

ECOHEALTH

the ecosystem approach to human well-being

H.N.B. Gopalan, of UNEP's Division of Policy Development and Law, examines the linkages between environmental well-being and human health, and introduces what UNEP and its partners are doing in the field of 'ecohealth', a new concept in tackling these issues

A healthy population is dependent on a healthy environment. Although humans have been aware of this crucial relationship for millennia, there has still been a tendency to separate the two fields of endeavour: a tendency to examine health issues in isolation, separate from the environmental factors, although poor environmental quality is responsible for up to 25 per cent of all preventable ill health.

Figure 1
Estimated proportion of the global burden of illness, injury and premature mortality attributable to environmental exposures, measured in DALYs (disability adjusted life years)

	Global DALYs (thousands)	% attributable to environmental factors	Environmental DALYs (thousands)	% of all DALYs (all age groups)
Acute respiratory infections	116 696	60	70 017	5.0
Diarrhoeal diseases	99 633	90	89 670	6.5
Vaccine-preventable infections	71 173	10	7 117	0.5
Tuberculosis	38 426	10	3 843	0.3
Malaria	31 706	90	28 535	2.1
Injuries				
Unintentional	152 188	30	45 656	3.3
Intentional	56 459			
Mental health	144 950	10	14 495	1.1
Cardiovascular disease	133 236	10	13 324	1.0
Cancer	70 513	25	17 628	1.3
Chronic respiratory disease	60 370	50	30 185	2.2
TOTAL THESE DISEASES	975 350	33	320 470	23.3
Other diseases	403 888			
TOTAL ALL DISEASES	1 379 238	23	320 470	

Source: WHO, 1997

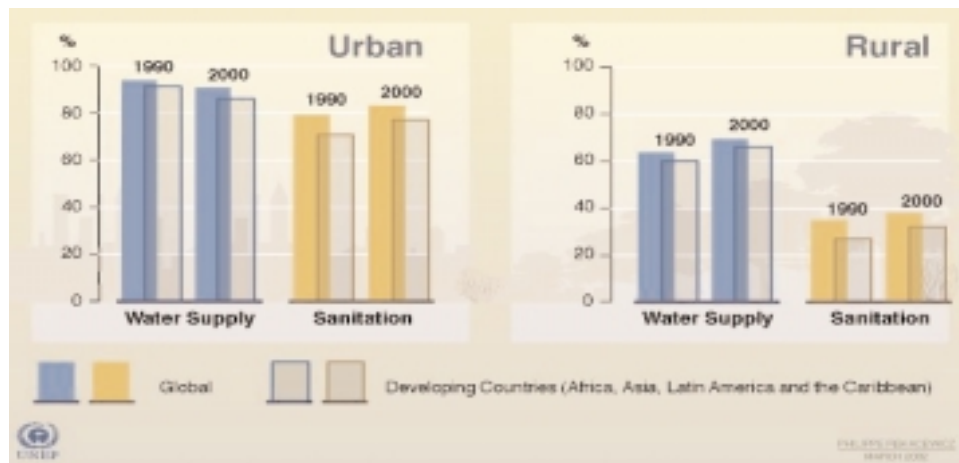
The World Health Organization (WHO) defines individual or population health as 'a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity'. However, environmental health is poorly defined, rarely quantified and valued, and as humans impact more and more on their environment, the close relationship between health and environment is becoming increasingly evident.

Access to a safe and clean supply of water and adequate sanitation facilities are imperative for human health. Unfortunately, this access remains one of the biggest challenges facing millions of people, particularly in the world's poorest countries. Even though the United Nations reports that water consumption has nearly doubled since 1950, in the year 2000, 1.1 billion people still did not have access to improved water supply and 2.4 billion people lacked access to improved sanitation (Fig. 2).

Water crises (which two thirds of the world's population are likely to face by 2025) caused by climate change, uncontrolled urbanization, unplanned water withdrawal and uneven geographic distribution of water accompanied by inappropriate water policies, exacerbate matters. The steady decline of water resources also means food shortage, as some 70 per

cent of the water we use is for irrigating crops. Even now, malnutrition is responsible for the deaths of millions of children. Water contamination can also stress water availability and directly influences health: cholera, typhoid and intestinal worms are diseases spread via sewage-contaminated water. Chemical contamination with pesticides, fertilizers, heavy metals, DDT, PCBs and other persistent organic pollutants from the urban and agricultural

Figure 2
Water supply and sanitation coverage in urban and rural areas of the world in 1990 and 2000



Source: *Global Water Supply and Sanitation Assessment 2000 Report*, WHO, and UNICEF, 2000

environments also affects human health indirectly via the food chain. Water – in irrigation channels, dams and other impoundments, and sewage – provides the breeding habitat for mosquitoes and other vectors of human disease. Malaria alone affects 300 million people a year, 90 per cent of them in Africa, and there is concern that climate change might lead to wider distribution and range alternation of malarial mosquitoes.

The Earth's climate is changing, and it is influencing human health. Earth's temperature is expected to rise between 1.4°C and 5.8°C in the coming 100 years, and it will affect everything from agriculture to industry to ecosystems.

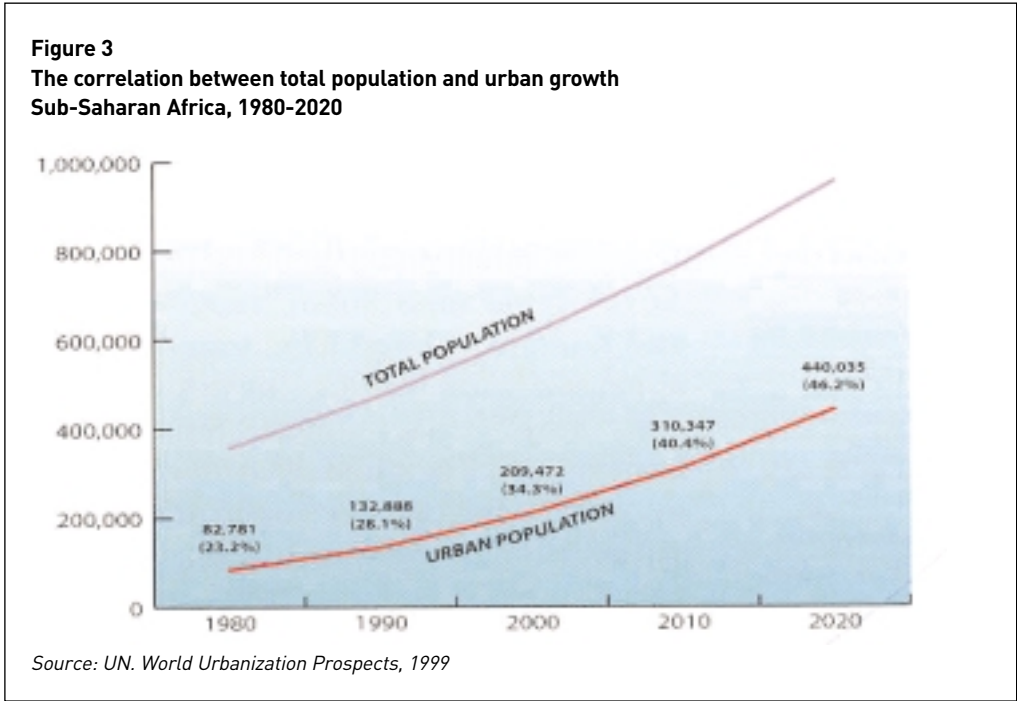
Resulting health problems include increased incidences of heat stress; injuries and death from natural disasters; changing vector distributions causing greater incidence of disease and emerging infectious diseases; and possible malnutrition or starvation due to changing agricultural productivity.

The number of people affected by natural disasters is on the rise, particularly in Africa, although the number of people killed by natural disasters has decreased since the 1980s. Approximately 250,000 people are killed this way every year, and about 95 per cent of these deaths occur in the developing world.

Both changes in climate and direct human activity (e.g. habitat destruction, fires, pollution, introduction of alien species and hunting/harvesting) are threatening biodiversity. Ecosystems provide many invaluable goods and services to humans, including, among other things, cycling and filtration processes such as air and water purification and the accumulation or decomposition of toxic substances; stabilization processes such as flood mitigation and erosion control; critical habitats; translocation processes such as pollination and seed dispersal; as well as aesthetic and recreational services. Some of the goods provided by ecosystems also include food, medicinal products, building materials and

energy sources. WHO estimates that approximately 80 per cent of the world's inhabitants rely mainly on traditional medicines for their primary health care, while plants play an important role in health care in the remaining 20 per cent. The roles of plants, animals and microbes in advancing our knowledge of biology, anatomy, physiology and medicine are also significant. However, human population growth, exploration into new territories and extinction events are diminishing biodiversity.

There is a correlation between population growth and urbanization. Almost half of the world's population (47 per cent) lives in urban areas, and that figure will continue to rise (Fig. 3). A number of people migrate to urban areas in search of greater opportunities for health, education and employment. The rapid growth of urban areas, however, means that proper services and infrastructure, such as adequate housing and water supplies, sewers, roads and waste disposal sites, are often not provided. Informal settlements are particularly insecure and face high levels of crime. They are often situated on fragile environments such as steep slopes, natural drainage pathways and flood-prone areas, and the health conditions in the poorest slums can be much worse than in rural areas. Indoor air pollution, largely due to the



use of biomass fuels in ill-ventilated houses, is a major cause of respiratory disorders, particularly in women and children. Increasing vehicular traffic causes air pollution and noise problems in urban areas. Furthermore, lead, which is toxic and can impair the learning abilities of children, is still used as a gasoline additive in most developing countries.

In general, knowledge of environment and health risks is segmented. Therefore, exchange of information within the environmental health sector, as well as with other sectors, is essential. Environmental health, through its very nature, tends to focus on preventative measures, whereas the field of medicine has traditionally focused more on the curative approach. However, as diseases that are clinically different may respond to the same preventative measures, the extension of current medical approaches (including both preventative and curative) and environmental education for better health promotion, needs to be encouraged. Moreover, as both the health sector and the environment sector lose out when it comes to financing and budget, it is important that health be seen as a central factor, not only in social development, but also in a country's ability to compete on the global economic stage, and to achieve sustainable economic progress.

Health is one of the five cornerstones of the WEHAB agenda (alongside Water, Energy, Agriculture, and Biodiversity) of the World Summit on Sustainable Development (WSSD) and is, of course, intimately linked with the other four sectors. The health agenda of WEHAB suggests that many issues, including those relating to environmental health, must be addressed, stressing the need for intersectoral cooperation, further information, capacity-building and greater financial resources.

NEPAD (New Partnerships for African Development) has several environmental and health goals in its action plan. Although the overall health objectives and actions are commendable and necessary, the NEPAD initiatives are somewhat lacking when it comes to environmental health. Perhaps the most vital missing link is the need for intersectoral cooperation. Health is represented as a separate sector, and its links, particularly with the environmental sector, are not stressed. In order to improve the health of countless people in Africa, intersectoral cooperation, research and education will be imperative, rather than simply improving the health systems that are already in place, although this will be critical as well.

Several of the Millennium Development Goals (MDGs) are both directly and indirectly related to environmental health: Goal 1 - Eradicate Extreme Poverty and Hunger; Goal 4 - Reduce Child Mortality; Goal 5 - Improve Maternal Health; Goal 6 - Combat HIV/AIDS, Malaria and Other Diseases; and Goal 7 - Ensure Environmental Sustainability.

Human health and well-being are also intimately tied to the health of life-sustaining ecosystems. Yet this complex relationship is rarely taken into account in either mainstream health or natural resource programming. Health is given even less weight in international trade agreements and practices. A medical approach alone is not sufficient for a holistic understanding of the factors affecting human health: economic, social and environmental components play equally important roles.

To enhance effectiveness in tackling environmental threats to human health, knowledge needs to be consolidated and shared to influence policy responses at the national, regional and global levels. The Canadian proposal, Health and Environment Linkages Initiative (HELI), developed at WSSD, could improve policy responses and provide a global partnership of governments, non-governmental organizations, civil society, academic and research institutions, and international organizations, necessary to provide health for all. UNEP is fully committed to the further development and implementation of the HELI proposal, in cooperation with WHO, Health Canada, Environment Canada and other partners. A Needs Assessment Workshop, pilot projects at local and regional level, networking of centres of excellence and capacity-building are some of the proposed activities under the HELI umbrella.

The United Nations Foundation (UNF) is supporting a UNEP/International Development Research Centre (IDRC) project entitled Improved Health Outcomes Through Community-Based Ecosystem Management: Building Capacity and Creating Local Knowledge in Community Health and Sustainable Development. The main objective of the project is to foster transdisciplinary research activities to promote human health through better management of ecosystems. Activities include research projects and capacity-building activities in Central America and the Caribbean, the Middle East and North and West Africa. Outputs include trained manpower and multidisciplinary research tools. The expected results are: improved health through better ecosystem management, particularly of tropical vector-borne diseases in agro- and urban ecosystems. Through the project, UNEP, WHO, IDRC and other partners have been jointly exploring the ecosystem approaches to human health (ecohealth) concept, to identify the web of ecologically-based factors affecting human health – as well as the links between them. Equipped with this knowledge, local communities can better manage ecosystems to improve people's well-being and the health of the ecosystem. Interventions, developed using this ecohealth approach, can make cost-effective

contributions to improving human health in developing countries. A Global Forum on Ecohealth will be convened in Montreal, Canada, 18-23 May 2003, jointly with WHO, IDRC and other partners.

In addition, UNEP will continue its work with WHO, the International Labour Organisation, the World Meteorological Organization, UNICEF and others, on children's environmental health; the environmentally sound and safe management of chemicals; assessment of the health impacts of climate change; preparation of guidelines to assess the impacts of climate change on human populations; assessing the impact of biodiversity loss on human health; and air quality management in Asia's major conurbations including megacities, among others. HELI and ecohealth are two of a growing number of initiatives that UNEP is beginning to tackle in the area of environment and health, providing strong evidence that this holistic approach is both useful and beneficial.

SUGGESTED READING

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3. *Assessing the Risk of Genetic Damage* (H.N.B. Gopalan et.al., Eds.), Hodder and Stoughton, (1992)
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12. *Urban Air Pollution Management and Practice in Major and Mega Cities of Asia*, SEI/UNEP/WHO/KEI, (2002)
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