the environment, health, and the future

Concern for the environment draws its focus and inspiration from a movement that began in the 19th century, picked up steam after the Second World War, and now embraces a wide range of local and global concerns that includes climate change (global warming); ozone depletion; loss of biodiversity; and pollution of the air, land, and water. This movement is driven by a sense of crisis about the effects of human and economic pressures on the planet and its ecosystems.

WHAT ARE THE MOST PRESSING ENVIRONMENTAL TRENDS?

In a brainstorming exercise conducted a few years ago, the U.S Environmental Protection Agency (EPA) developed a list of the environmental trends most likely to affect environmental quality at the federal, regional, and state levels between 2000 and 2025. This list reflects scientific understanding of current trends that are known to have a negative environmental impact and emerging knowledge about developments whose effects are still being understood.

The EPA exercise identified three trends as being most likely to have significant effects on environmental quality between now and 2025: water availability and quality, air pollution, and climate change (EPA 2008c). Four areas were seen as potential surprises that could have a positive or negative impact on environmental quality. On the positive side, future energy technology developments like fuel cells, tidal power, and nuclear power could have significant environmental benefits. On the other hand, climate change could potentially pass a "tipping point" where much larger negative effects occur, pharmaceuticals in waste water could be more destructive than we currently realize, and ocean pollution could have very serious biological effects. Additionally, technological solutions currently thought of as positive could turn out to have unanticipated side effects.

The EPA identified several issues where more of the agency's attention in the future would likely be required. These included indoor environmental quality, invasive species, and regeneration of ecosystems (EPA 2008c).

As for the forces driving future environmental change, the EPA exercise identified both helpful and harmful developments related to both technology and demographic change. Helpful developments included efficient transportation, new energy technologies, recycling, and changing generational consumption patterns. Harmful developments included sticking with traditional energy production, toxic chemicals, rapid international population growth, and population shifts in the United States to environmentally sensitive areas like the southwestern states.

The EPA's most pressing concerns were echoed in a list of environmental research priorities developed by an expert committee of the National Academy of Sciences (NAS).

THE MOST PRESSING RESEARCH NEEDS

In 2001 a high-level committee of the National Academy of Sciences was tasked with identifying the major environmental research challenges for the future. From hundreds of nominations submitted by the scientific community, they selected eight challenges, of which the following four are the most pressing in the immediate future:

1. **Biological Diversity and Ecosystem Functioning**. We need to understand the relationship between ecosystems and biological diversity, especially how to manage habitats so that they can support both human uses and natural life forms, and the effects of habitat alteration and loss on biological diversity.
2. **Hydrologic Forecasting**. We need better tools for understanding fresh water resources, including the ecological consequences of changing water use in the United States.
3. **Infectious Disease and the Environment**. We need a comprehensive ecological and evolutionary understanding of infectious diseases affecting human, plant, and animal health.
4. **Land-Use Dynamics**. We need to understand changes in land uses and land covers and their consequences.

Source: National Research Council 2001

ENVIRONMENT AND HEALTH

As the NAS list makes explicit, human health is part of the environmental equation. The health effects of environmental problems, however, are often indirect, in contrast with the traditional health domain in which the human connection is immediate and direct. As Figure 1 illustrates, environmental funders and other organizations that are concerned about climate change, ecosystem degradation, or species and biodiversity loss are all addressing issues with implications for individual and community health, although their grantees are more likely to be land trusts, toxics coalitions, or water groups than health-focused organizations.

In philanthropy there is vigorous interest in environmental issues, as reflected in the affiliation of more than 225 foundations from North America and around the world with the Environmental Grantmakers Association. Within this group, a subset of funders called the Health and Environmental Funders Network (HEFN) has a specific interest in environmental health. HEFN's members' grantmaking spans a wide range of issues, including:

- specific contaminants or sources of pollution;
- vulnerable populations like children, low-income communities, workers, or communities of color; and
- topical areas, including sustainable agriculture, smart growth and healthy building, climate change and energy, community health, environmental justice, chemicals and health, and green building.

In keeping with the spirit of the environmental movement, much of the work in the environmental health field is organized around social change strategies, including advocacy and organizing to change policies, pass legislation, change regulations, or press for enforcement of laws and regulations. Community empowerment strategies support organizing and capacity building to enable communities to address their own environmental health concerns. Market-based strategies build pressure on companies or industrial sectors, build alliances with business and industry, and encourage businesses to shift practices and products.

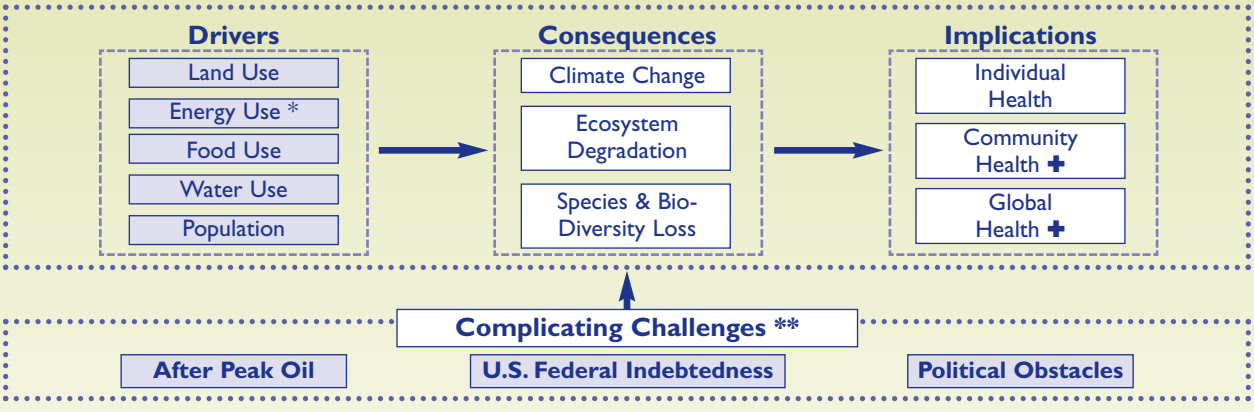
MAJOR ENVIRONMENTAL CHALLENGES TO HEALTH

Selecting from the many issues with which environmental funders are concerned, this essay will focus on three – climate change, environmental justice, and sustainable development – that have saliency for the future, as well as major implications for health.

- ***Climate Change*** – The threat of climate change is the greatest environmental problem humanity has ever faced. With each iteration of the science of climate change, the links between human-caused carbon dioxide (CO_2) emissions – a byproduct of burning fossil fuels – and rising temperatures get stronger (Hewlett 2008).

  Climate change contributes to the melting of glaciers, rising sea levels, the range and distribution of plants and animals, when trees bloom, the length of growing seasons, freezing and thawing of rivers and lakes, and the extent of the permafrost (EPA 2008c). Human beings are directly exposed to climate change through changing weather patterns and indirectly through changes in water, air, and food quality and quantity; ecosystems; agriculture; and

FIGURE 1: A BIG PICTURE LOOK AT THE ISSUES



Notes: * Including electricity, heating & cooling transportation
** Affecting responses for both domestic and global sustainability
✚ Includes refugees, conflict, social upheaval

Source: Parker 2008

economy. At this early stage the effects are small, but they are expected to steadily increase throughout the world (EPA 2008b).

These changes have an effect on health in several ways, including:

- *Extreme Weather* – Hurricane Katrina, which caused devastating social, economic, and psychological after-effects, is just one example.
- *Air Pollution* – Increased ground ozone and other pollutants dramatically raise rates of asthma and other respiratory diseases.
- *The Spread of Infectious Diseases* – Rising global temperatures may help spark a population boom in insects and disease-carrying animals.
- *Heat-Related Illness* – The European heat wave in 2003 killed an estimated 35,000 people.

Children are especially vulnerable to these changes. Their immune systems are not as evolved as adults; their bodies are still developing; they are more likely to come into contact with toxic substances both inside the house (such as stain-resistant chemicals used on carpets) and outside (such as playgrounds); and pound for pound, they take in more air, food, and liquids – possibly polluted – than adults do (EPA 2008a).

As the following snapshots illustrate, grantmakers approach climate change from a variety of perspectives: environmental conservation, building community capacity, and regulatory change.

The Nathan Cummings Foundation established the Ecological Innovation Program with the goal of addressing the challenges of climate change and promoting vibrant and sustainable ecological systems that support healthy communities and a just economy. The program encourages the development of broad alliances that advance integrated and sustainable approaches to social, economic, and ecological justice. It also promotes innovative public policies and other approaches by which corporations, governments, and other institutions take responsibility for the risks and costs of their activities and become drivers of positive ecological and social costs of their activities change (The Nathan Cummings Foundation 2008).

With foundation support, the organization Ceres is organizing large institutional investors to influence corporate boards and top management about taking action on global warming. Ceres has hosted two United Nations investor summits and has grown its investor group from eight institutions holding $600 billion in assets to over 50 with nearly $3 trillion in assets. These collective accomplishments have won substantial climate commitments from major companies, stimulating unprecedented investor action on an environmental issue and shaping the public debate on the business and financial aspects of climate change.

Health Care Without Harm is another of the foundation's grantees that has succeeded in changing corporate practices by working with the health care industry and care providers to reduce the use of harmful chemicals in everything from intravenous tubing to the food served in hospitals.

The Rockefeller Foundation's Initiative on Climate Change Resilience aims to develop the ability of communities to manage and plan for the inevitable effects of climate change and to make sure that planning includes the most vulnerable citizens. Over the course of the five-year, $70-million international initiative, the foundation expects to partner with governments, other foundations and donors, nongovernmental organizations, and groups from the private sector.

A component of the Climate Change Resilience Initiative will focus on raising awareness and exploring relevant solutions in the United States. The destruction caused by hurricanes, record heat waves, and wildfires in recent years underscores the need for local approaches to build resilience to climate change. For the foundation this includes developing a shared agenda between the groups working on climate change mitigation and those working on building resilience to climate change. For example, with Rockefeller support the New York City Climate Change Adaptation Task Force and Panel on Climate Change are simultaneously addressing the need to shrink New York City's carbon footprint to slow climate change and the need to adapt to the environmental changes that have already begun to take place. "Changes in the way we maintain and operate our infrastructure can help secure our city," Mayor Michael R. Bloomberg stated (The Rockefeller Foundation 2008). One such change will be to raise critical infrastructure like back-up generators to higher ground in areas prone to flooding.

➤ ***Environmental Justice*** – The number of American children who are members of minority groups is an increasingly large percentage of the U.S. child population. Many of these children will live in low-income communities. To ensure that they grow up healthy and free from the health disparities that characterize today's minority adults, it is vitally important to act now since it has been repeatedly demonstrated that children and families in

low-income neighborhoods and communities have a higher likelihood of exposure to a wide range of toxins, including:

- pesticides that are used extensively in urban schools, homes, and daycare centers for control of roaches, rats, and other vermin;
- outdoor particles from diesel smoke and ozone;
- mold from leaking, substandard housing;
- toxins from garbage dumps and factories; and
- indoor cigarette smoke (Rachel's Environment & Health News 2008).

In the National Cooperative Inner City Asthma Study, researchers who visited the homes of 1,528 asthmatic children in eight urban centers found smoking in 69 percent of the inner-city homes, elevated nitrogen dioxide in 24 percent, leaky roofs with water damage – raising the possibility of mold – in 29 percent, and excess roach allergen in the dust in 77 percent (Rachel's Environment & Health News 2008). Children who were sensitized to mold, cockroaches, and dust mites had many more emergency visits to the hospital.

Awareness of the broad array of environmental burdens and hazards that are borne disproportionately by lower-income communities and by racial and ethnic minorities is a growing – but relatively recent – concern in the environmental community. Many health funders are addressing these problems as well, although their starting point may be a health problem, such as asthma, rather than the conditions that gave rise to it.

The California Endowment's approach to urban environmental health broadly encompasses sources of environmental pollution as well as affected communities – in keeping with their focus on the social determinants of health. For example, the endowment supports the Trade, Health & Environment Impact Project, which focuses on reducing the effects of trade, ports, and goods movement activities on health and community life. The project is a collaboration of community and university partners that uses evidence-based data to inform public policy decision-making to encourage healthy solutions for communities affected by ports, rail yards, intermodal facilities, distribution centers, trucking routes, and other goods movement expansion activities. One of project's goals is to ensure that reducing health, environmental, and community effects becomes central to the transportation and goods movement planning and policy process. The project also seeks to shift the nature of the debate about ports and freight movement to elevate community voices in the policy arena, while also using the science and policy work of academic partners to strengthen those voices (The Trade, Health & Environment Impact Project 2008).

The project links air quality and transportation specialists, truckers, and advocates with health care providers who are concerned about asthma. One of the challenges the project faces is to expand the role of health care providers so that they are not only involved in environmental issues, but are also present in discussions with environmental specialists who would not otherwise be concerned about health.

Another California funder, the Liberty Hill Foundation, maintains an Environmental Justice Fund that strives to improve public health in communities of color and low-income communities in the Los Angeles area by reducing emissions and exposure to environmental hazards and toxic chemicals and improving the quality of life. The fund is supported by donations from foundations and individuals. With a motto of "Change, Not Charity," Liberty Hill aspires to be a catalyst in building a movement for social and racial equality, economic justice, environmental sustainability, and a shared sense of social responsibility. To support this goal, the foundation also provides technical assistance to grantees, connects foundation donors to grassroots campaigns, and helps shape public debate on important issues (Liberty Hill Foundation 2008).

The Environmental Justice Fund's grantees are organizations that actively involve the community through empowerment and education, foster leadership development, and build alliances and strengthen relationships among diverse communities. Recent examples include the Del Amo Action Committee, which is informing residents about the health effects of toxic DDT contamination and securing permanent relocation for affected residents, and the Healthy Homes Collaborative, which is training tenant leaders who will identify and eliminate lead poisoning in apartment buildings. The People's Community Organization for Reform and Empowerment, another organization with fund support, is training local high school students and community members to build and use air sampling buckets to test for myriad air pollutants in their communities and present their findings to policymakers.

The Ford Foundation's Environment and Development grantmaking portfolio reflects the foundation's vision that healthy communities are a result of environmental justice. The "healthy communities" element focuses on what good economic growth means in communities and

includes collaboration among experts from the fields of public health and medicine, economic development, and social justice (Ford Foundation 2008).

The program works to support natural resource management and environmental justice strategies in poor communities, as well as the underlying factors of economic exclusion and social marginalization.

Grantmaking is international in scope. Examples include:

- The Conservation Fund, a longtime Ford partner, is using a $400,000 grant to spread the word about community ownership of forests and tackle issues of rural poverty in North Carolina. The fund's Resourceful Communities program is working with communities and grassroots leaders to develop a forest management plan that protects forest lands from large developers.
- Asociación de Comunidades Forestales de Petén (ACOFOP), a federation of 22 community organizations, has been serving the areas surrounding the Maya Biosphere Reserve in Peten, Guatemala, since 1996. With a recent grant of $300,000, ACOFOP will continue to assist organizations with the management of forest resources and will build on recent successes such as the nearly 500,000 hectares of forest under timber production that they helped get certified as sustainably managed.
- The Gulf Coast Fund for Community Renewal and Ecological Health, created in response to Hurricanes Katrina and Rita through the Rockefeller Philanthropy Advisors, is using a $650,000 grant to engage and empower displaced residents in the sustainable and equitable rebuilding of the Gulf Coast region.
- West Harlem Environmental Action, the first environmental justice organization in New York City and one of the first in New York State to be run by people of color, is using a $250,000 grant to engage residents in community organizing, education, advocacy, and public policy surrounding sustainable development.

➤ ***Sustainable Development*** – Sustainable development is an approach to environmental issues that ties together concern for the carrying capacity of natural systems – the atmosphere, ecosystems, land and water resources, biological diversity, toxic chemical and hazardous wastes – with the social challenges facing humanity – poverty, consumption patterns, demographic growth, health, and so forth. The goal is to meet human needs while preserving the environment so that these needs can be met not only in the present, but also in the indefinite future.

The Jessie Smith Noyes Foundation's funding priorities reflect this perspective. The foundation's approach to the environment is shaped by a view of the earth as one community, an interconnected web of life in which human society is an integral part. Within this framework, the foundation's goals include protecting the health and environment of communities threatened by toxics and advancing environmental justice (Jessie Smith Noyes Foundation 2008).

One of the foundation's grantees, Anchorage-based Alaska Community Action on Toxics (ACAT), achieved a major victory in February 2007 when the Alaska Department of Environmental Conservation denied a permit to the Alaska Railroad Corporation for the spraying of herbicides along its more than 600 miles of right-of-way. Over 1,500 water bodies, including rivers, streams, and creeks, are within 225 feet of the tracks, making salmon and salmon habitats vulnerable to contamination from herbicides. ACAT worked with the Eklutna Tribe and the Montana Creek Native Association, providing technical information on the environmental and health effects of the proposed herbicides and helping write a resolution opposing the railroad spraying plan. Other local tribes, municipalities, and borough governments issued formal resolutions proposing alternatives to the use of chemical herbicides.

ACAT and its allies successfully used a combination of community organizing, scientific and technical information, and testing to help communities throughout Alaska address the effects of toxic chemicals.

CONCLUSION

The challenges of the future that worry environmental funders affect all of the earth's resources, of which humans are just a small part. Some environmentalists see people as part of the problem, while others see people as part of the solution. Because of this difference in perspective from health funders, for whom people are the central concern, the immediate goals of the two groups of funders can differ. It will be a challenge to balance the future needs of both humanity and the environment in keeping with the goals of sustainable development.

Ultimately health and environmental funders both share a commitment to healthy, safe environments that provide a high quality of life for people and other species and a commitment to the implementation of informed policies and programs that will improve our collective future and halt further deterioration of living environments. They share an understanding that the solutions for solving many health

problems lie outside the health care system, in the environments in which we live, work, go to school, and play. There is also an increasingly shared awareness that handling complex challenges at the intersection of the environment and health will require working across sectors to leverage knowledge and skills. Working from these shared values, funders can find ways to work collaboratively to ensure improved human health now and in the future.

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