

Our planet, our health

**REPORT OF THE WHO COMMISSION
ON HEALTH AND ENVIRONMENT**



**World Health Organization
Geneva**



Our planet, our health
Report of the
WHO Commission on Health
and Environment



World Health Organization
Geneva
1992

WHO Library Cataloguing in Publication Data

WHO Commission on Health and Environment

*Our planet, our health : report of the WHO Commission
on Health and Environment.*

1.Environment 2.Environmental health I.Title

ISBN 92 4 156148 3

(NLM Classification: WA 30)

© World Health Organization 1992

Publications of the World Health Organization enjoy copyright protection in accordance with the provisions of Protocol 2 of the Universal Copyright Convention. For rights of reproduction or translation of WHO publications, in part or *in toto*, application should be made to the Office of Publications, World Health Organization, Geneva, Switzerland. The World Health Organization welcomes such applications.

The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of the Secretariat of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

The mention of specific companies or of certain manufacturers' products does not imply that they are endorsed or recommended by the World Health Organization in preference to others of a similar nature that are not mentioned. Errors and omissions excepted, the names of proprietary products are distinguished by initial capital letters.

PRINTED IN SWITZERLAND

91/9104 - Benteji - 10 000

Foreword

The various ways in which the environment interacts with health in the context of development have never been analysed in depth at the international level. The principal objective of the Commission on Health and Environment set up by the Director-General of the World Health Organization, Dr Hiroshi Nakajima, was to fill this gap by examining knowledge and understanding of these interactions and reaching some conclusions on the relative importance of the various mechanisms involved and the kinds of action that need to be taken in the coming decades to counter their adverse effects. One specific purpose was to produce a rigorous and detailed update on these questions that could be made available to the United Nations Conference on Environment and Development to be held in Rio de Janeiro from 1 to 12 June 1992.

Not being a specialist in any of the fields the Commission would be covering, it was with some hesitation that I accepted the honour of becoming its chairwoman. However, I realized that there might be some advantage in entrusting this responsibility to someone with no specific training in matters of environment and health, but with experience in the practice of seeking advice from specialists on technical questions in order to be able to reach fully informed decisions of a political order. It is in this capacity that I have undertaken and carried through this mission, keeping clearly in mind, as a decision-maker, the questions to which we should all like to have a clear answer.

Thus, in view of the fact that health issues are not attracting as much attention as purely ecological issues in contemporary discussion of the environment and development, it might legitimately be asked whether there is some sort of incompatibility or conflict between protecting and improving the environment and protecting and improving health. The Commission's conclusions are unequivocal: not only is there no conflict between these two objectives, but the kind of development needed to safeguard health and welfare will depend on many conditions, including respect for the environment, while development without regard for the environment would inevitably result in impairment of human health.

The Commission also examined the consequences of population growth in certain countries and of rising consumption in others, the role of the

production and disposal of waste, and the effects of poverty on nations and people. There can be no doubt that, for sustainable development to be achieved, the protection of the environment—and hence of health—will require a global approach to the control of these factors, each of which must be examined in the light of the local situation in any programme of development. This is a very long-term objective, and its attainment will require far-reaching and sustained changes in policies and practice at all levels, in countries where the population is stable as well as in those where it is expanding.

Such a wide-ranging review would not have been possible without the contributions made by the members of the Commission, the panels which provided them with the basic materials essential for their work, and the Secretariat, without whose help this report could not have been written.

My gratitude goes to all those who have facilitated a task that will not have been in vain if the international community, and WHO in the first instance, acts in consequence and reflects in its decisions the concerns voiced by the Commission. The state of the environment, and especially the trends that can now be observed, give few grounds for optimism in the decades to come. They should rather spur us to intensify our still far from adequate efforts towards worldwide protection of our environment through policies of sustainable development, for on this depend the health and ultimately the survival of the human race.

Simone Veil
*Chairwoman,
WHO Commission on
Health and Environment*

Preface

If health for all is to be achieved, a new alliance for health is called for. Health protection and promotion must be considered in their widest sense. Human health is a vital cross-sectoral issue, dependent on the continued availability of environmental resources and on the integrity of the environment. In recent years, environmental problems have acquired new dimensions. Everywhere in the world, the environment is changing, as a result of pollution and loss of natural resources—water, land, air, vegetation, and even genetic diversity. All around us we see the deleterious effects on health of environmental degradation.

The health challenges to be faced in the coming decades will require concerted action on the part of many individuals and agencies at all levels. As the directing and coordinating authority for international health work, WHO must fulfil its role as leader in such action. For this reason, in 1990 I established an independent Commission on Health and Environment, comprising internationally recognized experts in the scientific, social and political fields. The conclusions and recommendations of the Commission will help to shape WHO's programmes of cooperation and will provide the basis for a new global strategy for environmental health.

The Commission has provided an essential and timely assessment of the relationship between health and the environment, in the context of development. I am grateful to all its members for their personal commitment and dedication to such a daunting undertaking. My particular gratitude goes to Mrs Simone Veil who, as Chairman of the Commission, ensured the success of its work, and to the Vice-Chairmen, Dr Emil Salim and Professor Nikolai Izmerov, who provided guidance and inspiration. I also wish to thank the members of the four technical panels for their contributions, in particular the four chairmen whose work was vital to the success of the Commission.

The Commission's report will be an important contribution to the United Nations Conference on Environment and Development and will bring to the forefront the health dimension of the environmental and development crisis. WHO and its Member States must play a more aggressive role in protecting and promoting health as part of development and environ-

PREFACE

mental protection policies in a changing world. The action required is substantial and the task will not be easy. But if we work together for human health and well-being, the integrity of the environment, and sustainable development, we shall all benefit.

Hiroshi Nakajima
Director-General
World Health Organization

Background and acknowledgements

The WHO Commission on Health and Environment was appointed by the Director-General of WHO as a fully independent body in early 1990. Composed of 22 members (Annex 1), the Commission was chaired by Mrs Simone Veil, France, Member of the European Parliament. H.E. Dr E. Salim, Minister of State for Population and the Environment, Indonesia, and Professor N.F. Izmerov, of the Academy of Medical Sciences of the USSR, served as Vice-Chairmen.

The work of the WHO Commission can be regarded as a follow-up of the 1987 report, *Our common future*, of the United Nations World Commission on Environment and Development (WCED). That report reviewed the relationship between the environment and development, and methods of assuring the progress of mankind while respecting the environment so as to make it possible to bequeath it in a healthy condition to future generations. Although the relationship with health was not considered in detail in the WCED report, concern for health underlay most of it. It therefore seemed opportune, three years later, for an independent body to make an assessment of the health consequences of environmental change, especially in anticipation of the United Nations Conference on Environment and Development which will be held in Brazil in 1992. The Director-General considers the report of the Commission on Health and the Environment to be WHO's main contribution to that Conference, one that underlines the importance of health in environmentally sound and sustainable development.

The Commission had the support of four independent expert panels appointed by the Director-General, on food and agriculture, energy production, industry, and urbanization—four areas that cover the main aspects of development. Professor E.H. Kampelmacher (Netherlands), Dr B.H. MacGibbon (United Kingdom), Dr B.D. Goldstein (USA) and Mr M. Diop (Senegal) were appointed respectively chairmen of the food and agriculture, energy, industry, and urbanization panels. In the absence of Mr Diop, Dr B.W. Christmas (New Zealand) chaired the panel on urbanization. The panels held two meetings each. The members of the panels are listed in Annex 2.

BACKGROUND AND ACKNOWLEDGEMENTS

Within WHO, a task force was established by the Director-General to provide technical support to the Commission. The members are listed in Annex 3.

The Commission held three meetings. The first (June 1990) was devoted to planning the work of the panels, the second (March 1991) to developing the structure of its report, and the third (July 1991) to the drafting and adoption of the report. While the Commission takes full responsibility for its own report, it acknowledges that much of it is based on the reports that the panels prepared under their own responsibility. Any discrepancy between the panels' and the Commission's conclusions and recommendations must therefore be attributed to the fact that Commission and panels worked independently of each other, the panels, owing to their mandate, taking a more sectoral approach than the Commission.

The meetings of the Commission were attended by representatives of a number of United Nations Organizations, other international organizations, and nongovernmental organizations. They are listed in Annex 1.

The Commission wishes to express its indebtedness to Mr D.E. Satterthwaite, who was responsible for the preparation of the first draft of the report and gave invaluable assistance to the Commission throughout its work.

* * *

The World Health Organization is indebted to the Governments of Australia, Finland, Germany, Italy, Japan, Norway, Sweden and The Netherlands for their generous financial contributions to the work of the WHO Commission on Health and Environment. Without their support this work would not have been possible.

Summary

Health and the environment

The maintenance and improvement of health should be at the centre of concern about the environment and development. Yet health rarely receives high priority in environmental policies and development plans, rarely figures as an important item in environmental or development programmes, despite the fact that the quality of the environment and the nature of development are major determinants of health.

Indeed, the most immediate problems in the world are ill health and premature death caused by biological agents in the human environment: in water, food, air, and soil. They contribute to the premature death of millions of people, mostly infants and children, and to the ill health or disability of hundreds of millions more. The problem is most acute in the developing countries where:

- four million infants or children die every year from diarrhoeal diseases, largely as a result of contaminated food or water;
- over a million people die from malaria each year and 267 million are infected;
- hundreds of millions suffer from debilitating intestinal parasitic infestations.

Serious environmental health problems are shared by both developed and developing countries, affecting:

- hundreds of millions of people who suffer from respiratory and other diseases caused or exacerbated by biological and chemical agents, including tobacco smoke, in the air, both indoors and outdoors;
- hundreds of millions who are exposed to unnecessary chemical and physical hazards in their home, workplace, or wider environment (including 500 000 who die and tens of millions more who are injured in road accidents each year).

Health also depends on whether people can obtain food, water, and shelter. Over 1000 million people lack the income or land to meet such basic needs. Hundreds of millions suffer from undernutrition.

It is a requirement of health that the global cycles and systems on which all life depends are sustained. Population growth and the way resources are exploited and wastes generated threaten the environmental base on which health and survival depend and transmit the growing costs to future generations. The toll they exact on human health and natural resources and systems could be enormously reduced by better environmental management.

Integrating development, the environment, and health

Health depends on our ability to understand and manage the interaction between human activities and the physical and biological environment. We have the knowledge for this but have failed to act on it, although we have the resources to meet current and future needs sustainably.

Two concerns are vital: development addressing people's needs, especially for health; and ecological sustainability so that natural resources are not depleted and natural systems not damaged or degraded. Meeting the needs of the present and future world population for food, water, and energy without depleting or damaging the global resource base, while avoiding the adverse health and environmental consequences of industrialization and uncontrolled urbanization, can be achieved only if people have the knowledge and the means to influence action. This calls for changes in the way governments plan and manage development. In agriculture, research and extension services are required that are more participatory and more responsive to the needs of poor farmers. In urban areas participatory partnerships between local authorities and community organizations need to be developed. People dependent on natural resources should be fully involved in decisions about their use and protection. All groups, including those who are living and working in the least healthy environments or are currently excluded from decisions about how resources should be used, should share in decision-making and action.

Local participation needs national and global frameworks to ensure that adequate knowledge and resources are available and that local actions do not result in an unsustainable burden on natural cycles and systems. It also requires intergovernmental agreements that limit each country's call on finite resources and its right to dispose at will of non-biodegradable wastes. For this, people are needed whose concerns go beyond the quality of their own environment; only they can press their governments' to reach the international consensus on which a healthy and sustainable planet depends.

Global challenges to health and the environment

Any discussion of health, the environment, and development must include consideration of the size of the population and its consumption level, since this combination largely determines the impact that the human population makes on the environment. It must include the distribution of income and assets, the prime concern being for people whose health is impaired by lack of them. It must also include the macroeconomic framework within which governments set their economic, social, and environmental policies. While the priority is to change the sectoral policies of governments and international agencies so as to promote health and sustainability, macroeconomic policies affect all sectoral policies.

Population

The world's population grew more than fivefold between 1800 and 1990 to reach over 5000 million; projections suggest 8000 million by 2020. In developing countries, where populations are still expanding, pressure on scarce resources has made it difficult to improve living conditions; in the towns and cities the authorities have rarely been able to provide the extra services required by the rapid growth in population. In developed countries, where population levels are largely static, prosperity has given rise to increased consumption and even overconsumption with insufficient regard being paid to their possible planetary impact: the depletion of non-renewable resources, the degradation of soil and water resources, and the emission of gases that threaten climatic stability and the stratospheric ozone layer. Such consumption levels raise the question of sustainability, especially as a growing proportion of the world's population aspires to comparable levels of consumption.

Healthier environments and lower death rates are not inconsistent with the goal of reducing population growth rates. Indeed, the steps that reduce infant and child deaths also tend to encourage reduced fertility rates: a secure livelihood, better health and education of the mothers, improved water supplies, sanitation, and nutrition, all coupled with effective family planning programmes integrated into health care systems available to all. Where serious measures are taken for a sustained reduction in child mortality, the fertility rates eventually fall. Sustaining reductions in fertility requires policies that remove the economic necessity for poorer groups to have large families. But the pressure on resources of growing populations and growing consumption levels is so severe that to wait for economic expansion to reduce fertility would be disastrous. Provision of a secure livelihood, education, and health care (including the means to control fertility) is therefore a high priority.

Poverty

At least 1115 million people were classified as poor in 1985 and 630 million of these were living in extreme poverty. Such statistics cover only those with an inadequate income. The number lacking a minimum standard of living is much higher. Those who cannot read, obtain clean water, or avoid environmentally induced disease, and who are permanently under the threat of physical violence and the effects of crime are invariably poor, whatever their income. So too are those who cannot participate in community life or expect to live beyond the age of 60. If poverty is measured by the number of people lacking a standard of living that includes adequate food, safe and sufficient water, sanitation, a secure shelter, and access to education and health care, over 2000 million people live in poverty—some 40% of the world's population. A high proportion are women and children, who are more vulnerable to environmental health risks. Within households it is generally women who look after the children, manage the household, and care for the sick; as such they suffer more from the diseases associated with inadequate water and sanitation and from the defects in the provision of basic services. Women who head households also usually face discrimination in looking for jobs and in obtaining access to public services, housing, and credit.

Resource use

The impact of any population on the environment depends on the type and level of its resource use and on its waste generation and management. Most of the world's consumption of non-renewable resources is concentrated in Europe, North America, and Japan. Per caput consumption levels in the richest countries are 50 or more times higher than in the poorest countries. The OECD nations, with 15% of the world's population, are responsible for 77% of all hazardous industrial waste. More than 80% of the gases in the atmosphere that contribute to the greenhouse effect arise from production or consumption in the developed world.

A healthy population may require a relatively prosperous and stable economy, but this need not imply the levels of income and resource consumption common in developed countries. Many communities with a relatively low level of income have made substantial improvements in health; some have achieved a life expectancy close to that of West Europe and North America with a much lower level of resource use. Improved health can be separated from ever-increasing consumption if development programmes stress the promotion of health both in the narrow sense of curing or preventing disease and in the broad sense of promoting well-being and informed participation.

Macroeconomic frameworks

Macroeconomic policies are major influences on the state of health and of the environment within all countries. But they are usually established with little or no consideration given to their health or environmental consequences. For example, trade and fiscal policy or agricultural or energy pricing may influence health either by their effect on income levels and distribution or by the effect on the quantity and quality of land, air, and water resources. Macroeconomic policies influence the extent to which health care and health-related services are funded. They also affect the size of household incomes, and hence the quality of food and housing affordable.

Macroeconomic policies should minimize conflicts between economic, environmental, and health goals. With increased knowledge of the social and environmental effects of macroeconomic policies the effects can be limited, including those which arise from structural adjustment, and special programmes can be established for those whose health might otherwise suffer from loss of income or cuts in services—for instance health care or nutrition programmes or employment projects.

Food and agriculture

Agriculture, forestry and fishing provide not only the food and natural resources on which human society depends but also the livelihood of about half of the world's population. Their output can only be sustained if the ecological systems on which they draw are not overexploited.

The output of the world's food-producing systems has greatly increased over the past few decades. As yet there is no global shortage of food or the capacity to produce it in the world, but for a large part of the world's population undernutrition and the infections associated with it will remain the main cause of ill health and premature death because they do not have enough land to grow the food they need or the income to purchase it. Foodborne diseases are among the most common diseases in every country, although they are far less often life-threatening in developed countries. Most disease agents that contaminate food and water are biological and come from human or animal excreta, although food contaminated by toxins produced by plants and moulds, and those present in fish and shellfish, can be a serious problem.

The ecological base for feeding the world's population is under stress owing to the rapid degradation of land and water resources. Production and distribution methods remain inefficient, as is shown by the size of the losses before and after harvesting. A continued rise in the population in a number of developing countries, greater substitution of meat, eggs and dairy

products for grains and vegetables, and increased food and soil losses put great stress on farmers and on the ecological underpinnings of farming systems. Conversely, reduced population growth, better-balanced diets, changes in production techniques, and greater attention to reducing food losses would make it possible for farmers to sustain production and meet future demands.

Agriculture is not without occupational health risks, of which accidents, infection with diseases spread by animals, and exposure to agricultural chemicals are the most common. In tropical countries, water reservoirs and canals for irrigation have been constructed and new land opened up for agricultural use without proper control of disease vectors. The result is that they have often been followed by a great increase in many of the most lethal and debilitating diseases, including malaria and schistosomiasis.

Agricultural chemicals are widely misused, most seriously in developing countries where pesticide regulations and their enforcement are less strict and products that have been banned or restricted in developed countries are still widely available. Agricultural chemicals are damaging water resources. Drainage water often contains high levels of salts and nutrients, the latter causing blooms of algae in lakes, reservoirs, and shallow coastal waters.

Health and its environmental determinants are closely related to land tenure. Farmers with secure tenure of adequate amounts of fertile land usually avoid extreme poverty and the ill health that accompanies it. Those with little security and too little land or holdings of only marginal productivity are often poor; so is their health. Many small farmers have developed a sophisticated knowledge of how to sustain yields in difficult circumstances. However, environmental degradation is common where high concentrations of poor farmers have only land of poor quality to exploit.

Certain strategic principles can promote health and more sustainable patterns of food production. They include the promotion of good agricultural practice (for instance, crop rotation, avoidance of excessive fertilizer application, use of correct dosage of chemicals or pesticides, reduction of food losses before and after harvesting). They also include wider use of integrated pest control and better integration of farming, forestry, and water resource management. Several major innovations are likely to prove of particular importance for increased food production or better preservation; they include food irradiation and the use of modern biotechnology to improve productivity and processing.

The Commission recommended that:

- Countries should take steps to ensure that all households can afford and obtain an adequate diet, and in particular that income and employment programmes should play a role in ensuring that everyone has the means to acquire sufficient food.

- Efforts to increase food production should be accompanied by measures to protect and enhance land and water resources.
- Research and extension services should be more participatory, more responsive to the needs of small and poor farmers, including those dependent on poor-quality or fragile land, and give more attention to health and environmental issues.
- Governments should integrate health goals in their agricultural policies, including promotion of the health of farmers and agricultural workers.
- More research should be carried out on how to increase food production in the tropics while reducing tropical diseases and harmful effects on the environment.
- Governments should give high priority to reducing food losses before and after harvesting.

Water

Fresh water is considered a renewable source, but there are limits on the supplies available. In many countries or regions, shortages of fresh water are the main obstacle to agricultural and industrial production. Some of the shortages (or seasonal or annual variations in supplies) lead to poverty and soil degradation. Many cities and agricultural regions are now drawing supplies from underground aquifers at a rate far above their natural rate of recharge.

Fresh water is essential to health not only for its part in production but also for domestic consumption and use (drinking, cooking, washing, laundry). A high proportion of life-threatening and health-threatening infections are transmitted through contaminated water or food. Nearly half the world's population suffer from diseases associated with insufficient or contaminated water, mostly the poor and virtually all in developing countries. Two thousand million people are at risk from waterborne and foodborne diarrhoeal diseases, which are the main cause of nearly four million child deaths each year. Schistosomiasis (200 million people infected through contact with infested fresh water) and dracunculiasis (10 million infected through drinking water containing the disease vector) are two water-based diseases. Insect vectors breeding in water transmit malaria (267 million infected), filariasis (90 million infected), onchocerciasis (18 million infected), and dengue fever (30–60 million infected every year).

Water shortages usually lead to problems of water quality since sewage, industrial effluents, and agricultural and urban run-off overload the capacity of water-bodies to break down biodegradable wastes and dilute non-biodegradable ones. Water pollution problems are most serious in cities in

developing countries where controls on industrial emissions are not enforced and sewers, drains, or sewage treatment plants are lacking. Sewage and industrial effluents can be treated before disposal if sewers exist and the regulatory authorities are effective. Agricultural and urban run-off cannot be treated and in many areas in both developed and developing countries it is a growing threat to the quality of lakes, rivers, and the groundwater. Fisheries have been damaged and drinking-water sources contaminated by pollution in many areas of the world.

The Commission stressed that:

- Fresh water should be considered as a scarce, valuable, and finite resource and water resource management should be promoted to reconcile competing demands from different sectors and consumers.
- Because of the immense effect of water-related diseases on human health, a greater priority should be given not only to ensuring safe and sufficient water supplies but also to sanitation and to increased education about personal hygiene. Improving the quantity and quality of water and providing safe excreta disposal services are usually possible at relatively low cost, especially if optimal use is made of local knowledge and resources and the users are fully involved in the design, implementation, and management of the services provided.
- Fresh water should be priced and protected in accordance with its value to health and to production. Innovative schemes can often reach poorer groups with major improvements at a cost they can afford. Preferential tariffs or subsidies should be avoided for most consumers, and used only to ensure that the poorest receive a level of service sufficient for health.
- The priority for water pollution control in the world is control of bacteriological and parasitic waterborne diseases, but contamination of water by heavy metals and other chemicals should also be prevented or minimized.
- More emphasis should be placed on making the best use of existing water supplies; shortages of drinking-water can often be remedied by greater attention to maintenance (since up to 60% of water supplies in a piped system may be lost in leaks) and by charging the users of the largest amounts of water a realistic price.

Energy

The main goals of energy development have been to reduce the cost of producing energy, to make systems more efficient, and to open up previously untapped energy sources. Reducing the adverse environmental and health effects has also become a goal. More recently, concern about climatic change