

CHAPTER 8

Climate Change, Air Pollution, and the Environment: The Health Argument



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Summary There are no aspects of climate and environmental change that are more critical than those that affect health and well-being, and none are more urgent than those that affect the most vulnerable. Air pollution and climate change fit both these categories, and now rank among our greatest contemporary threats to human health.

This is what we know: 92% of the global population breathes air pollution levels that are unsafe. More than seven million lives are lost to indoor and ambient air pollution every year. The major sources of air pollution are the combustion of fossil fuels, the burning of biomass, and agriculture. Global health and welfare losses from air pollution in 2013 were valued at about US \$5110 billion, or almost 7% of gross domestic product. However, there is no policy realm in the world that regularly takes into consideration the potential costs and benefits to public health of all decisions, even those that directly produce health-influencing externalities.

Health should be central to discussions around drivers of environmental degradation, such as production methods that pollute, deleterious consumption, distribution patterns and disruption of ecosystems. Moreover, the attainment of health should be promoted as an explicit aim, rather than an afterthought, of decisions in key sectors such as energy, transport, technology, water and sanitation, and urban planning. The health sector must show leadership and work with other sectors to assume its obligations in shaping a healthy and sustainable future. The effects of human actions on the environment are an ethical and human rights issue; they will be felt by future generations and have the most severe impact on the most economically, demographically, and geographically vulnerable populations.

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At this point in history, no decision-maker can claim to be ignorant of the adverse health consequences of environmental degradation. Together, we have a major responsibility to drive the transformation needed to make radical changes in policies and behaviors—while there is still time.

Air Pollution: A Major Killer

Known, avoidable environmental risk factors cause at least 13 million deaths every year, which amounts to one quarter of the global burden of disease (Fig. 8.1) Air pollution alone causes about seven million premature deaths a year, or one in eight



Fig. 8.1 (a) The big picture: 23% of global deaths are attributable to the environment (Source: WHO Infographics, Preventing disease through health environments; http://www.who.int/quantifying_ehimpacts/publications/PHE-prevention-diseases-infographic-EN.pdf?ua=1)

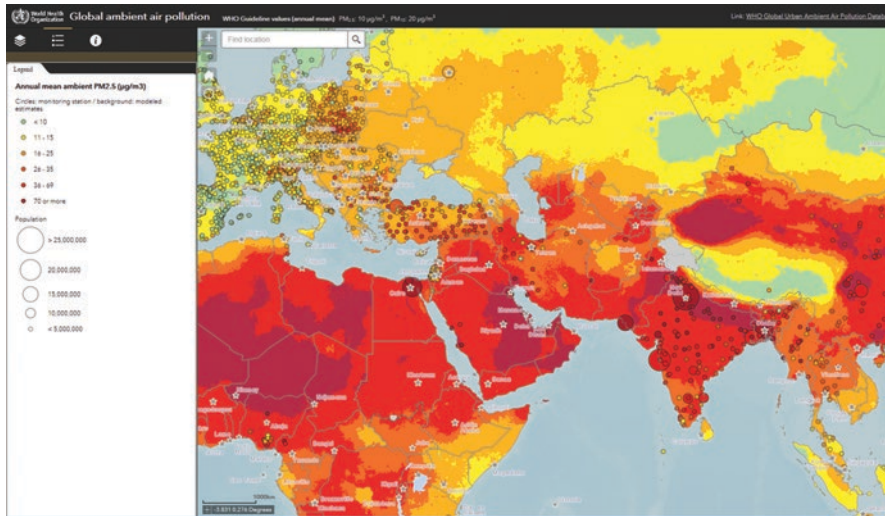


Fig. 8.2 (a) Air pollution: 92% of the global population breathes air pollution levels that are not safe. *Source:* Global interactive map of ambient air pollution (<http://maps.who.int/airpollution/>)

of all deaths, placing it among the top global risks to health. The poorest three billion people are exposed to indoor air pollution due to cooking and heating homes with solid fuels (coal, firewood, and dung and crop residues). Close to four million people die prematurely from illnesses attributable to household air pollution from inefficient cooking practices using polluting stoves paired with these fuels and kerosene. This is an unbearable cost in lives, health, and human development, particularly for the poor (Fig. 8.2).

There is more evidence than ever before about the direct and indirect paths through which a stable and protected environment maintains human health—and, conversely, how failure to manage climate and environmental risk factors are contributing to both communicable and noncommunicable diseases among all populations, from the poorest to the richest. We also have a wealth of evidence on effective interventions to address many of the root drivers of the environmental determinants of health, including action at the local level.

Countries are facing a combination of longstanding, unresolved environmental and health challenges, as well as new ones. These include a lack of universal access to clean household energy; limited access to safe water and sanitation; and consequences from unsustainable development, such as air, water and soil pollution; exposure to hazardous chemicals; more complex, chronic and combined exposure in working and residential settings; ageing infrastructure; stagnating environmental health progress; and increasing inequalities, in all countries.

These challenges result in a triple burden of environmental risks, which include the direct impacts of emergencies, persistent and—in some cases—expanding infectious disease risks, as well as noncommunicable diseases. For noncommunicable diseases, environmental risk factors are now of a comparable magnitude to other well-established risks (such as tobacco consumption, diet, alcohol consumption, and physical inactivity).

Human influences on the global environment continue to grow, and they contribute to climate change, which is considered to be potentially the greatest threat to global health in the twenty-first century. Many countries already suffer significant loss of life and damage to crucial health infrastructure from extreme weather events. These conditions threaten to undermine gains in health and development, and may exacerbate migration and increase social and political tensions within and between countries. In the absence of strong measures to cut carbon emissions and protect populations from the effects of climate change, rising sea levels will submerge extensive and densely populated coastal areas, including some entire small island nations, by the end of this century.

Although the paramount concern is to protect human lives and ensure well-being, environmental degradation also exacts large economic costs from the health sector. Global health and welfare losses from air pollution in 2013 were valued at about US\$5110 billion, or almost 7% of gross domestic product. Approximately 10% of global gross domestic product is now spent on health care, driven increasingly by the costs of treating noncommunicable diseases. Failure to manage environmental risks therefore increases the strain on health services and national and household budgets.

The Public Health Response to Climate and Environmental Change

The responsibility and tools to tackle many environmental determinants of health lie beyond those of individuals or the health sector alone. Therefore, we need a wider societal, intersectoral, and population-based public health approach.

A wealth of evidence demonstrates the health impacts of individual exposure to hazards in the environment, for example, to specific chemical or biological contaminants in water. At the same time, there is also strong evidence for the cost-effectiveness of many interventions, from small-scale (e.g., point-of-use water treatment) to large-scale investments (e.g., in sanitation infrastructure).

There have been notable successes in applying such evidence to intersectoral policy. Examples range from removing lead from petrol in many countries to controlling the depletion of the ozone layer and the associated health risks of ultraviolet radiation through the application of measures set out in the Montreal Protocol on Substances that Deplete the Ozone Layer (1987).

In dealing with environmental, climate and other determinants of health, the World Health Organization (WHO) promotes a Health in All Policies approach, including coverage of health in environmental and labor regulations and safeguards, assessment of the health impact of development projects, and tackling several environmental health issues in a single setting, community, or system.

Numerous examples of good practice are available, but such integrated approaches are quite rare and are seldom directed to “upstream” environmental and social determinants, such as more sustainable and equitable resource consumption, climate stabilization, and protection of biodiversity and ecosystem services. This

patchy application of integrated approaches drives exposure to hazardous health conditions.

Additionally, many environmental risks to health are interdependent and trans-boundary in nature. These include the transfer of polluting industries, dangerous work processes, and hazardous waste to poorer and less regulated countries; trans-boundary air pollution and radiation risks; and the burning of fossil fuels that drives global climate change. This transfer and extension of risk is occurring against a background of decreased direct investment and a trend of environmental deregulation for some national governments, and an increasing influence of diverse, often politically and economically powerful, multinational, private-sector actors.

At the same time, there is continuous demand for more commonly recognized “downstream” environmental health interventions to deal with the direct and local effects of environmental risks to health—most obviously in the case of responding to emergencies, which can in turn result in or be caused by environmental degradation.

The persistent burden of environmental disease and the evolving range of risks clearly call for a strengthening of primary prevention. A massively scaled-up primary prevention strategy will enormously benefit the health sector and make significant, vital contributions to sustainable development. In fact, it would be a challenge to achieve the 2030 Sustainable Development Agenda without rebalancing the emphases on prevention and healthcare.

Currently, the average engagement of the health sector decreases rapidly. The 97% of global health resources spent on treatment are applied only to the health *effects* at the end of the causal chain. Most of the remaining 3% spent on prevention is applied to addressing specific *exposures* at the individual level.

In order to address the root causes of disease, the health sector needs to engage more effectively to influence decisions that have impacts on the upstream determinants of health. Rather than attempting only to deal with the fallout of having not taken environmental health risks into consideration after the fact, the health sector should aim to reclaim its role at the heart of environment and development policies. We need to ensure that interventions that drive climate and environmental change take account of health considerations.

Bolstering this approach is a growing recognition of opportunities for “co-benefits” of measures that simultaneously protect health and the environment. For example, it is estimated that doubling the share of renewable energy by 2030 would not only reduce air pollution-related disease but also create 24 million jobs and bring a global GDP increase of 1.1%. In another example, improving water and sanitation services benefits public health, increases labor productivity, and reaps an estimated return of between US\$5 and 28 per dollar invested. Well-designed policies can maximize synergies and co-benefits: tackling local air pollution to cut greenhouse gas emissions will reduce the economic burden of health problems.

We need to promote more efficient, equitable, and sustainable delivery of Universal Health Coverage, with the reduction of environmental impact of healthcare as a co-benefit, and as an example of the leadership of the health sector.

The health sector should take the opportunity to “lead by example” by promoting environmental sustainability within its own operations, ensuring environmentally sustainable healthcare facilities.

Healthy Opportunities

If implemented and built on, the Paris Agreement on climate change is likely to be remembered as one of the most important public health treaties in history. The public health community should now join forces with the environment community to take the lead in ensuring the Agreement is implemented and increasingly ambitious, and open the door to a green health revolution.

The Paris Agreement should also inspire new and improved agreements to address other threats to global health and well-being, including threats from air and water pollution, waste mismanagement, soil degradation, and diminished biodiversity. In the absence of such agreements, environmental threats to health and well-being are unlikely to be contained.

The 2030 Agenda for Sustainable Development and its associated Sustainable Development Goals provide the integrated framework for the ambitious changes needed to fulfill the commitments made. The Goals and their targets provide the structure to identify and implement actions to safeguard and enhance the upstream determinants of health, and to follow a sustainable pathway to improved, and more equitably distributed, health and well-being.

Health is relevant to all the Goals, not just Goal 3 (Ensure healthy lives and promote well-being for all at all ages). Within the scope of environmental and climate change, there are specific and important opportunities for health gains through shaping the agenda of nutrition (Goal 2, End hunger, achieve food security and improved nutrition and promote sustainable agriculture); water and sanitation (Goal 6, Ensure availability and sustainable management of water and sanitation for all); clean energy (Goal 7, Ensure access to affordable, reliable, sustainable and modern energy for all); decent work (Goal 8, Promote sustained, inclusive and sustainable economic growth, full and productive employment, and decent work for all); sustainable cities (Goal 11, Make cities and human settlements inclusive, safe, resilient, and sustainable); responsible production and consumption (Goal 12, Ensure sustainable consumption and production patterns); and climate change (Goal 13, Take urgent action to combat climate change and its impacts).

The Goals therefore provide an opportunity for the health sector to engage in broad, inclusive and massively expanded primary prevention, effectively bringing together Principle 1 of the Rio Declaration on Environment and Development (1992) (“Human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature”) and Article 1 of the Declaration of Alma-Ata (1978) (“... the attainment of the highest possible level of health ... requires the action of many other social and economic sectors in addition to the health sector”).

Increasingly, much of this action and many of these decisions will occur in urban settings. Over 50% of the global population now lives in cities, and that number is growing. More than 3.5 billion people living in cities today—half of humanity—suffer from inadequate housing and transport, poor sanitation and waste management, and air quality failing WHO's guidelines. World energy demand is expected to increase by 80% by 2050 (compared to 2010 levels), most of which would be met with fossil fuels if no new energy policies are put in place.

Cities embody the most acute health and environment challenges, from air pollution to sanitation, heat-island effect, chemical contamination, and solid waste management—but the concentration of people, wealth, connectivity, and local leadership through city mayors also provide the greatest opportunities for integrated health, climate and environment programs.

As most future urban growth will take place in cities, urban expansion needs to be planned to make cities a centre of health and well-being. Promoting sustainable transport, access to clean water and energy, waste management, sustainable food production, and healthy urban planning will critically improve health, as well as contribute to the Sustainable Development Goals for Health (3), Energy (7) Water (6) Cities (11) and Climate Change (13).

We need a new framework of health policy leadership positioned to assess and advocate for development that leads to healthier, greener and cleaner cities, and we need a new generation of mayors to lead this healthy development.

Concluding Remarks: The Transformation Needed

In the twenty-first century, health needs to be central to discussions around drivers of environmental degradation, such as production methods that pollute, deleterious consumption, and distribution patterns and disruption of ecosystems. Moreover, attainment of health should be promoted as an explicit aim, rather than an afterthought, of decisions in key sectors such as energy, transport, technology, water and sanitation, and urban planning.

Investment in the capacity of the health sector to engage in policy and to assess and monitor investments that are made in other areas of the economy would support promotion of mutually beneficial measures that simultaneously protect health and the environment. This approach would, in turn, avoid current and future economic costs, allowing for reinvestment in health and sustainable development.

For example, more sustainable urban transport systems that promote public transport, cycling and walking would reduce air pollution, noise and risk of road traffic injuries, and enhance physical activity levels. More generally, it is estimated that placing a price on polluting fuels in line with their health impacts through air pollution would result in a reduction of more than 50% of premature global air pollution deaths, a 20% reduction in greenhouse gas emissions, and the generation of some US\$3000 billion in tax revenues every year—more than 50% of current global health spending by governments.

The health sector has the specific responsibility to inform policy-makers and the public of the health impacts of climate and environmental change, because of the importance that populations give to health issues and the generally high quality of, and public trust in, health evidence.

There is a continuous need for evidence on the effectiveness of measures to tackle the environmental root causes of disease burden and on the health impacts of sectoral policies. As such decisions often have wide-ranging effects, there is an associated need for capacity to assimilate, interpret and communicate data and evidence from sources not traditionally used by health policy-makers—evidence that indicates that health-harmful (e.g., fossil) fuels should not be subsidized, for example. Evidence of the impacts on human rights and equity, public acceptance of measures, and information on the socioeconomic and financial costs to individuals and health systems are particularly important.

Implementation must occur not only through influencing other sectors but also within the core functions of the health sector. For example, climate change should be incorporated into risk assessments and preparedness and response plans for health emergencies; climate resilience should be integrated into the building blocks of health systems; and investments should be supported in the provision of energy, water and sanitation for health facilities, as a crucial contribution to universal health coverage.

However, for this approach to work, there needs to be a recognition of its merits that drive institutional change. Major policy and implementation decisions in all sectors are taken at the national and subnational levels. Health actors need to be informed by evidence, connected through institutional mechanisms that allow them to work with other stakeholders (for example, from urban planners to city mayors) and empowered through regulatory frameworks that include health in intersectoral policy-making. Effective regulations and standards should be used to promote energy efficiency and safeguard human health, among other things.

Opportunities for action on health, climate and the environment are rapidly opening up.

Health should be central to the framing of discussions around drivers of environmental degradation and promoted as an explicit aim of decisions in key sectors such as energy, transport, water, sanitation, waste, and urban planning (Figs. 8.3 and 8.4).

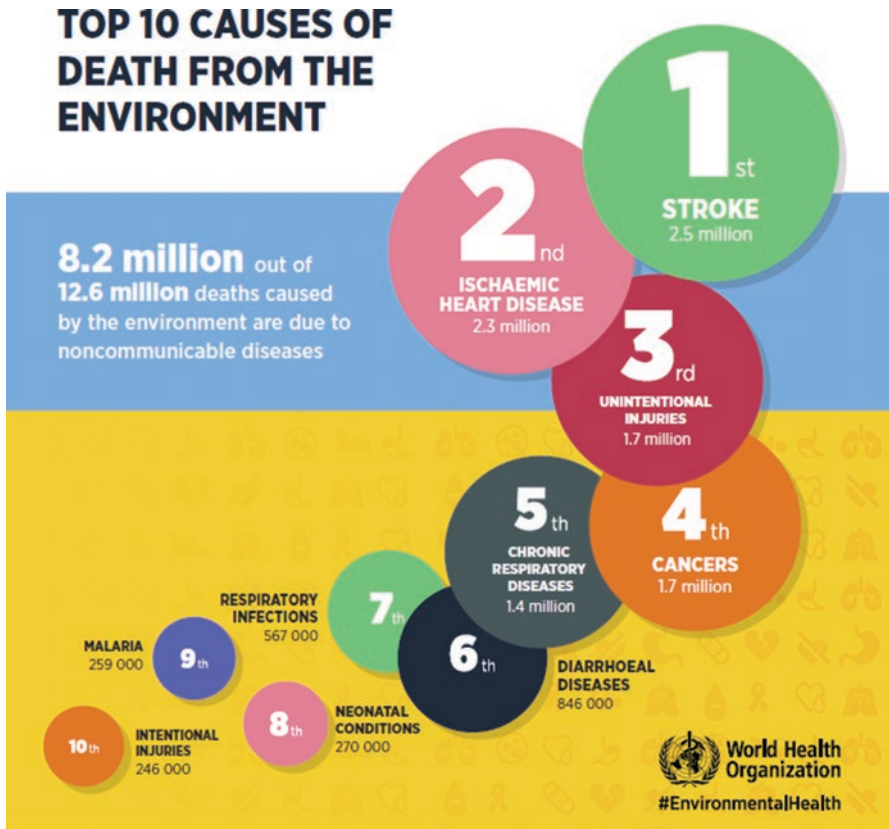


Fig. 8.3 Top ten causes of death from the environment (Source: WHO Infographics, Preventing disease through health environments; http://www.who.int/quantifying_ehimpacts/publications/PHE-prevention-diseases-infographic-EN.pdf?ua=1)

THE INVISIBLE KILLER

Air pollution may not always be visible, but it can be deadly.

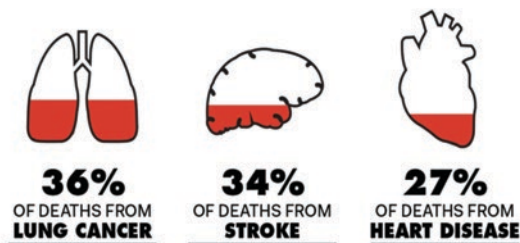


Fig. 8.4 Breathe Life campaign (Source: <http://breathelife2030.org>)

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