitoring overall health status, ensuring that health is monitored at the city, neighbourhood or district level and that intra-urban and intra-district differences are detected (this is important in terms of shifting the focus of regulatory control in many countries from low risks which often affect only relatively small percentages of the population)

- Estimating the contributions of various environmental and social factors to health problems, by using improved indicators of the relationship between health and living conditions to support decision-making

- Analyzing environmental and social health needs and requirements in various development sectors that are significant for health, such as housing, local government, transport and industry, including consideration of the health opportunities offered by each sector

- Formulating health and environmental policies in partnership with relevant sectors

- Advocating, facilitating and fostering the inclusion of health issues in the work of competent agencies, organizations and communities at all levels and generally promoting health and the environment

- Supporting health and environmental service delivery and providing such services as are appropriate at various tiers of government

- Supporting the development of research that may be necessary to improve understanding, assessment and management of health risks

- Providing technical support and guidance in policy and planning, evaluation and capacity development.

Source: adapted from von Schirnding (9)