Environment, Health, and Poverty

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Every year in developing countries, an estimated 3 million people die prematurely from water-related diseases, and 2 million people die from exposure to stove smoke inside their homes. Most of the victims—infants and young children, followed by women—are from poor rural families that lack access to safe water, sanitation, and modern household fuels. Over 1 million people die annually from vector-borne malaria, with the vast majority of deaths occurring in poverty-stricken Africa. Another million people die from urban air pollution, and there is reason to believe that the urban poor suffer most.

It has long been recognized that the environment in which people live—from the household to the community to the global level—significantly affects their health. Many environmental policies and regulations are motivated by public health concerns. Until recently, however, the actual magnitude of health impacts from exposure to various environmental risks and the relative contributions of these risks were not known. Recent estimates, based on the Global Burden of Disease studies, suggest that premature death and illness due to major environmental health risks account for one-fifth of the disease burden in the developing world—comparable to the toll from malnutrition and larger than the burden from other preventable risk factors and groups of disease (Murray and Lopez 1996). Yet these environmental risk factors contribute less than 5 percent of the disease burden in rich countries, despite much higher levels of urbanization, industrial development, and energy consumption—all of which are usually associated with environmental pollution and health problems. It is true that general health status is better in rich countries; the total burden of illness and death from all causes per million people is about half that in developing countries. Still, the disease burden from environmental risks in the rich countries is smaller by a factor of 10 than in developing countries (see Figure 1).
This underscores the basic, although often overlooked, fact that although growth in industry, power generation, transport, and other attributes of economic development brings new environmental challenges, the largest environmental threats to human health stem from poor living conditions traceable to lack of development and growth.

Environmental health risks, can thus be grouped into two broad categories:

- **Traditional hazards related to poverty and lack of development**: lack of safe water, inadequate sanitation and waste disposal, indoor air pollution, disease vectors (such as malaria), and so on.

- **Modern hazards caused by development without environmental safeguards**: among them are urban (outdoor) air pollution and occupational and other exposure to agroindustrial chemicals and waste.

Traditional environmental hazards affect developing countries and the poor most. Their impact exceeds that of modern health hazards by a ratio of 10 for Africa, 5 for Asian countries (except China), and 2.5 for Latin America and the Middle East (see Figure 2). *Waterborne diseases* caused by inadequate water supply and sanitation impose an especially large health burden in Africa and in the Asia and Pacific region. In India alone, each year more than 700,000 children under age 5 die from diarrhea. More than half of the world's households cook and heat using unprocessed solid fuels, particularly biomass (crop residues, wood, and dung) in inefficient stoves without proper ventilation, exposing people—mainly poor women and children—to high levels of indoor air pollution (see Box). About half of all these deaths—nearly 1 million—occur in India and China. *Vector-borne diseases*
LACK OF MODERN HOUSEHOLD ENERGY THREATENS
THE HEALTH OF POOR WOMEN AND CHILDREN

Biomass is the energy source of the poor. When traditional biomass fuels—mainly, wood, straw, and dung—burn in simple cookstoves during meal preparation, air inside homes becomes heavily polluted with toxic smoke. Exposure to biomass smoke increases the risk of acute respiratory infection (ARI) in children under five years of age. Children in The Gambia who were carried on their mothers' backs while the women cooked over smoky stoves were six times more likely to develop ARI than unexposed children. In Nepal the incidence of moderate and severe cases among two-year-olds increased as they spent more time near the fire. A study in Tanzania found that children younger than five years who died of ARI were almost three times more likely to be sleeping in a room with an open cookstove than healthy children in the same age group.

Studies in South America and India have shown that exposure to indoor air pollution severely reduces lung function in children. Exposure to high indoor smoke levels is associated with pregnancy-related problems such as stillbirths and low birthweight. Studies in Colombia, India, Mexico, Nepal, and Papua New Guinea show that non-smoking women who have cooked on biomass stoves for many years exhibit a higher prevalence of chronic lung disease (asthma and chronic bronchitis). Eighteen percent of blindness in India is attributed to the use of biomass fuels.

The detrimental health effects of traditional biomass energy go beyond exposure to harmful smoke. In Nepal rural women are so busy with their daily chores that they are forced to give local beer to children to keep them quiet as they gather fuel and feed the stoves. Nepalese women suffer a high incidence of uterine prolapse that is likely the result of carrying heavy loads of wood soon after delivery. In rural India women spend six hours a day collecting fuelwood and fodder and cooking. In some areas this extreme physical drudgery causes serious reproductive problems and mental disorders in women.


are affected by a range of environmental conditions and factors, including polluted and standing water, open sewers and certain types of sanitation, clogged storm drains, and floods. In Africa alone, malaria is responsible for about 800,000 deaths annually. A study of environmental health in the Indian state of Andhra Pradesh found that the burden of disease from traditional risks falls disproportionately on the poorest 40 percent of all households. At the same time, environmental health outcomes show significant variations that cannot be simply explained by households' economic status and hence reflect indicators of human development other than the income measure alone.

Conversely, modern threats to human health prevail in industrial countries that have managed to drastically reduce their citizens' exposure to traditional environmental hazards. What is further worrisome is that the contribution of modern environmental risks to the disease burden in most developing countries is similar to—and in quite a few countries greater than—that in rich countries (see Figure 2). Urban air pollution, for example, hits its highest levels in China, India, and a number of cities in Asia and Latin America. The urban poor bear the brunt of air pollution: they often live in densely populated neighborhoods where dirty household fuels are used and where garbage is burnt nearby and that are close to traffic corridors or industries, and they travel in open vehicles or walk and spend a great deal of time outdoors. Thus, the poor of this world are increasingly experiencing the “double burden” of both traditional and modern environmental health risks.

This all makes environmental health yet another dimension of the multifaceted nature of poverty. The linkages between poor environmental health and other dimensions of poverty are complex and multiple, reinforcing each other in various ways. Poor people typically face greater environmental health risks in their surroundings because of lack of basic infrastructure services and unhealthy locations (such as low-lying and marginal lands); they are more vulnerable to these risks due to their constrained ability (given insufficient education and information, daily drudgery and hardship, and so on) to adjust their behavior to moderate exposure; and they are most susceptible to these exposures because of the simultaneous effect of several factors (for example, exposure to indoor smoke and waterborne pathogens), exacerbated by malnutrition and inadequate health care.
**Future Trends**

Urbanization is a major factor in Africa, Asia, and Latin America that is changing the landscape of environmental health concerns and posing significant new challenges. Rapid urbanization and the uncontrolled growth of urban slums increases the double burden for the urban and semiurban poor, adding risks associated with modern transport and industrial pollution to exposure to dirty cooking fuels, primitive stoves, crowding, and poor access to water and sanitation. In some parts of the world malaria is becoming an urban issue, in part due to infrastructure failures. Climate change is likely to worsen this situation, and globalization and liberalization of trade may exacerbate the transmission of some diseases.

**Search for Solutions**

While the environmental challenges of development and globalization require concerted action, the much higher environmental health costs of living in poverty and lacking basic infrastructure and other services must not be neglected. Policies and actions that address both types of health damage synergistically are the best options. They include policies that promote strong growth and good governance structures, capable of safeguarding the environment and responding to the needs of the poor. Tradeoffs are sometimes inevitable and should be made with a full understanding of the resulting net health impacts.

Better infrastructure and energy services for households and communities are key measures for mitigating the most daunting environmental risks to health; others are improved housing and vector-control interventions, effective health care systems and equitable education policies. In Sub-Saharan Africa, for example, improvements in water and sanitation, household energy, housing, vector control, and pollution management could prevent up to 29 percent of the total burden of disease, and health sector interventions targeted at the same disease clusters could reduce this burden by a further 28 percent.

In India, provision of water supplies to rural households ranks among the most cost-effective preventive health interventions. Reducing modern risks calls for pollution prevention and abatement measures, which in turn require setting and enforcing environmental standards, developing a culture of environmental compliance, and creating effective incentives. Given severely constrained government resources and the multitude of pressing social needs in developing countries, mobilizing private sector investments and initiatives—for financing infrastructure and improving service delivery in urban and rural areas within a sound regulatory framework that includes environmental safeguards—is vital for achieving these goals.

The environment-health nexus highlights that improvements in people’s health require a holistic, multisectoral approach to mitigating major risks by integrating cost-effective efforts into infrastructure and human development areas and building effective institutions at all levels of governance, including communities themselves. A holistic approach is particularly important for improving the health of the poor, who are most vulnerable both to the main environmental hazards and to deficiencies in health services delivery. The World Bank Environment Strategy, developed in extensive consultation with various stakeholders in client countries, other donors, and international NGOs, considers environmental health a top priority and calls for a greater focus on this principal development outcome in Bank operations across all relevant sectors.

**References**


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The Environment Strategy Notes series aims to provide a forum for discussion on a range of issues related to the Environment Strategy, to help the transfer of good practices across countries and regions, and to seek effective ways of improving the Bank’s environmental performance.

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