

# Issue Two: Environment

## The Search for Balance

**G**lobal warming is the observed increase in the average temperature of the earth's atmosphere and oceans in recent decades and its projected continuation. The burning of coal, oil, and natural gas produces waste gases (mainly carbon dioxide) that remain in the atmosphere and trap heat. Most scientists fear that if nothing is done to limit the emission of these greenhouse gases, the earth's average surface temperature will increase up to 10 degrees this century, with potentially devastating consequences for humanity. However, while 90% of climate scientists are in agreement that humans cause global warming, there are some different opinions on this issue. Some people believe that trying to combat global warming is tampering with the earth's natural evolution. Others believe that governments should not get involved. Instead we should let the free market and competition create solutions to the problem. Some scientists point to possible natural causes for the current warming of the planet, such as activity caused by the sun.

While predicting the future is always imperfect, many national governments determined the possibility of global warming was strong enough to warrant organized action. On December 11, 1997, delegates from more than 150 nations met in Kyoto, Japan and agreed on a treaty called the Kyoto Protocol. This treaty requires industrial nations to make significant reductions in their emissions of greenhouse gases, but does not require developing countries to make any cuts. However, in 2005, the G8 nations and Brazil, China, and India (three of the largest greenhouse gas emitters) signed a joint statement on global warming. It stressed that the scientific understanding of climate change is now sufficiently clear to justify nations to take prompt action. Government groups are currently developing goals beyond the Kyoto Protocol's final year of 2012.

Because of the serious nature of global warming, a variety of interested groups are not waiting for the slow and deliberate process inherent in forging official government agreements. Thousands of grassroots initiatives have been started to deal with this issue. They include local and state government initiatives, NGOs, private citizens doing their part to lower their ecological footprint, and businesses that understand the profit potential in clean tech, or "green" businesses.

### ESSENTIAL BACKGROUND KNOWLEDGE

**T**he earth has always had a self-sustaining environment. But mankind has altered the natural cycles by adding more chemicals into the atmosphere than would occur naturally. Since the Industrial Revolution, humans have been burning fossil fuels at a rapid pace. The burning of oil, coal, and natural gas releases mainly carbon dioxide, or CO<sub>2</sub>. We have added 2.3 trillion tons of CO<sub>2</sub> to the atmosphere in the last 200 years. Half of this amount was added in the last 30-50 years. Thus, most scientists believe that too much carbon

### QUESTIONS FOR NEGOTIATION

#### Guiding Question

1. Why is global warming a major international concern?

#### Related Questions

2. What should governments do about global climate change?  
What international agreements can be reached?
3. How useful or appropriate is the Kyoto Protocol for dealing with global warming?
4. Which countries should contribute to reductions in greenhouse gas emissions, and by how much? What would be the economic impact of these reductions?

dioxide is being trapped in the earth's atmosphere. This "greenhouse blanket" effect is causing an overall warming of the earth's atmosphere. Even if we are able to significantly reduce the greenhouse effect, humans will be dealing with the consequences of the additional greenhouse gas emissions for thousands of years.

### The Causes of Global Warming

The earth is kept warm by greenhouse gases (GHGs), like carbon dioxide, which act like a shield to trap heat from the sun within our atmosphere. Greenhouse gases occur naturally and are important to life on earth. Without them, all of the heat from the sun would leave the earth's surface and the planet would be too cold to live on.

Some GHGs are natural to the environment. They include water vapor, carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), and ozone (O<sub>3</sub>). Industry has created non-natural GHGs. These include chlorofluorocarbons (CFCs) and hydrofluorocarbons (HFCs).

The main greenhouse gas is carbon dioxide, or CO<sub>2</sub>. Carbon is a naturally occurring element that keeps circulating among the different environments on earth. Forests as well as soils, oceans, and the atmosphere, all "store" carbon. While alive, plants and trees soak up CO<sub>2</sub> and temporarily store the carbon in wood, roots, leaves, and soils. When they die, carbon is slowly released back into the atmosphere as they decay.

Humans have disrupted the natural cycle by not allowing the plants to naturally decay. With deforestation, people have often burned trees and plants, adding carbon into the atmosphere faster than it can be absorbed.

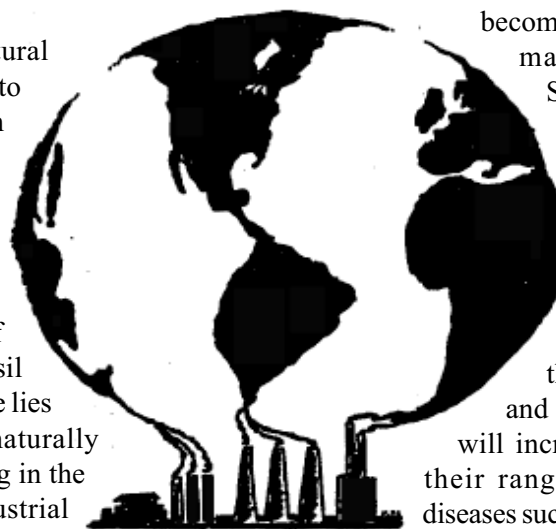
Another important source of carbon (or carbon sink) are fossil fuel deposits. This particular store lies buried deep inside the earth, naturally separated from the carbon cycling in the atmosphere. But since the Industrial Revolution, humans have released it into the atmosphere when we burn fossil fuels like coal, oil or natural gas. This process has seen greenhouse gas concentrations in the atmosphere soar. Through our current greenhouse gas emissions, we are adding at least

six billion tons of carbon per year to the atmospheric carbon cycle. This is significantly altering the intricate web balance of carbon's natural cycles and as a consequence, changing the global climate.

### The Impact of Global Warming

Using elaborate computer models, climate scientists calculate that the earth's temperature may rise by up to 10 degrees by the year 2100. The north and south poles would see the largest variance in temperature. This is a process known as polar amplification. We are already seeing warming of the oceans at the poles, which is causing the polar ice caps to melt. The latest computer models predict that the polar ice caps will be reduced by 80% in 20 years and will be gone by 2040. The loss of sea ice has a domino effect. The sun warms the exposed water faster than the sea ice, increasing the warmth of the water even further. Fish, animals, and humans who rely on the sea ice would either die off or be forced to relocate. Sea levels will rise, washing away many coastlines. Some island nations will disappear. Many major cities will lose valuable coastal land, or they will have to build and maintain expensive sea walls, like the city of New Orleans.

The possible repercussions of global warming are not limited to the oceans. It is likely that the trade winds will slow, disrupting the natural circulation of water and warm and cool airflows. Weather may become more variable. Heat waves may become more common. Storms involving heavy rains and flooding may increase. As the earth warms, rain and snow patterns may change geographically, impacting farm land and the livelihood of some populations. It is predicted that the intensity of hurricanes and other intense weather events will increase. Insects may increase their range, fostering the spread of diseases such as malaria and dengue fever. There may be mass extinctions of wildlife, such as the polar bear. Desertification (the expansion of the earth's deserts) may increase, along with other forms of altered ecosystems.



### SUGGESTED WEBSITES

US Environmental Protection Agency  
<http://epa.gov/climatechange/index.html>

Determine Your Ecological Footprint  
<http://www.ecofoot.org>

Union of Concerned Scientists: Global Warming Page  
<http://www.ucsusa.org/>

People: health and pollution  
<http://www.peopleandplanet.net>

Global Warming and Buildings  
<http://www.architecture2030.org>

### The Benefits of Global Warming

There are certain regions of the world that could gain an advantage with global warming. Countries in cold climates, like Iceland and Russia, could benefit from an increase in land available for farming and a reduction in energy needed to heat homes. Shipping companies could use the Northwest Passage at the North Pole if all the polar ice was gone. However, the overall disruptive affects of global warming make these advantages seem small by comparison.

### Other Viewpoints

Skeptics of the notion that humans cause global warming note that the earth's temperature has changed from time to time throughout history. They argue that the current rise may also be due to natural causes. Global temperatures may just appear warmer, for we are coming out of a prior cool period known as the Little Ice Age. Another argument is that increased activity from the sun can affect the amount of cloud cover. This in turn can affect global temperatures. Some people question if humans have the ethical right to tamper with the earth's ecosystems. Business and government leaders wonder if the world's economy can afford the expense of overhauling how humans live and work. Free market supporters propose that the market system will create the new technology needed to counteract global warming without government intervention.

### International Responses

The most important issue with global warming is not what is causing it, but if in fact we are in a warm climatic period, how do we cope with its consequences? Most governments of the world have concluded that not developing a plan for coping with global warming is too risky. In December 1997, government representatives from over 150 countries around the world produced the Kyoto Protocol to the United Nations Framework Treaty on Climate Change. The treaty requires developed countries to reduce their emissions of greenhouse gases by the year 2012 to 5% below 1990 levels. The treaty came into force as of February 16, 2005, after Russia ratified it in 2004. With the Russian ratification, countries responsible for at least 55% of the greenhouse gas emissions as of 1990 had accepted the treaty's conditions.

The Kyoto Protocol is hampered by the fact that the largest contributors to global warming, the US, China, India, and Brazil, are not covered under the agreement. The US did not ratify the agreement, preferring voluntary reductions. No developing countries were required to make any cuts. Their representatives argued that developed countries should be the first to cut emissions since most of the man-made emissions going into the atmosphere over the last two centuries have come from the world's wealthiest countries. Supporters of the treaty argue that if the developed countries take the lead on global warming, the developing countries will follow. It is like that this situation will soon change. The new American president, Barack Obama, has indicated he will reverse US policies that prevented the US from being an equal member in global warming discussions. In is also hoped that in the next round of discussion on a successor to the Kyoto Protocol (November 2009), some of the countries not required to make reductions will agree to do so.

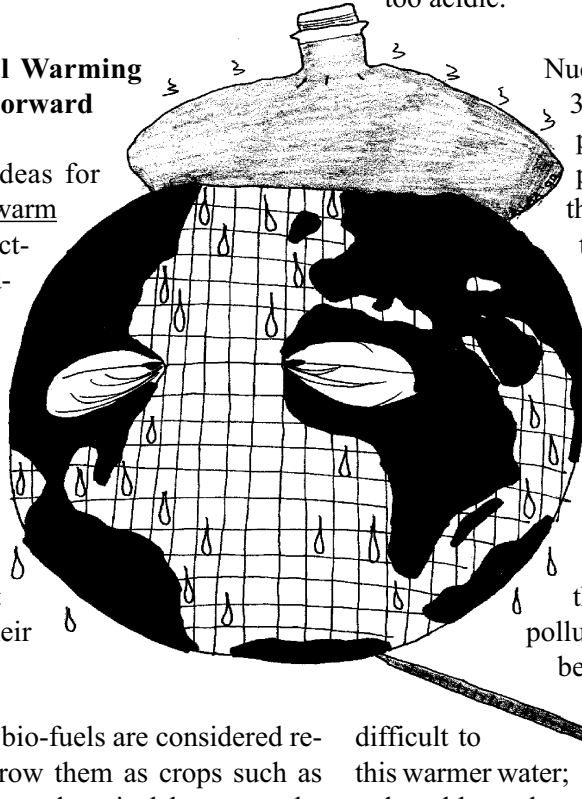
### A Multi-pronged Response

Government responses at the national level take years to formulate, as committees build consensus and compromise takes the "teeth" out of effective actions. Thus a grassroots approach may be able to accomplish more, and sooner, than treaties like the Kyoto Protocol. Thousands of initiatives have been started to deal with global warming. They include: 1) local government codes and practices, 2) state government laws, 3) NGOs, 4) private citizens doing

their part to lower their ecological footprint, and 5) businesses that understand the profit potential in clean tech or sustainable practices. For example, there are 315 businesses in the San Francisco Bay Area developing clean tech or alternative fuel products in response to global warming.

**Ways to Combat Global Warming that May Not Move Us Forward**

There are several ideas for combating global warming which are attracting a lot of interest and funding: bio-fuels, clean burning coal, artificial carbon sequestration in the oceans and nuclear power. However it remains to be seen if these ideas move us forward in reducing greenhouse gas emissions, or if they are just as bad as fossil fuels in their own ways.



**Bio-fuels (ethanol):** Some bio-fuels are considered renewable in that we can grow them as crops such as corn or switchgrass. However there is debate over the use of crops for bio-fuels, for: 1) it would take a large amount of land to grow enough crops to replace oil as fuel; 2) it's unclear if it takes more energy to convert bio-fuels than they actually provide; 3) burning them contributes to ozone, a highly corrosive gas that damages the delicate tissue of the lungs.

**Coal:** a very dirty-burning fossil fuel that causes acid rain and the release of methane, a greenhouse gas. The mining of coal causes environmental problems such as polluted runoff into waterways, it often renders the land underneath a mine unusable, and it is dangerous, dirty work for miners. However, there are plentiful supplies of coal in such energy-needy countries as China and the US. Therefore work is being done to burn coal "cleaner" so that it does not emit GHG emissions. Researchers are working on reducing coal emissions to harmless chemicals, such as baking soda. However, it is unclear if this will be possible on a large-scale basis. Also, it does not prevent the environmental problems of mining coal.

**Artificial carbon sequestration in the oceans:** the oceans naturally absorb some of the CO2 greenhouse gases from the atmosphere. But a proposal to inject large amounts of CO2 into the deepest parts of the ocean will: 1) kill off all fish living there and 2) turn the oceans too acidic.

**Nuclear power:** After a lull of about 30 years, there is currently a stampede to build new nuclear power plants in many countries. It is true that nuclear power is a fuel source that doesn't need to be burned, so it doesn't pollute the atmosphere like fossil fuels. However, there are a lot of safety concerns regarding nuclear power: 1) the fissionable materials that are needed to run plants produce deadly radioactive end products that must be stored safely from humans for thousand of years; 2) there is growing evidence that plants pollute ground water; 3) as the oceans become warmer with global warming, it becomes more difficult to cool the reactors with this warmer water; 4) it is unclear how vulnerable nuclear power plants are to terrorist attack or black market smuggling of nuclear bomb making material.

**Award-based Strategies**

Humans like to compete, be acknowledged, and win prizes. Thus respected institutions are beginning to offer awards for individuals or companies that demonstrate ecological responsibility. For example, by using recycled materials and building energy efficient buildings, architects can apply for a National Green Building Award from the National Association of Home Builders (NAHB).

**Individual Strategies**

Individuals can choose to reduce their own ecological footprint as a means of combating global warming. Individuals can also influence business practices by basing purchasing decisions on choosing companies that have demonstrated environmental responsibility.

### SUGGESTED WEBSITES

International Medical Volunteers Association  
<http://www.imva.org/Pages/orgbio.htm>

The World Health Organization (WHO)  
<http://www.who.int/home-page/>

The World Bank  
<http://www.worldbank.org/>

The United Nations Children's Fund (UNICEF)  
<http://www.unicef.org/>

Oxfam International  
<http://www.oxfam.org/>

The United States Agency for  
International Development  
<http://www.usaid.gov/>

Joint United Nations Programme on  
HIV/AIDS (UNAIDS)  
<http://www.unaids.org/>

Doctors Without Borders  
<http://www.doctorswithoutborders.org/>

### ENVIRONMENT: WORLD HEALTH

“Health,” says the World Health Organization (WHO) “is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.” This broad definition of health is much more than an optimistic goal. It recognizes that many elements in a society must be present to sustain a healthy population. Literacy and education, political and social stability, trade and infrastructure investment are all essential to the good health of a population.

Not surprisingly, developing countries have the greatest share of health problems because so many of them lack one or more of these critical elements. However, even in rich nations, many people do not meet WHO's definition for health. This is because they are caught in environments where one or more key elements to health are missing. For example, the infant mortality rate for various minorities in the US is double that of the population as a whole and three to five times higher than in most of the other developed nations. This phenomenon is true for average life expectancy, too.

Still, the magnitude of the problem in developing countries is enormous compared to developed countries. Consider that, according to WHO, there are more than five million deaths each year due to HIV,

malaria and tuberculosis, the three greatest killers worldwide.

Finally, despite the overwhelming concentration of poor health in developing countries, their plight affects the entire international community. Disease crosses international boundaries as easily as any international tourist. Outbreaks of malaria and tuberculosis in addition to AIDS have erupted recently in Europe and Asia. Reports of deaths from other terrifyingly deadly viruses appear regularly in news reports.

However, even more important, is that unhealthy populations decrease literacy and productivity, discourage financial investment, and create social and political instability. This leads in turn to greater poverty and poorer health of the population. This vicious circle becomes enormously costly to all nations of the world as they respond to contain the dangers posed by these conditions.

### Prevention, Containment, Cure

Health workers and organizations tackle these problems with a variety of approaches, including prevention, quarantine and curative treatment. Contrary to conventional wisdom, when speaking of developing countries, prevention of disease is not always the least expensive approach to creating a healthy population. Most of these countries lack the infrastructure necessary to gain the upper hand on the diseases that affect them most.

For instance, no vaccine yet exists for the three greatest killers, AIDS, malaria and tuberculosis. Hence, their prevention requires significant expenditures for public education and sanitation facilities, even though drug or material costs for treatment are relatively small, except for HIV/AIDS. To reduce the cost of treatment for HIV/AIDS, producing drugs locally or generic versions of the drug have helped to bring their costs down.

Further complicating strategies for health workers is the dynamic relationship between these diseases. For example, an HIV infected person is ten times more likely to contract tuberculosis, while tuberculosis is the direct cause of 32% of deaths of HIV positive individuals. In addition, while HIV is relatively difficult to transmit, tuberculosis is highly infectious and can be caught by sharing the same breathing space with an infected person. There are about two million deaths a year due to tuberculosis, 95% of which occur in developing countries. It is the leading killer of young people and adults.

### The Costs

The productivity of a nation's economy is proportional to the health of its population. Countries with higher per capita GDP have longer life spans. According to WHO, Africa's GDP would be up to \$100 billion greater if malaria had been eliminated years ago. WHO estimates that a \$1 billion per year expenditure to prevent malaria in sub-Saharan Africa would increase the combined GDP of countries there by up to \$12 billion. A similar cost-benefit relationship applies to AIDS and other diseases. Yet, in 1999, the total spent on AIDS prevention in the region from all sources was less than \$165 million.

Although organizations based in developed countries publicize the plight of populations suffering in developing countries, the funds they have to contribute are relatively small. On average, about 5% of all health care costs for developing nations are paid for by outside sources. Nevertheless, according to the World Bank, in the very poorest countries, the percentage of health care costs donated by the developed world rises to between 20-50%. As small as these sums may seem, they are crucial in providing research, training, and technical advice for local health care workers. Without such support, the already overwhelmed health care systems in these countries would simply collapse.

### International Responses

Countries have struggled to provide healthy and disease free environments from the beginnings of civilization. However, true international efforts were not begun until 1907 with establishment of the International Order of Health in Paris, France and in 1923 with the establishment of the Health Organization of the League of Nations. These focused primarily on disease control and standardization of drugs. In 1948, WHO inherited the responsibilities of these two organizations. But WHO was also charged with the much broader mandate of promoting health, as defined above, for "all people." Since the end of World War II, three classes of organizations have evolved that address international health issues: multilateral, bilateral and non-governmental organizations (NGOs).

### QUESTIONS FOR NEGOTIATION

#### Guiding Question

1. What is required to sustain a healthy population?

#### Related Questions

2. Where does funding for health care costs come from?
3. What are the causes of the world's three deadliest diseases?
4. Why is the gap in life expectancy between developing and developed countries an international concern?

### Multilateral Organizations

**W**HO is the largest of all world health organizations. Although it works closely with the United Nations, it is an inter-governmental agency supported by 191 member nations. Other large multilateral groups are the United Nations Children's Fund (UNICEF) and the United Nations Development Programme. Of special significance is the World Bank, which provides over \$1.5 billion per year in health related funding.

### Bilateral Organizations

**B**ilateral organizations are those, such as the United States Aid for International Development (USAID), which are agencies in

a single country that provide aid to developing countries. USAID has recently provided over \$1.2 billion annually in health related funding. Most developed countries have such agencies.

### Non-Governmental Organizations (NGOs)

**N**GOs, which are private organizations, provide approximately 20% of all health aid to developing countries. They also have the reputation of being the most cost-effective. The two largest NGOs are Project Hope, based in the United States, and Oxfam International, which has affiliates in ten countries.