Health & Environment

Tools for Effective Decision-Making

The WHO-UNEP Health and Environment Linkages Initiative (HELI)

Review of Initial Findings

UNEP

World Health Organization

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TABLE OF CONTENTS

This report used to store milk and juice.

This report was printed on recycled milk and juice cartons. The entire paper production process incorporates sustainability objectives. Few chemicals are used, water is reused and the use of electricity is kept to a minimum.

PREFACE

From longstanding to emerging hazards, environmental factors are a root cause of a significant burden of death, disease and disability - globally and particularly in developing countries. They range from poor water quality and access, vector-borne disease and air pollution to toxic chemical exposures, climate change and degraded urban environments. The resulting impacts are estimated to cause over 25% of death and disease globally, reaching nearly 35% in regions such as sub-Saharan Africa *(1)*. Much of this burden rests upon the shoulders of the poor and vulnerable.

Many of these deaths are avoidable and much of this disease is preventable. However, effective action requires renewed moral commitment to sustainable development and determined political action through international and national partnerships. Together we must translate our global knowledge-base on environment and health linkages into practical policy tools and action at the country level, incorporating environment and health considerations into social, economic and political decisions.

Simple and cost-effective solutions can best be implemented when potential impacts are considered early in the policy process -- rather than after environmental damage has occurred, health problems have emerged and human lives cut short or damaged. This requires an inclusive approach to the problems. For too long, the vicious cycle of unsustainable development, ecosystem degradation, poverty and ill health has been addressed sectorally, from a crisis management and curative perspective, rather than multisectorally and through preventive strategies.

In response to the urgent need for a more coherent and proactive policy agenda, the World Health Organization (WHO) and the United Nations Environment Programme (UNEP) joined forces at the 2002 World Summit on Sustainable Development (WSSD) to launch the Health and Environment Linkages Initiative (HELI). Sponsored by the Government of Canada and supported by the United States Environment Protection Agency, the overriding mission is the facilitation of better access at country level to existing knowledge, tools and methods for making good policy decisions on environment and health.

UNEP and WHO provide partner countries with direct support to address critical development/policy issues of their choice from a linked environment and health perspective; develop a holistic package of recommendations; and take action for implementation. This intersectoral approach can optimize the use of economic tools to quantify the health and environmental impacts of alternative choices and, where relevant, translate these impacts into the monetary terms upon which decision-makers often base their judgements. Using the tools of economic valuation to address health and environmental problems creates other synergies. It contributes to a greater appreciation of the goods and services provided by natural ecosystems. It can help decision-makers to identify mutually beneficial strategies that simultaneously promote human well-being and environmental protection and development, as well as poverty reduction.

In Jordan, Thailand and Uganda, HELI's initial country partners, decision-makers from health, environment and other government sectors are working together to assess water, agricultural and livestock management policies from an integrated health and environmental perspective. At the global level, HELI is developing tools and resources relevant to country-level policy-makers. This includes guidance on the conduct of assessments and on economic analysis of linked impacts. A web portal is being developed to provide an initial point of access for information about priority environmental hazards, related health issues and best practice policy approaches -- with reference to the wider range of WHO and UNEP resources available.

No initiative is a panacea or a "one-fix" solution. However, by linking scientific knowledge to its application in a demand-driven approach and by working directly with country-level policy-makers from a wide range of sectors, UNEP and WHO can catalyse the design of more complementary environment, social and economic policies.

Our country partners share our conviction that it is time to adopt a more proactive approach to environment and health decision-making, addressing the root causes of much disease rather than the symptoms alone. Together, we want to demonstrate that such an approach makes good public policy sense, that in the broader and long-term perspective: what is good for the environment can be good for health and good for development.

With less than a year of implementation behind us, an inclusive process is now well under way and gaining momentum. We are very pleased to share this report on the initial findings and results of HELI's activities and pilot projects, reflecting both the achievements and the challenging work still ahead.

A product of the partnership spirit of Johannesburg, HELI is an example of effective cooperation and action at international, regional and country levels. It combines the talents of WHO and UNEP in a targeted approach to policy-makers. We invite others to join us, strengthening health and environment linkages in policy-making, as part of our common response to the implementation imperative posed by the World Summit on Sustainable Development and the United Nations Millennium Development Goals.

UNEP

World Health Organization

The WHO/UNEP HELI initiative is funded by Health Canada and Environment Canada.

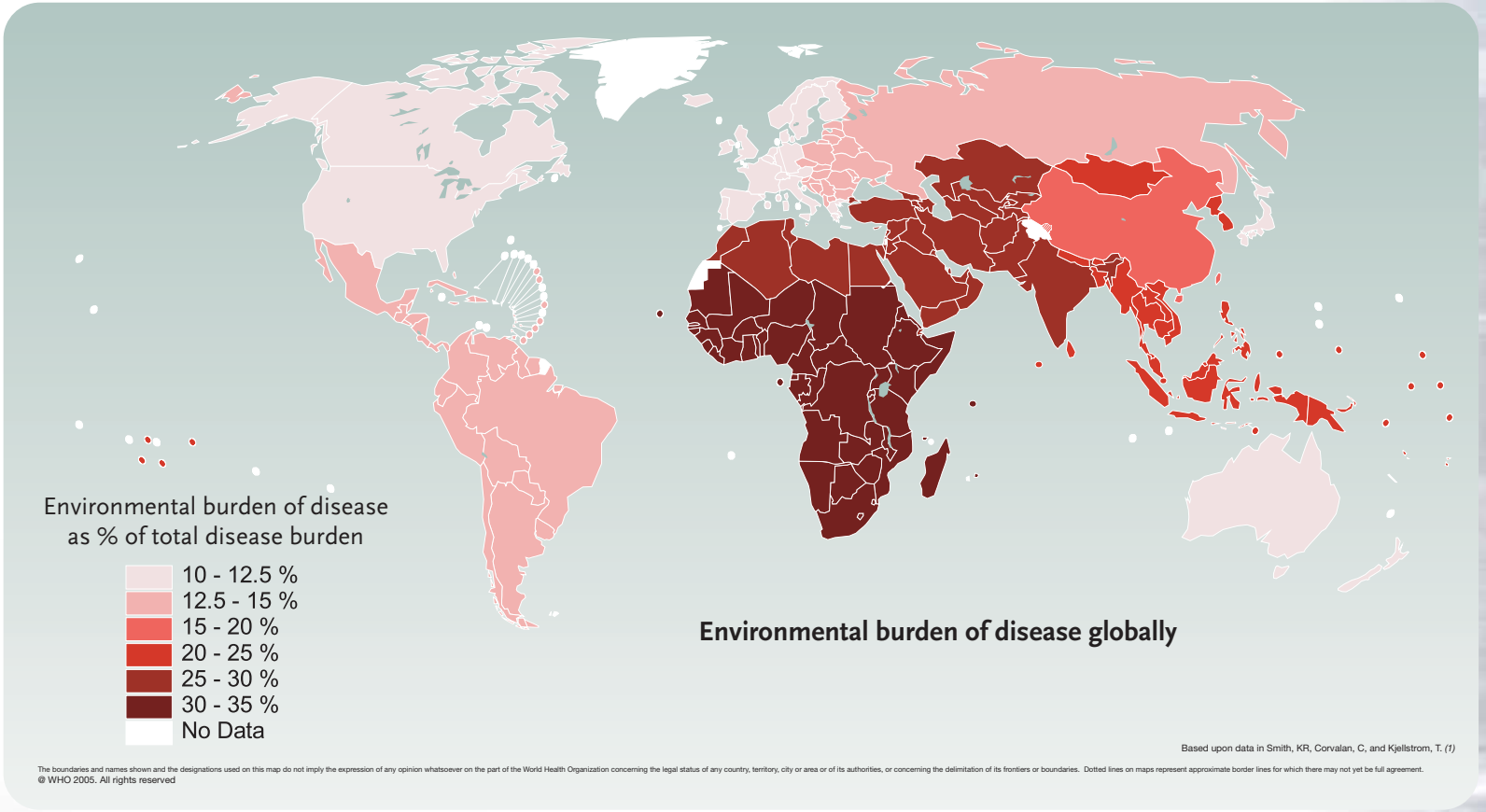
Health and Environment Linkages Initiative - HELI

HELI is a global effort by WHO and UNEP to promote and facilitate action in developing countries to reduce environmental threats to human health, in support of sustainable development objectives. HELI supports a more coherent approach to valuing the services that ecosystems provide to human health as part of decision-making processes. Activities include:

- Projects at country level bringing together diverse government and civil society sectors to assess and recommend integrated policies on environment and health issues.
- Guidance on better use of impact assessment and economic valuation to enhance environment and health decision-making.
- Improving access to policy-relevant knowledge, resources, and tools, via electronic media and printed materials, in priority areas. These include: water quality, availability and sanitation; water-related vector-borne diseases; ambient and indoor air quality; toxic substances; and global environmental change.
- Capacity building for policy action at local, national and regional levels through technical workshops and interactive events including policy-makers, scientists and the public.

"Human beings are at the centre of concern for sustainable development. They are entitled to a healthy and productive life in harmony with nature."

Principle 1 of the Rio Declaration on Environment and Development, 1992



Estimated proportion of total disease burden caused by environmental risk factors, by region of the world.

A HEALTHY ENVIRONMENT: LUXURY OR NECESSITY?

Every minute, 5 children in developing countries die from malaria or diarrhoea. Every hour, 100 more children die as a result of exposure to indoor smoke from solid fuels. Every day, almost 3000 people in low- and middle-income countries die from road traffic injuries: in the poorest countries most of these deaths are among pedestrians. Every month, nearly 19 000 people in developing countries die from unintentional poisonings, often as a result of exposure to toxic chemicals and pesticides in their work or home environments. Environmental hazards and related illnesses kill millions globally every year *(1,3)*. But while the victims share a common fate, their problems are not necessarily linked in either today's policy agendas or in the minds and actions of decision-makers.

Much of the environmental disease burden is attributable to a few key risks. Those include unsafe water and sanitation, vector-borne disease, indoor smoke from solid fuels, toxic hazards and global environmental change as well as unsustainable patterns of development that contribute to air pollution, traffic injury and other forms of urban environmental degradation. Along with the human toll, developing countries bear the economic cost of lost productivity, the burden on the health sector, degraded resources and long-term social consequences *(4)*. Against these stark realities, policy-makers in the developing world grapple with a rapid rate of modernization and change. They face critical development decisions that require a thorough consideration of impacts on environment and health.

Why are environment and health issues not higher on policy agendas, particularly in countries where the disease burden is so great?

A HELI review of environment and health decision-making in a developing country context described and analysed the driving forces that shape environment and health policy, synthesizing the results of over 50 in-depth interviews with experts and decision-makers globally as well as findings from an extensive literature review *(2)*. The review concluded that the primary barriers to more effective policy are neither a lack of evidence nor a lack of knowledge. They are economic, institutional, political and social.

Macroeconomic factors such as trade globalization, market liberalization, debt burdens and structural adjustment policies are among the most powerful drivers of national political agendas and, indirectly, environment and health policies.

The hidden hazards posed by hasty and improperly conceived projects may be overlooked; better environmental management may be regarded as a luxury that developing countries cannot afford. The goods and services provided by bio-diverse ecosystems, upon which particularly the poor may rely for healthy livelihoods, are not meaningfully taken into account within market-driven development processes. This leads to continued degradation of those natural resources with resulting health impacts *(5)*.

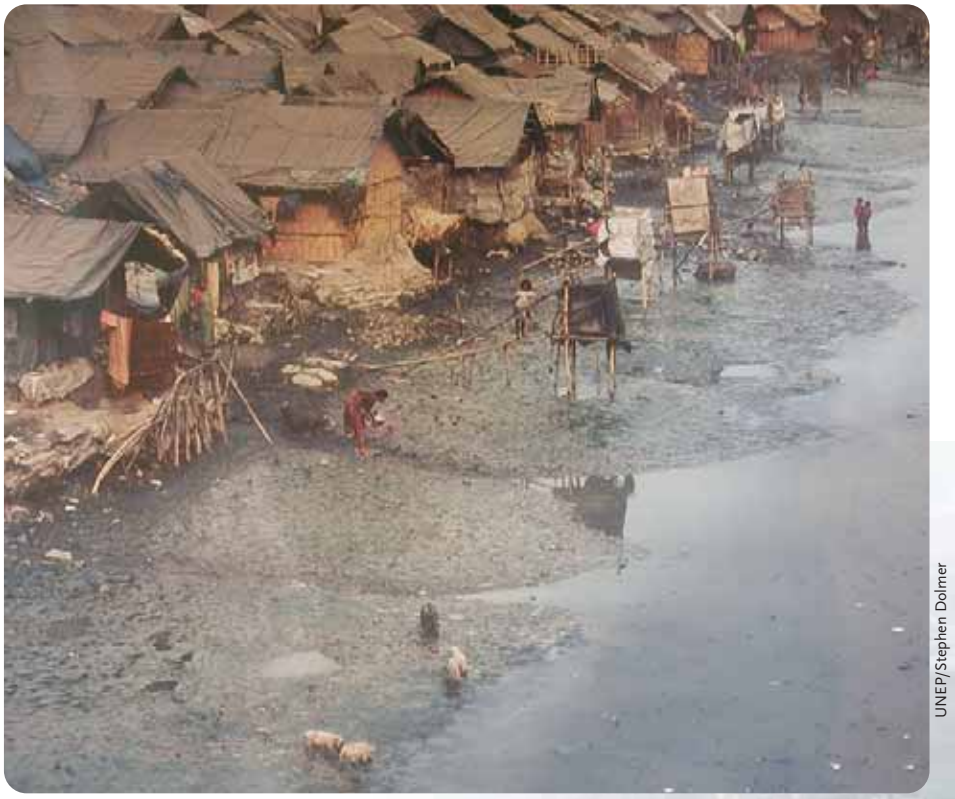
A dearth of institutional resources, human capacity and "enabling" legal frameworks impedes adequate assessment of the complex links between health, environment, poverty and development options. For instance, irrigation schemes may yield benefits in terms of food security and health. But when irrigation and dam design is not sensitive to the surrounding ecosystem, the scheme may enhance the conditions necessary for disease vectors to thrive and thereby create new health impacts. Agricultural chemicals can be used constructively to increase yields, but they also can kill or maim farm workers and children, and infiltrate water sources, when chemical regulation and education is inadequate.

A complex series of tasks is required to translate scientific evidence about such issues into policy. Common institutional barriers to the effective use of scientific information may include weak technical capacity, limited or ineffective legal and regulatory frameworks and debate driven by interest group pressures rather than by evidence. Data collected systematically according to scientifically acceptable criteria rarely determine policy on their own. Large infrastructure projects that are popular symbols of development (e.g. urban highways, water purification plants) may be regarded as evidence or indicators of good policy even when alternative strategies (e.g. improved public transport and bike lanes, better ecosystem protection of drinking water resources) might contribute to a more cost-effective package of solutions. The cost and benefit of alternative strategies, in terms of impacts on health and environment, may not be fully considered.

Environmental hazards, which may be unseen and/or emerge slowly over time, also compete as policy priorities with social, political, economic and humanitarian crises - some of which may be related to long-neglected environmental problems (e.g. floods and epidemics or drought and famine). In the division of more routine governmental tasks, however, health ministries are focused on health care services and policies, which may not systematically address broader environment and development agendas.

"Environment is still perceived by some countries as a luxury. Policy-makers in developing countries want more employment, higher income. They tend to say: 'Don't come talk to us now. Developed countries have already gone through this process. When we reach a similar stage, we will look at the environment.' "

Director, Economics and Trade Branch, Division of Technology, Industry and Economics, UNEP(2).



UNEP/Stephen Dolmer

"It is common practice to define poverty exclusively in financial terms. Yet someone surviving on one or two dollars a day in a run-down environment may well be far worse off than someone else, without any income at all, but living on fertile land. We are not trying to idealise poverty or the non monetary means of subsistence available to the poor, but we should try to convince people that alternative solutions do exist. " Director, Division of Policy Development and Law, UNEP *(2)*.

UNEP/ Perrmdhai Vesm

Increased road traffic has exacerbated air pollution in urban areas of Asia, Latin America and Africa, as well as the risk of traffic injury.

Environment ministries, for their part, often are newer entities lacking sufficient influence and resources to promote, proactively, government investment in sustainable development policies. As a result, they tend to remain focused more upon "sectoral" concerns related to nature conservation and pollution. This institutional context generates barriers to coordinated action and mutually reinforcing strategies. Thus governments may make crucial policy and economic development decisions without substantive input on either health or environment.

International institutions also have operated with separate and unlinked agendas.

Agreements at recent international conferences and summits all emphasize the need to improve coherence and enhance the coordination of work at country level that promotes economic development, the environment, health and poverty-reduction. In a concrete, action-oriented international agenda the translation of evidence into terms and tools relevant to policy-makers is of critical importance. Renewed emphasis therefore should be placed on demand-driven approaches rather than supply-side solutions that generate knowledge for its own sake. HELI aims at making best use of existing knowledge to demonstrate that good environment and health policy is not a luxury but an essential feature of sound development processes.

The Human Toll

- **Unsafe water**, poor sanitation and hygiene kill an estimated 1.7 million people annually, particularly as a result of diarrhoeal disease *(3)*.
- **Malaria** kills over 1.2 million people annually, mostly African children under the age of five *(6)*. Poorly designed irrigation and water systems, inadequate housing, poor waste disposal and water storage, deforestation and loss of biodiversity, all may be contributing factors to the most common vector-borne diseases including malaria, dengue and leishmaniasis.
- **Indoor smoke** from solid fuels kills an estimated 1.6 million people annually due to respiratory diseases *(3)*.
- **Urban air pollution** generated by vehicles, industries and energy production kills approximately 800 000 people annually *(3)*.

- **Road traffic injuries** are responsible for 1.2 million deaths annually; low- and middle-income countries bear 90% of the death and injury toll. Degradation of the built urban and rural environment, particularly for pedestrians and cyclists, has been cited as a key risk factor *(7,8)*.

- **Lead exposure kills more than 230 000 people per year** and causes cognitive effects in one third of all children globally; more than 97% of those affected live in the developing world *(9)*.

- **Climate change impacts** including more extreme weather events, changed patterns of disease and effects on agricultural production are estimated to cause over 150 000 deaths annually *(3,10)*.

- **Unintentional poisonings kill 355 000 people globally each year** *(6)*. In developing countries, where two-thirds of these deaths occur, such poisonings are associated strongly with excessive exposure to, and inappropriate use of, toxic chemicals and pesticides present in occupational and/or domestic environments *(11,12)*.

Over the next 30 years, most of the world's population growth will occur in the urban areas of poor countries *(13)*. Rapid, unplanned and unsustainable styles of urban development are making developing cities the key focal points for emerging environmental and health hazards *(14)*. These include the synergistic problems of urban poverty, traffic fatalities and air pollution. In addition, increased urbanization and motorization and diminishing space for walking/recreation in cities is associated with more sedentary lifestyles and a surge in related non-communicable diseases *(15-17)*. Globally, physical inactivity is estimated to be responsible for some 1.9 million deaths each year as a result of diseases such as heart ailments, cancer and diabetes *(3)*.

Increased industrial and agricultural production has intensified poorer countries' production and use of both newer and older chemicals, including some formulations that are banned in other countries. OECD has estimated that the global output of chemicals in 2020 will be 85% higher than in 1995, and nearly one-third of the world's chemical production will take place in non-OECD countries, compared to about one-fifth in 1995. The shift of chemical production from more affluent to poorer settings could increase the overall health and environmental risks arising from the production and use of such chemicals *(18)*. Already in many developing countries a range of toxic effluents are emitted directly into soil, air and water from industrial processes; pulp and paper plants; tanning operations; mining; and unsustainable forms of agriculture; at rates well in excess of those tolerable to human health. Along with the problem of acute poisonings, the cumulative health impacts of human exposures to various chemical combinations and toxins can be a factor in a range of chronic health conditions and diseases *(19,20)*.

UNEP/ Carmel Fatima

Some cities are rediscovering the health and environment advantages of non-motorized transport alongside more high-tech approaches (e.g. high capacity bus and rail). Improved protection from risk of injury for pedestrians and cyclists remains a critical challenge.

UNEP/ Perrmdhai Vesm

PASSION, POLICY & SCIENCE IN ENVIRONMENT AND HEALTH

Scientists are trained in dispassionate enquiry, an essential tool of the trade. At the same time, in the policy process, there is a need to frame compelling objective evidence on environment and health issues in terms valued by the public – and decision-makers. Appreciating the complexities of the policy process and how scientific evidence is used, and might be used better, in that process has been a theme of HELI. The passion of politics must be harnessed to the scientific passion for knowledge about the root environmental causes of disease.

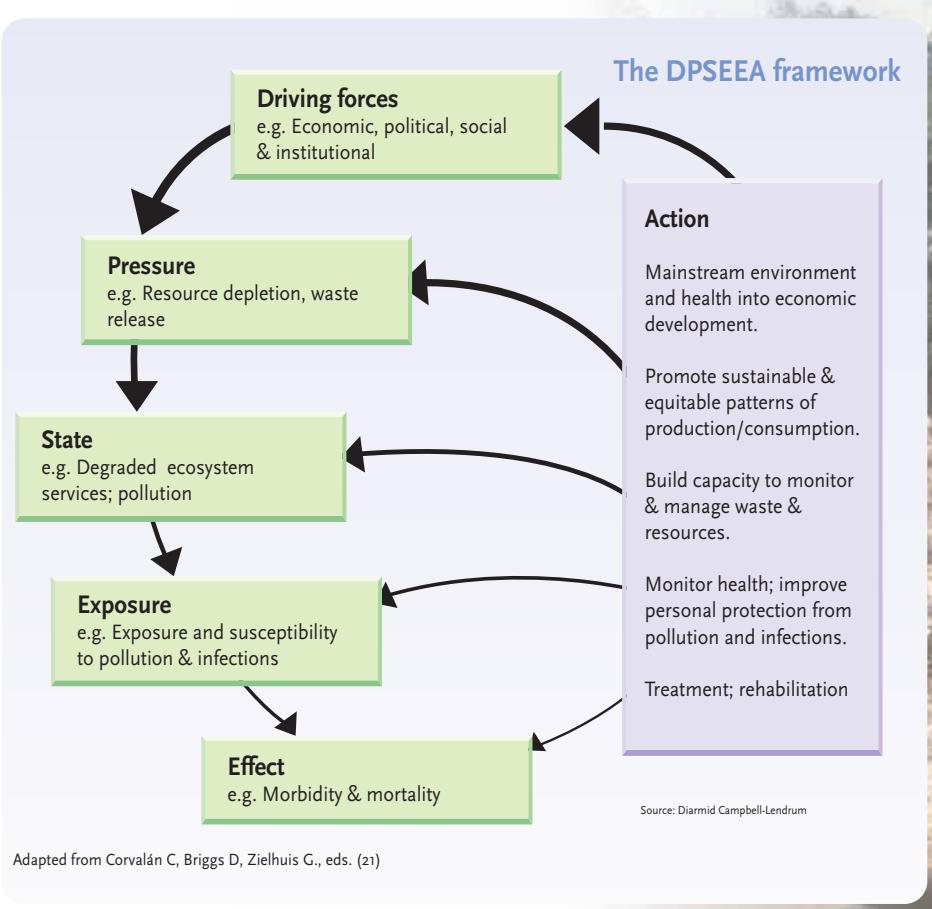
HELI's approach was designed around four key issues identified in the Needs Assessment Workshop (April 2003) involving both developed and developing country policy-makers, and refined further in the global review of decision-making.

- **More effective impact assessment procedures are needed in developing countries.** This can facilitate political and scientific exchange within a systematic and transparent framework. Impact assessment is a forum where science and policy interact – producing a synergy between scientific evidence and policy agendas.

- **Analysis of environment and health costs and benefits is important to improved utility of assessment frameworks.** Both economic and socioeconomic valuation put issues into monetary terms relevant to many policy-makers. Non-monetary measures, including death and disease burden and the rate/degree of environmental degradation, also are powerful indicators.

- **Interactive exchange between scientists, policy-makers and stakeholders is critical to improving access to knowledge about health and environment problems and solutions.** Such exchanges can range from technical workshops to intersectoral government meetings and ministerial-level encounters. Participatory research allows policy-makers and stakeholders to "see" and "touch" the evidence for themselves.

- **Building decision-maker and stakeholder awareness about environment and health problems, tools and policy options requires sustained and comprehensive communication strategies.** Such strategies should describe potential "solutions" alongside the "problems," and relate to successful experiences elsewhere. Potential economic and poverty reduction gains should be communicated together with the health and environment gains. Policy-relevant briefing and training materials should be refined and adapted to local needs and issues.



Adapted from Corvalán C, Briggs D, Zielhuis G., eds. (21)

The DPSEEA framework illustrates how socioeconomic driving forces can generate environmental pressures, leading to altered ecosystem states, personal exposure to risks, and eventual health impacts. Actions can be taken at each step in the causal chain, to help manage the driving forces, and reduce negative effects.

"We have done a lot of situation analysis, identification of the issues. However, that remains only information -- unless it can be turned into policies in the respective ministries. Data has to be translated into something that will move people; some people are moved by money, some by politics. These are passion parameters. You have got to make people feel the issue."

WHO Official, SEARO Region, New Delhi (2).

Rob Barnes 2004

A Global / Local Approach

The identified needs have been addressed via the following concrete activities.

- **Country-led pilot projects** - undertaken by partner governments and supported by WHO/UNEP, using their combined scientific/technical know-how. The projects assess existing or proposed policy in a particular sector in the light of environment and health impacts. National-level health and environment actors manage the assessment in coordination with other government sectors (i.e. agriculture, finance & economics). The process results in policy recommendations that can achieve real reductions in death and disease.

- **Regional workshops and national events** - sharing lessons from the pilot projects, building capacity, and engaging decision-makers and the public in policy development/implementation processes.

- **Guidance** - on integrating linked environment and health impacts into assessment of policies of critical socioeconomic importance. The guidance also covers tools for the economic valuation of environment and health costs and benefits -- in a context relevant to developing countries. A menu of useful strategies is provided, rather than one prescription or formula. This may be adapted to each country's needs and resources.

- **Development of a web portal and publications** - enhancing knowledge of environment and health risks and potential solutions, and tailored to the needs of policy- and decision-makers. Emphasis is placed upon good practice experiences, feasibility and cost-effectiveness, along with links and references to more technical information.

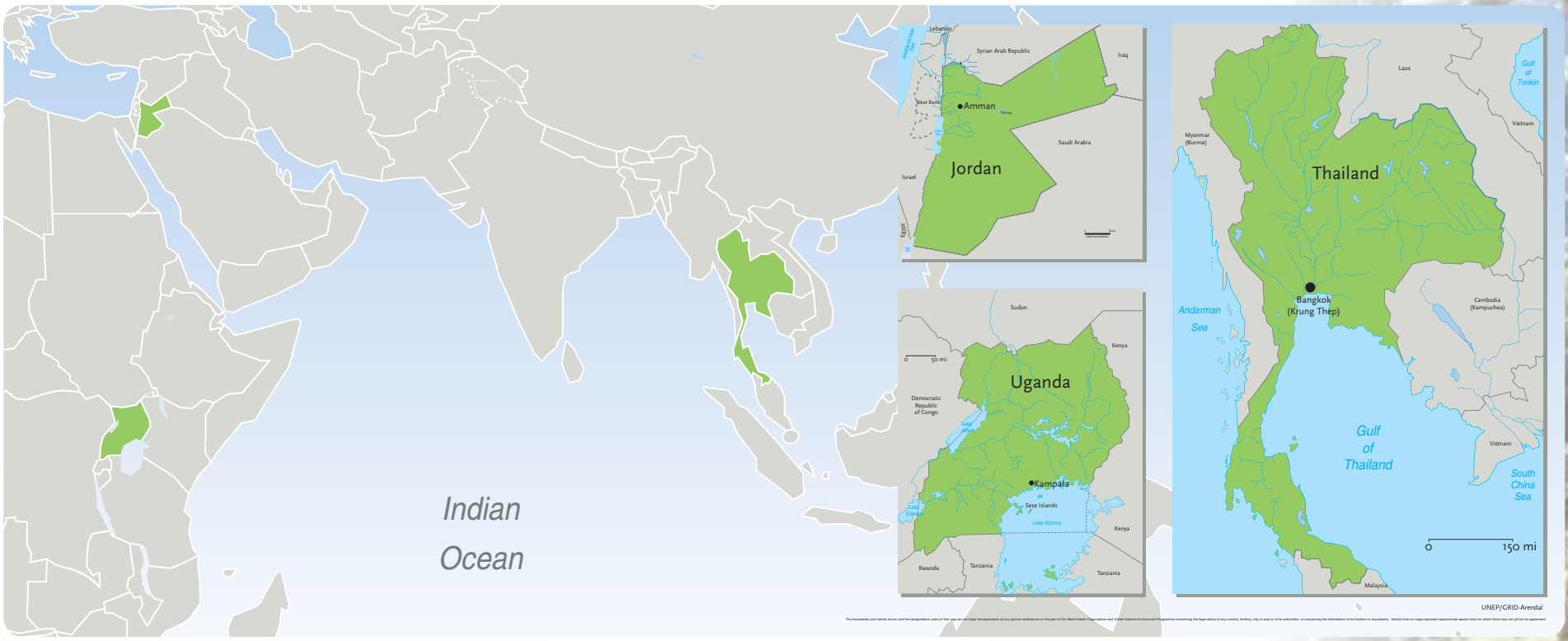
Responding to WSSD

"...The goals of sustainable development can only be achieved in the absence of a high prevalence of debilitating diseases, while obtaining health gains for the whole population requires poverty eradication. There is an urgent need to address the causes of ill health, including environmental causes, and their impact on development..."

Plan of Implementation of the World Summit on Sustainable Development, 2002.

Nigel Bruce/ITDG/Nepal

Reliance on solid fuels by many of the world's poor is a factor in deforestation and in indoor air pollution -- with consequent impacts on respiratory health.



HELI's country partners - Jordan, Thailand and Uganda – are conducting assessments of specific policies from a linked environment and health perspective.

ACTION AT COUNTRY LEVEL

Sound action in individual countries is the core of the HELI initiative. Country-level pilot projects harness the combined international, regional and country-level resources of WHO/UNEP into a single focused effort. Each partner country chooses a **pilot project theme** according to national priorities and performs an intersectoral assessment of policy from an **environment and health perspective**. Local actors choose the specific assessment methodology, tools and process best suited to local realities and needs. However, each assessment includes the following elements and procedures.

- A **core team** conducts the assessment; this team includes key experts from various sectors of government, academia and civil society.
- An **advisory committee**, including a wide range of stakeholders and government actors, reviews and contributes to the assessment process and its conclusions.

Once the assessment is complete, the initiative supports a public and technical dialogue regarding implementation of the recommendations.

- **Briefings** are provided to key groups/actors, e.g. politicians and decision-makers.
- **Public presentation** of the assessment's recommendations and results is organized, with participation of the media.
- **A workshop**, hosted by the pilot project partner and including other countries in the region, is conducted to disseminate professional knowledge and build capacity for intersectoral collaboration.

UNEP/Topham

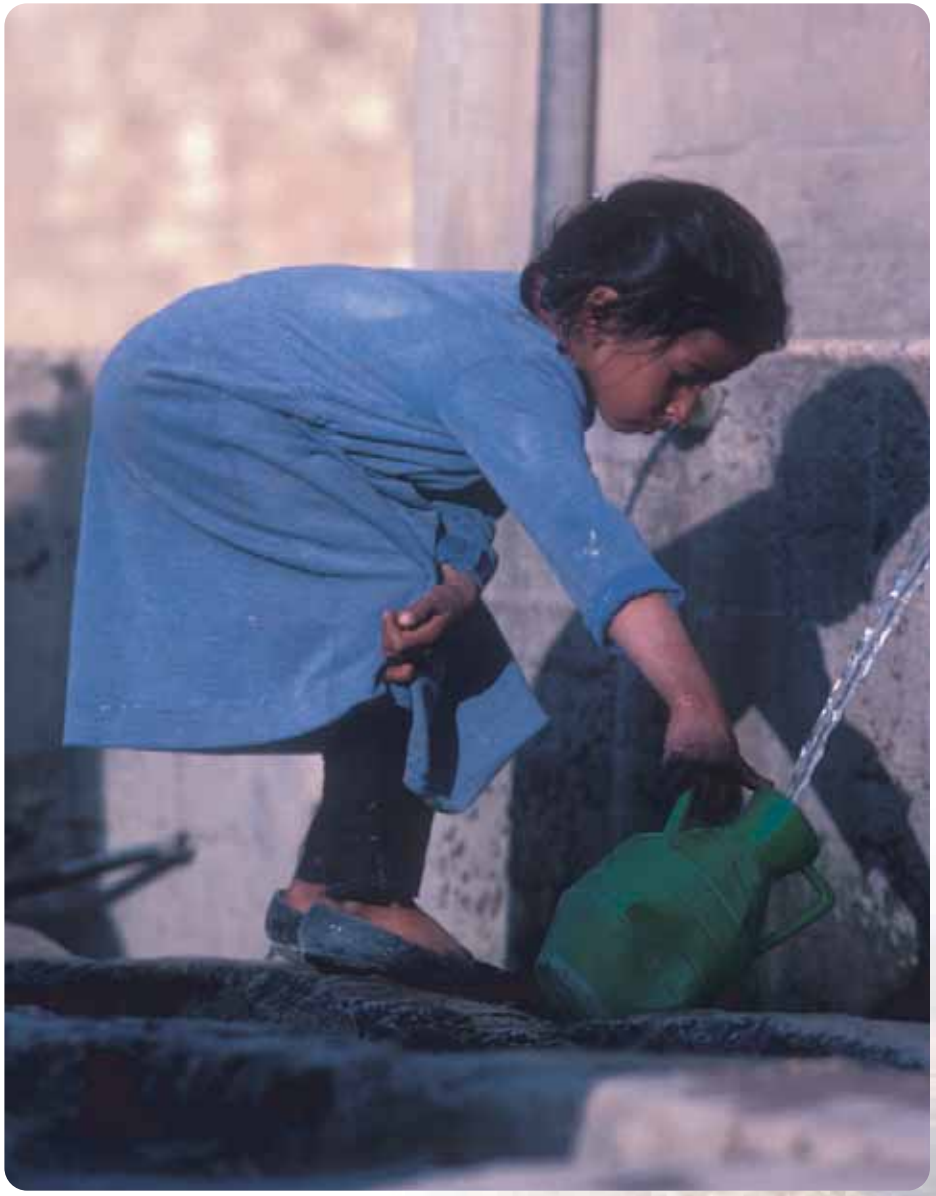
Jordan: Water is Life

Jordan has one of the lowest levels of water resource availability, per capita, in the world. Water scarcity will become an even greater problem over the next two decades as the population doubles and climate change potentially makes precipitation more uncertain and variable, particularly in this region. Management of water resources is therefore a key issue facing national government authorities. Increasing overall water extraction to meet demand carries a high cost; Jordan is now accessing non-renewable water resources from fossilized deep-water aquifers. Water quantity and quality also have major health and environmental impacts. Assessing those impacts against alternative water management and efficiency strategies, and in the light of policy costs and economic development issues, can optimize the use of a scarce resource.

The Process:
The initiative has brought together representatives from the Ministries of Planning, Water, Agriculture, Environment and Health respectively; science and research institutions; consumer/producer associations; and bilateral/international agencies such as USAID and UNDP. A core research group, facilitated by the WHO Regional Centre for Environmental Health Activities (CEHA) in Amman, is preparing a strategic environmental assessment of existing and planned water efficiency policies and various alternatives. The assessment considers linked environment and health impacts together with the economic valuation of health and environment costs and benefits. The review considers issues such as: differential pricing for water use in various sectors; education and awareness campaigns; relative allocation of water for economic production and domestic purposes; wastewater treatment and pollution control; and the agricultural use of purified sewage wastewater. A study group comprised of four teams of government officials and scientists has been formed to conduct the review. At the conclusion of the assessment process, recommendations will be presented to a stakeholder advisory group and before policy-makers, as well as at a WHO/UNEP cosponsored regional workshop hosted by Jordan and involving other countries in the Eastern Mediterranean Region.

"The challenge is to manage a most limited vital resource in a way that best responds to the growing needs, and nurtures the health of the next generation."

HELI Technical Advisory Group in Jordan.



Duncan Willets/Camerapix

An arid landscape, a growing population, and increased demand for water resources all make effective water management a critical issue for both health and environment in both Jordan and the region.

Duncan Willets/Camerapix

Thailand: Healthy Agriculture

Thailand is regarded as an emerging economy that has experienced rapid industrial growth. Nonetheless, 65% of the country's workforce is employed in agriculture -- ranging from the traditional rice sector to expanding export-oriented cultivation of products such as tropical fruits and cotton.

In order to boost agricultural production and efficiency there has been a marked increase in the use of more powerful agricultural chemicals, both herbicides and pesticides. Anecdotal evidence indicates an increased incidence of agrochemical misuse and occupational farm worker exposure, partly due to field workers' inadequate understanding of the acute toxicity and long-term health hazards associated with improper pesticide use. Marketing strategies that aim to maximize pesticide sales sometimes exacerbate these problems. At the same time, economic losses can occur if unacceptable levels of pesticide residues are found in produce designated for export.

The Process:
An environmental health impact assessment (EHIA) is being conducted for the use of agrochemicals. This is coordinated by the Thai Department of Health and the Health Systems Research Institute, in collaboration with the Thai Food and Drug Administration, Departments of Agriculture and Agricultural Extension, Office of Natural Resources and Environmental Policy and Planning and a range of civil society NGOs. The goal is to provide an evidence-based assessment of agricultural pesticides for sustainable agricultural development, from a health and environment perspective. This includes analysis of existing policies and legislation and the development of new national policy recommendations. Improved guidelines and tools and their pilot application at the local level also are part of the process. The assessment supports Thailand's own drive to mainstream and institutionalize health impact assessment as part of its sustainable healthy public policy. Findings will be presented at a national event and workshop cosponsored by WHO/UNEP and hosted by Thailand with regional participation.

"More efficient tools and methods for policy decision-making can help Thailand to cope efficiently with the threats that excessive agro-chemical utilization pose to the country's rapid development."

Senior health officer, Thai Department of Health

Life in a Thai field (above). Inappropriate or excessive use of agrochemicals is a linked health and environment issue in many developing regions, including Asia (background).

Uganda: A Herding Tradition & Modern Livestock Development

One of Uganda's south-western districts is sometimes referred to as the Switzerland of Africa, due to its meat and milk production's importance to the national economy and culture. Nationally, there is potential for developing the livestock branch with an aim to expanding trade. However, livestock development choices and management practices also have impacts on the environment and health. There are concerns about the possible human health impacts of exposures to chemicals and pharmaceuticals used to protect livestock from disease; these may enter food, soil and water supplies, the latter shared by animals and humans. There are long-term economic, health and ecological trade-offs between policies fostering the development of local and exotic cattle breeds. The local breeds are valued for their meat and are more resistant to vector-borne diseases, some of which affect humans. The exotic breeds require more chemical treatments due to their lower natural resistance, but typically produce greater quantities of milk. For this reason they are valued by poor households seeking to improve family nutrition or supplement income. Some of the chemicals used to treat livestock also are used in malaria control programmes, raising concerns about preserving long-term efficacy by managed use.

The Process:
The initiative has brought together key experts and policy-makers from nearly a dozen Ugandan institutions including the Ministries of Health; Agriculture; and Water, Lands and Environment respectively; the National Drug Authority; and academia. Four core teams are now undertaking an impact assessment of livestock management development options and agrochemical use, from an environment and health perspective. The topic was chosen by the Ugandan Ministry of Water, Lands and Environment, which is coordinating the project in consultation with a wide range of stakeholders. The assessment includes the first-ever series of government tests of chemical and pharmaceutical residues in animal products, soils, water and invertebrates. The data will be used to generate an initial profile of health and environmental risks, with technical support from WHO/UNEP. Analysis of current policies in the light of new and existing evidence can inform decisions on livestock branch development, public health, environmental management, economic development and poverty reduction. The HELI analysis parallels a UNEP-sponsored review of environmental issues related to Uganda's poverty reduction strategies and planning policies. When the assessment has been completed, the pilot project conclusions and recommendations will be presented at a WHO/UNEP cosponsored regional workshop hosted by Uganda for other countries in the African region. It is hoped that the findings will be used to position and steer Uganda's livestock industry to international markets, enhance implementation of multilateral agreements on chemical safety, health and environment, and contribute to achieving the Millennium Development Goals at the national level.

"Livestock: a hidden insurance for sustainable livelihoods."
Principal Environment Inspector,
Ministry of Water, Lands and Environment, Uganda.

Camerapix

Uganda's indigenous Ankole cattle are valued for their meat. Livestock production is an important economic activity in a number of Ugandan districts, including the country's south-western region (background) sometimes referred to as the 'Switzerland of Africa'.

Camerapix

ENVIRONMENT & HEALTH TOOLS FOR SUSTAINABLE DEVELOPMENT

Even in today's world of instant communications, delivering vital knowledge and evidence about environmental health problems, and potential solutions, into the hands of policy-makers remains a formidable political, organizational and logistical challenge.

The second thrust of the HELI initiative, complementing the pilot projects, focuses on better use of assessment tools and improved overall access to knowledge for effective environment and health decision-making.

A dynamic web-based portal and paper-based tool kit for communications and training are being developed, and will be constantly updated and enhanced. They include:

- policy briefs on priority environment and health issues describing cost-effective, environmentally-sound approaches to addressing vector-borne disease; indoor and urban air pollution; chemical hazards; water quality and sanitation; and climate change impacts;
- description of, and links to, data sources and instruments such as Geographic Information Systems (GIS), useful for environment and health assessment and monitoring;
- useful references for more information on priority issues and to existing UNEP/WHO resources;
- tools and guidance on carrying out impact assessment and economic valuation of linked health and environment issues.

Such resources also make reference to the broader range of evidence and assessment tools that WHO/UNEP have developed and are refining constantly. These include: environment and health monitoring frameworks, providing the data upon which evidence of problems and potential solutions may be based; environment and health standards and multilateral environmental agreements, which set baselines and goals to be achieved; tools for comparative risk assessment/burden of disease assessment for quantifying environmental hazards in terms of their impact on human life and health; case-study experiences describing good-practice interventions; environment and health indicators that track progress to the goal; and tools for impact assessment.

WHO/Photo

Measuring air pollution (above)**; testing water quality** (background).

WHO/Photo

Impact Assessment: A Bridge between Science and Policy-making

Whenever a policy decision is made, it can be presumed that decision-makers have made an **assessment** of potential impacts. But was this process formal or entirely informal? Was the relevant scientific evidence about environment and health reviewed publicly and systematically? Impact assessment is the process link in the chain between evidence and decision-making. Yet formal impact assessments are not conducted for many strategic policy decisions. At the project level too, impact assessment processes may fail to consider health and environment in a linked and inclusive perspective. More effective and systematic impact assessment was thus identified as an important priority for HELI, and for improving environment and health decision-making overall.

Over the past three and a half decades, a plethora of impact assessment methodologies have been developed. UNEP and WHO have supported the refinement and application of tools for environmental impact assessment (EIA), integrated assessment (IA), health impact assessment (HIA), and strategic environment assessment (SEA). Overall, there is increased recognition of the value of impact assessment methods that link sectors and disciplines more inclusively. By adapting existing methodologies so as to generate guidance that systematically takes account of health and environment impacts, HELI contributes to a more coherent assessment approach.

The review and guidance:

- is based on a global study by international experts in the field of impact assessment, synthesizing lessons and experiences from EIA and HIA as well as other assessment approaches. The review included interviews with decision-makers and practitioners, questionnaires to interested stakeholders and systematic literature review;
- addresses the general range of available impact assessment approaches and best practice for matching the approach with decision-making needs, priorities or frameworks;
- relates to both quantitative methods of analysis and qualitative methods (i.e. stakeholder dialogue) as an integral part of the assessment exercise;
- aims at being a practical tool to strengthen a decision-making process at country level that is transparent, inclusive, scientifically sound and benefiting from best practice experience.

As a bridge between science and policy-making, the assessment of linked health and environmental impacts can play a significant role in expanding the narrow focus and frequent shortcomings of sectoral assessment. It also ensures that the direct contributions of ecosystems to better health are duly captured in the decision-making process.

Peter Furu/Danish Bilharziasis Laboratory

Mid-level managers from health, environment, development, and planning sectors interview a fishing village resident in Lao PDR about the impacts of a nearby dam constructed three decades ago. Their findings will contribute to an impact assessment of new dams, now in the early planning stages. This health impact assessment exercise was part of a course conducted in 2003 by the WHO/FAO/UNEP Panel of Experts on Environmental Management for Vector Control (PEEM), in collaboration with the Danish Bilharziasis Laboratory and the Liverpool School of Tropical Medicine.

Economic Valuation: Using Numbers for Sensible Policy

Optimizing use of limited resources is one of the biggest challenges facing any decision-maker. Economic assessment is therefore a vital tool. It can enumerate the potential costs and value the anticipated benefits of a proposed programme, policy or regulatory initiative, and reflect trade-offs inherent in alternatives.

There is increasing recognition that environment and health impacts often require valuation in economic terms in order to receive adequate consideration in policy. An integrated economic analysis of such impacts can capture the hidden costs and benefits of policy options, as well as the synergies and institutional economies of scale that may be achieved through complementary policies that support sustainable development. For instance, the economic benefits to be derived from sustainable forestry practices may be considerable when impacts are analysed as part of a comprehensive policy package; this would relate not only to issues of employment and poverty reduction, but also to the long-term environmental and economic impacts of forest maintenance or depletion, as well as to the health costs of diseases associated with deforestation.

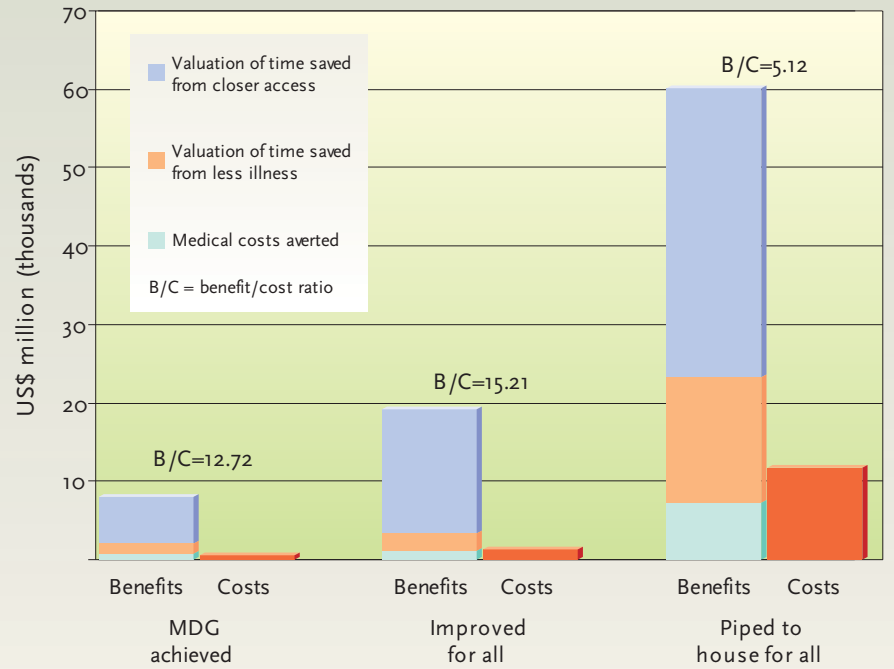
A key element of the tool kit, therefore, is a review of issues related to the economic assessment of linked environment and health impacts, as well as guidance for conducting such assessments.

The HELI exercise builds upon UNEP and WHO's ongoing work on methods for quantifying the environmental impacts of a particular policy, on the one hand, and population health impacts on the other *(3,22)*. While the work in this initiative focuses specifically on economic evaluation and valuation, guidance for estimating the burden of disease from environmental risks such as air pollution, poor water and sanitation, etc. is highly relevant to any economic exercise, and will be disseminated in the framework of the broader range of resources available through HELI *(23,24)*.

The review and guidance on economic assessment is the product of a joint effort between a number of leading international experts in health economics and environmental economics.

"The political agenda in our country is called the 'economic catching up process.' This causes a significant bias towards short-term economic interests rather than long-term development. The more intense the political competition, the greater the need for politicians to define their specific political agenda as a 'faster catching up process' than that of other political parties. In this situation, the only successful way to promote healthy public policy is to show how the economy can gain from protecting health and environment."

Economist and research coordinator, Health Systems Research Institute, Thailand (2).



Rob Barnes 2004

Based upon data in: Hutton, G. & Haller, L. (2004). Evaluation of the costs and benefits of water and sanitation improvements at the global level. WHO Report WHO/DSE/WSH/04.04. WHO, Geneva, 2004.

Annualized costs and benefits for achieving either *(1)* the Millennium Development Goal (MDG) for water and sanitation, *(2)* improved water supply and sanitation for all, or *(3)* piped water supply and sanitation for all, throughout the AMR-B region of Latin America, by 2015. Benefits outweigh costs for all interventions; the highest benefit-cost ratio is achieved through improving water supply and sanitation for all, but the greatest net benefit is acheived by supplying piped water and sanitation to all houses.

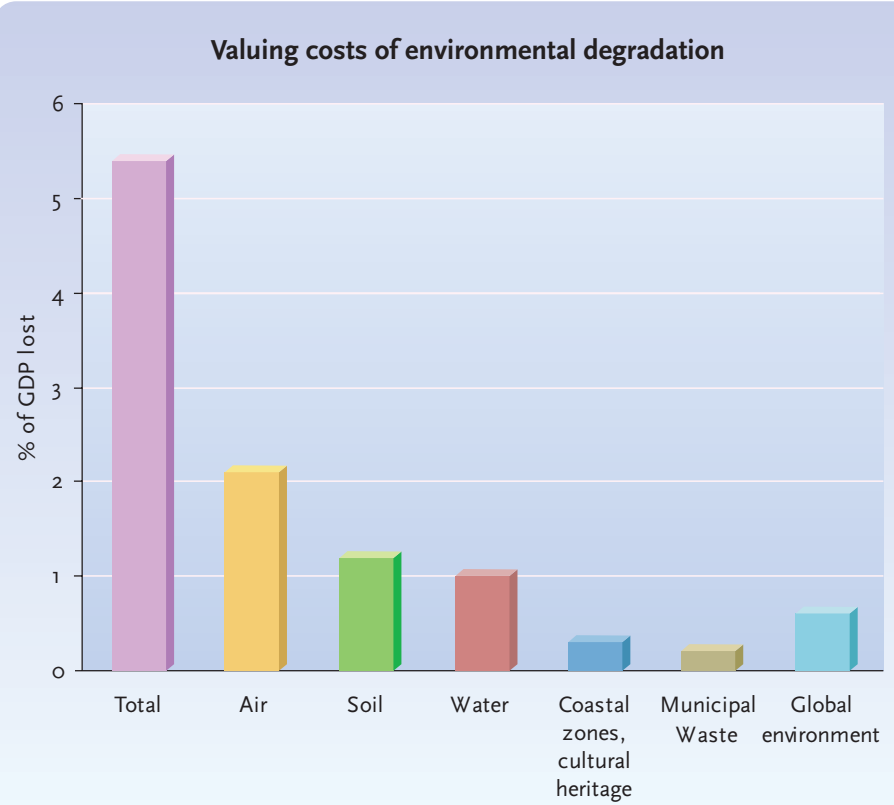
WHO/Photo

It describes how the evaluation and valuation of ecosystem integrity or degradation can be linked to the quantification and valuation of specific health outcomes, and describes the steps normally required to carry out systematic economic analysis. The guidance describes issues to be considered in the choice of tools such as cost-benefit and cost-effectiveness analysis. In addition, the review underlines the importance of analysing the distribution of costs and benefits of any intervention strategy across different socioeconomic groups. The guidance is not prescriptive; rather it outlines the range of options and methods that may be used in the conduct of a linked economic analysis of environment and health impacts in various policy contexts.

The ways in which economic analysis of environment and health may be integrated into broader plans or programmes, such as poverty reduction strategies, is another topic covered. Economic instruments also are important in financing and supporting successful environment and health policy implementation; the use of instruments such as taxes, subsidies, user fees and market-based instruments (e.g. emission taxes), is thus examined. Case-study examples illustrate some of the successes and failures of their application in real country situations.

Rapid & Participatory Economic Assessment

Economic tools may be highly sophisticated, using numerous variables and equations to model an entire economy's performance. However, there are experiments in *rapid and participatory* economic assessment, at the community and household level, which potentially could support better grass roots environment and health decisions. In Thailand, farmers have used rapid methods of economic valuation to assess the benefits and costs of adopting more sustainable agricultural practices such as integrated pest management. In Uganda, a rapid participatory approach to valuation of the health benefits expected from sanitation improvements has been piloted. A WHO health team visiting a village worked with local leaders at a lunch-time meeting to perform such a rapid assessment, estimating the value of the work-hours that an average household might lose due to sanitation-related intestinal disease, and the cost of treatment and medications. This analysis took only a couple of hours and prompted the leaders to give greater priority to sanitation improvements. Such methods have the potential to be more useful to local decision-makers in certain situations than highly formalized valuations costing more in money and time.



Based upon data in: Larsen, B., M. Sarraf and G. Pillet. (2002) Cost Assessment of Environmental Degradation in Egypt, The World Bank / METAP, Report Number 25175-EGT.

Estimated percentage of GDP lost to environmental degradation in Egypt in 1999. Approximately 2/3 of these costs are from the health effects of degraded environments.

INTEGRATION

Some impacts of a policy on environment, health and human well-being cannot be quantified or valued in terms of money or numbers. In many developing countries basic environment and health data may be missing or incomplete, making quantitative assessment a difficult task from the outset. Social values and perceptions of risk and well-being also influence the manner in which many stakeholders assess the potential impacts of a policy.

In the HELI process, UNEP and WHO highlight the importance of integrating disciplines and approaches on a number of levels:

- linked assessment of policies' impacts on health and ecosystems, and linkage of tools for impact assessment and economic analysis;
- reference to the social sciences as integral to an analysis of environment and health impacts, alongside the physical sciences and economic disciplines. This requires the use of impact assessment methods that are inclusive and reflective, not only of expert opinion but also of a broad, validating dialogue among politicians, the public and experts;
- integrated use of environment and health data for policy assessment, to optimize the present day use of existing evidence, alongside long-term improvements in monitoring, collection and reporting of indicators.

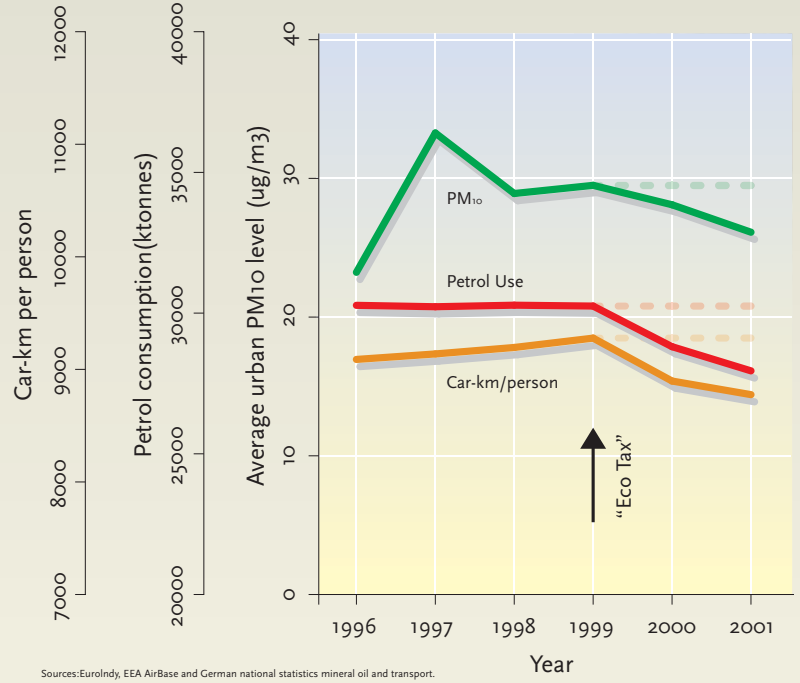
Finally, the integration of ecosystem approaches to environment and health in mainstream policy-making requires not only the linkage of health and environment in the assessment process, resourceful use of evidence, and judicious use of qualitative and quantitative tools – but also the appropriate enabling conditions. Such conditions are created when there are effective legal and civil society institutions and frameworks to support policy implementation. In many developing countries such supportive legal and social institutions may be weak, despite the deeply felt desire for change that exists at the grass roots and, indeed, among many policy-makers. Strengthening such institutions is a challenge that needs to be addressed jointly by country-level policy-makers, international institutions and civil society.

The importance of taking a **multidimensional approach** to the implementation of more effective environment and health policies is thus a theme running throughout the entire HELI initiative.

"The lack of quantification and valuation of EH hazards prevent any dialogue on the issue. It's when you put a figure on the environmental health burden of disease that you can talk with decision-makers especially the Ministry of Finance. In addition, in the countries where we are working, EIAs are mainly used for donor-funded development projects with little attention to economic valuation. CEA and CBA are not used for health and environment-related projects. Both tools are complementary, and should be internalised in development work."

Economist, consultant to the World Bank (2).

Eco-taxation: an integrated profile of impacts



Sources:EuroIndy, EEA AirBase and German national statistics mineral oil and transport.

Based upon data in: Environmental health indicators for Europe: a pilot indicator-based report. Copenhagen, WHO Regional Office for Europe, June 2004. (E82398 p.14) (http://www.euro.who.int/document/E82398.pdf)

Rob Barnes 2004

Integrated reporting of just a few key indicators can help decision-makers to evaluate the health and environment impacts of their policies - in this case, a differential "eco-tax" system for vehicle fuels introduced in 1999 by the German Government. Since the measure was put into effect, per capita car travel has declined nationally and previously static petrol use has fallen slightly. Though more difficult to interpret, the average urban concentration of small particulates (average urban PM_{10}/m3 weighted by the city's population), also shows some signs of reduction.

UNEP/topham

"At a local level, people in communities do not think or act in 'sectoral' ways. Issues they face in health, agriculture, transport, environment, water, food are seamless and relate one to the other. It is antithetical to their way of living and working to constantly come up against the wall where they are told 'that is dealt with by the health sector' or 'you will have to wait until the agricultural extension office comes to the village'. What we offer to communities needs to reflect their own reality. Hence the need for holistic, integrated approaches and actions."

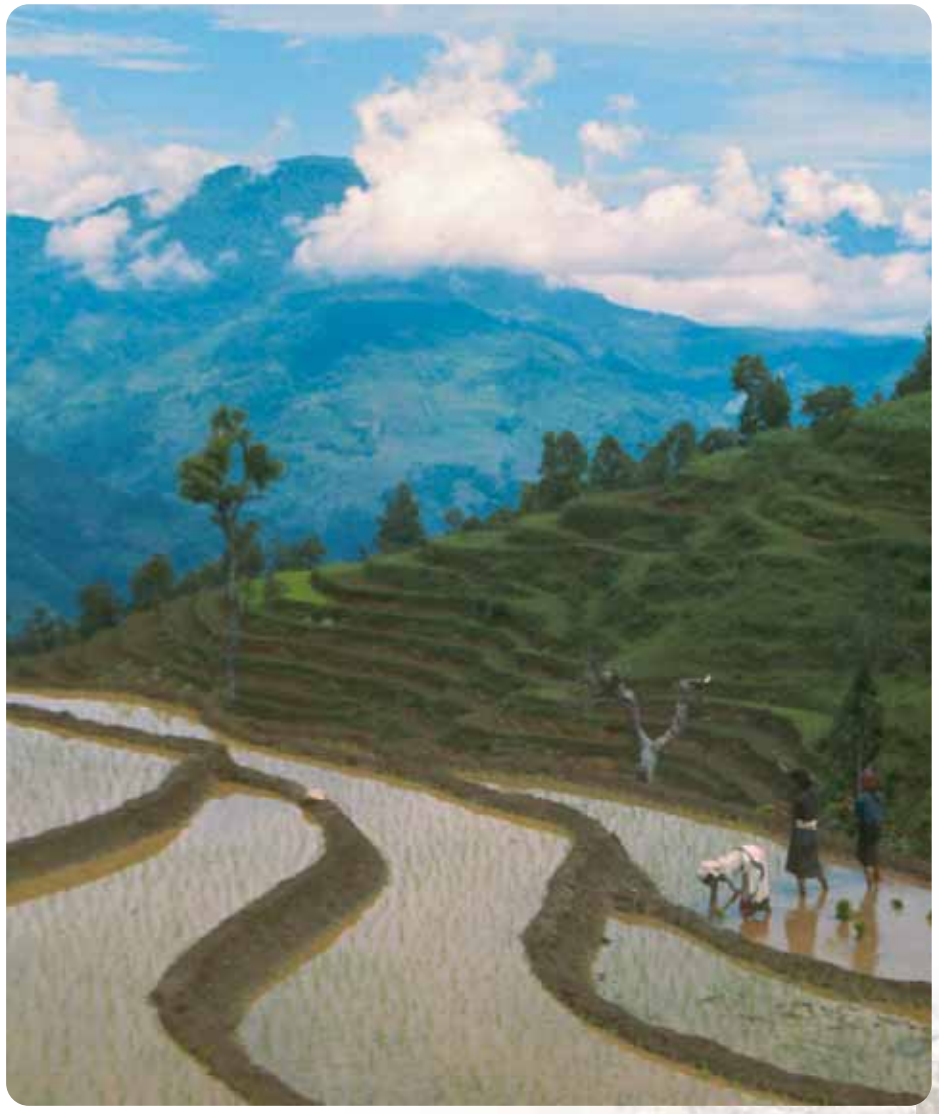
WHO officer, Healthy Environments for Children Alliance Secretariat, Sustainable Development and Healthy Environments, Geneva (2).

Case Studies of Integrated Policies

When New York City's water quality was threatened by increased bacterial and agricultural pollution, an economic valuation estimated that a managed ecosystem approach to the protection of the Catskill Mountain watershed could restore the natural filtration mechanisms protecting the city's water quality and health - at about one-sixth of the cost of a modern water filtration plant. The City of New York chose to adopt this approach, financed by new user fees for water and a package of economic incentives for Catskill landowners and communities to employ better land use management.

Those measures were effective because they were supported by **legal tools**, permitting the state to control land use in the watershed area, alongside **social action** that raised awareness about the importance of watershed protection.

In Thailand also, economic valuation studies have documented the long-term economic advantages to be gained from sustainable land use and sustainable agriculture. However, the absence of **legal tools** (e.g. systematic land use zoning, application of land taxes, land tenure rights) and the lack of **public awareness**, still impede the implementation of better land use policy for environment and health goals -- **even when the economic evidence is available** *(25)*.



FAO/10723/P. Gigli

Integration and disintegration: Terraces are an ancient and ecologically sound method of preventing soil erosion. Properly maintained and drained, terraces also benefit human health by facilitating cultivation and irrigation in hilly and dry regions (above)**. Contamination of both rural and urban watersheds by modern-day chemicals, sewage and solid waste leads to ecosystem degradation and health impacts** (background)**.**

UNEP/topham

MOVING AHEAD

Even in the poorest countries and settings, there is much scientific knowledge about critical environmental hazards and their impact on health. The social, environmental and economic costs are increasingly well-documented. The key challenge is to **harness** this knowledge to policy definition and action in situations where many other issues compete for attention.

Significant progress has been made in countries of some regions, particularly the Americas and Europe. Regional processes of dialogue between ministers of health and environment have been launched or are well-established, and collaboration between initiatives such as HELI and those processes could yield many fruitful synergies. But in most countries around the world there is much more to be done to ensure the mainstreaming of environment and health considerations into all government sectors and economic endeavours.

> **"The data, knowledge, skills, and capacity needed for making and implementing decisions are important, but they are not all that difficult to mobilize. The key barrier is governmental."**
>
> *Senior Director, International Policy Initiatives, Center for Conservation and Government, Conservation International (2).*

The first phase of the WHO/UNEP HELI initiative has generated significant interest in developing countries, as well as the international and bilateral agencies that support development. The main focus of a second phase of the HELI initiative will be to sustain, refine and expand the approach with existing and potential developing country partners. This means support for the implementation of recommendations emerging from the first round of projects and the initiation of pilot projects in other countries. These new projects should take place in diverse regions of the world and support intersectoral assessment and action, particularly at national and local levels, on a range of traditional and emerging environment and health issues (e.g. urban transport and sustainability; ecosystem changes and emerging diseases; indoor air pollution; water quality and sewage contamination). Evaluation and feedback on the results obtained in the first round of pilot projects should facilitate creative cross-fertilization of knowledge, south-south learning opportunities and the application of successful approaches elsewhere.

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A child and a tree

UNEP

Air and earth

The second phase also will include investment in the further refinement of decision-support methods and better use of environment and health decision-making tools, such as economic valuation and impact assessment, particularly for use in poorly resourced settings. Finally, advocacy and communication strategies should capitalize on the initial investment in developing HELI, and ensure that the approach and its products are applied, debated and refined.

Shrewd entrepreneurship in the private sector capitalizes on the investment in new products and approaches with systematic marketing and distribution alongside continuous learning and fine-tuning. Similarly, sustained investment by international institutions, developing country governments and donors sends an important message to policy-makers internationally and at country level:

It is only by addressing health and environment issues together that the real value of each can be fully appreciated.

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[1]Notes: Mortality rates from malaria, diarrhoea and unintentional poisonings are derived from estimates of annual deaths by cause, age and WHO subregion in 2002, cited in the World Health Report 2003 *(6)*. Mortality from indoor air pollution is derived from attributable mortality by risk factor and age group, for the year 2000, cited in the World Health Report 2002 *(3)*. Mortality from road traffic accidents is derived from the World report on road traffic injury prevention *(7)*. Proportion of deaths among pedestrians in poor countries is from Nantulya VM, Reich MR. "The neglected epidemic: road traffic injuries in developing countries" *(8)*. Reference to "developing countries" refers to region and mortality stratum as defined in the World Health Report 2003.

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(pages 22-23): UNEP / Nuntawan Silp (drinking water); © John Maier, Jr. /The Image Works (Curitaba Brazil: bus); Yuri Abramochkin/UNEP (summer in the fields); TopFoto.co.uk (Guangzhou street scene); FAO/10723/P.Gigli (terraces in India)

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