



# World Ecology Report

Critical Issues in Health and the Environment

*Knowledge brings new choices. Education brings new knowledge.*

## SPECIAL FOCUS: *Women and Development*

This September, China will host the United Nations Fourth International Conference on Women in Beijing. Within recent years, there has been much debate about the existing and potential role of women in natural, social, and economic resources restructuring and development, especially at the U.N. Last year's International Conference on Population and Development (ICPD) in Cairo and the more recent World Summit for Social Development (WSSD) in Copenhagen paid considerable attention to women's roles in a changing world, especially women living and working in developing nations. The following article is an overview of this important debate.

### A CHANGING WORLD

The world has changed considerably since the early 1970s, when Ester Boserup's groundbreaking *Women's Roles in Economic Development* first challenged the assumption that development is unproblematic, that people are served by it, that underdeveloped economies want it, and that developed economies are in a position to supply it. Boserup argued forcefully that merely integrating women into existing development models doesn't begin to address considerations of equality for women, especially among nations where economic, political, and cultural poverty are widespread among both men and women.

Boserup's was among the first critiques of development wisdom to move beyond the traditional pitting of women-without versus men-with political and cultural access to resources development. Since the 1970s, development wisdom has moved away from the simplistic model of redistributing the pie toward one of preparing an entirely new dish, a dish that starts with a recipe for equality rather than merely "add women and stir." Catch-up mechanisms may be designed to increase women's roles in existing development projects, but they don't always succeed because they tend to be based on a western understanding of economic growth.



**Women in Extreme Poverty**

SOURCE: *Women 2000*

### FIXED IDEAS

According to a recent *Scientific American* article, people among rich, industrialized nations have fixed ideas about what economic development is. This western model rests on ideals of growth and progress that understand economic development in terms of continual expansion. Under this model, human labor yields to more and more complicated machinery, small family farms yield to larger and larger commercial enterprises, and economic systems expand outward to absorb bigger and bigger markets, and groups of producers and consumers.

But the way economic systems evolved in Europe and North America may not be the best model for development programs in other parts of the world, especially Africa, Asia, and Latin America. If the world now produces enough food for everyone, as statistics show, why do economic development programs often worsen distribution inequities among developing areas? Why does agricultural modernization, for example, generally increase production of only a few crops at the expense of others? And how is this development model addressing the needs of impoverished peoples in general, and of women in particular?

The western definition of "proper" development grew out of economic and social conditions particular to Europe and North America. Family, community, and political structures combined with population distribution—urban centers surrounded by agricultural areas—to define the current development model. While that model has provided the basis for most of the economic and social development schemes that have been applied to impoverished areas, especially in the southern hemisphere, its inability to adapt to local and regional needs has sometimes worsened existing conditions.

In Africa, programs designed by developed-economy policy makers have traditionally been aimed at men, and have revolved around growing crops to sell on world markets. This scheme neglects to consider the

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fact that women produce 70 percent of the food in Africa, or that cash crop production undermines women's status as household heads and deprives them of access to historical land-use relationships, like communal ownership and management.

The same has held true in Central America and the Indian Subcontinent, where women's traditional roles as food producers and child rearers have been undermined by some development schemes that have promoted products suitable for international consumption, especially beef, timber, fruit, wheat, and grains. How are women's roles in economic development to become more equitable if women have little or no say in changing this traditional model of what development is?

### CHANGING FIXED IDEAS

Women's issues dominated the ICPD in Cairo, and were also prevalent at the WSSD in Copenhagen. Perhaps the main reason for this is that women's groups, especially non-governmental organizations, are becoming better organized, which enables them to challenge fixed ideas about women's roles in development schemes through a coordinated and direct approach to existing policy making institutions.

Another reason is that policy making institutions, of which the United Nations and the World Bank are examples, now understand that women empower themselves. This is what is meant by a whole new recipe. In

January 1995, the U.N. sponsored an Economic Restructuring and Social Policy conference that was designed to address the role of women in development agendas. Educators, policy makers, and development specialists from around the world gathered for a week-long forum, and offered analyses of specific development projects in Africa, Asia, and Latin America, as well as Eastern Europe, the former Soviet Union, and parts of the United States. The consensus was that, while the "lost decade" of the 1980s exacerbated global economic disparity, particularly among developing nations, the macro-economic outlook moving into the next century provides considerable opportunities for redress. Such opportunities, conference participants said, must proceed from the central idea that the western model for economic growth is not applicable to all development situations, and won't help women achieve economic, social, and political equality.

### ACHIEVING EQUALITY

The emerging women's development agenda for the 21st century is not only about recognizing women's specific needs and concerns, or about integrating them into existing development models. Rather, it seeks to transform the development process itself through strategies based on gender and social equity for all sectors of society that could promote sustainable livelihoods and stable communities.

The most important aspect of this

agenda is increasing opportunities for women to educate themselves about issues and ideas that directly concern them. This means everything from agricultural practices to health care and family planning. Development agendas are focusing on increasing women's literacy and economic opportunity as the most practical means to achieve this goal. Studies show that literacy, as well as access to media in general, can play the most significant role in reducing population growth rates, for example. This year China will begin airing a soap opera on television geared toward extolling the benefits of proper family planning, and praising the value of female children. Literacy programs for girls and women in Africa are producing a new generation of citizens.

### FINANCIAL MECHANISMS

Another aspect of the new development agenda is to improve women's access to certain financial mechanisms that have traditionally been denied them. As both owners and workers, women in Latin America and India, for example, have participated greatly in the informal sector of their regional and local economies. Yet, while micro-enterprises owned and operated by women have provided jobs and income, many women have been unable to gain access to financing and credit opportunities from mainstream economic institutions.

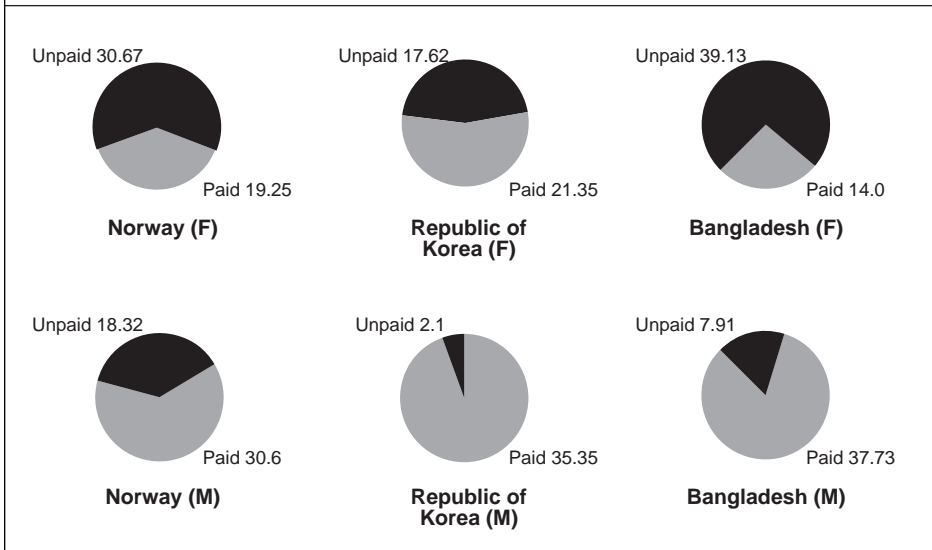
The U.N. Development Fund for Women has been working with a network of affiliated NGOs operating in Latin America to help develop the institutional capacity to respond effectively to the fiscal needs of women entrepreneurs. The project includes research, training, and credit-methodology design, and flows from a gender-sensitivity evaluation performed by non-governmental affiliates. Close to 700 business owners participate, more than 400 of whom are women. Information gathered from this development



**Gender-sensitive development projects enhance women's access to property, skills, and representation**

SOURCE: UNIFEM, N, March 1995

### Time Allocations Between Paid and Unpaid Work by Sex, 1990-1991



SOURCE: World Bank Atlas, 1994

project is being used to establish effective methods for supplying women entrepreneurs with lines of credit and financing in other parts of the world.

In India, the Women's Bank was begun by the Self-Employed Women Association, a women's NGO devoted to empowering women and enhancing their economic opportunities. The bank has over 40,000 members and assets totaling about \$2 million. Women run the bank, and only women are allowed to deposit, withdraw, and borrow money. As a result, against enormous political, cultural, and financial odds, Indian women are transforming their own lives.

#### AGRICULTURAL PRACTICES

The emerging women's development agenda also understands the need for creating new models of environmental and social sustainability that positively impact women's livelihoods through gender-equitable access to natural resources and trade. The World Bank recently issued a strategy statement on relieving hunger that acknowledges that economic growth and expansion alone aren't enough to alleviate chronic hunger and poverty. Indigenous agricultural practices, regional economic growth, basic social services, and resource renewability are intricately woven together, and must be understood in the context of specific geographic areas and community relationships. The World Bank's shift away from traditional strategies recognize is the significance of the role of women in forming community structures and in providing a major part of the labor force, especially among areas with large agricultural enterprises.

China's economic reforms have helped women in rural regions dominate the livestock and poultry industries. Emerging township and village enterprises, which employ more than 40 million women, have expanded agricultural opportunities for Chinese women. On average, a woman in China's countryside earns 40 percent of a household's income, and this increase in economic value is serving to enhance women's traditional socio-cultural status.

Gender and trade policies were the subject of a regional seminar held in Zimbabwe last spring to establish an information base on the impact of trade policies on women's lives worldwide, and to create mechanisms for promoting increased awareness of gender-related trade concerns. Policy makers, academics, activists, and women's organizations met to discuss the impact of trade expansion on women, and identified urgent gender-policy issues among the informal business and agricultural sectors. Such seminars contribute greatly to the creation of regional platforms from which policy-oriented advocacy, strategy development, and networking may be pursued, and provide an effective mechanism for creating awareness among international development policy makers.

Women are the primary contributors to Pakistan's rural agricultural economy, but they have little or no access to information that would help them increase productivity. Literacy rates among women in rural Pakistan are low. UNIFEM is sponsoring an educational program over the radio devoted to increasing awareness about agricultural processes and products for Pakistani women.

The program has been ongoing since 1993, and addresses problems associated with fertilizers and pesticides, food preservation, and obtaining credit.

The Women and Pesticides Project in nine Asian countries is designed to raise awareness about the dangers of pesticides by monitoring chemical uses among regional communities, and by providing information and education about safe alternatives. Every year, more than 25 million agricultural workers in developing countries, many of them women, suffer acute poisoning from agricultural pesticide products. Because women are directly targeted by many pesticide advertising campaigns, illiteracy and lack of education can mean that women are unable to read pesticide use directions printed on the products.

#### HEALTH CARE and EDUCATION

Increasing literacy and educational opportunities through development strategies has the potential to directly impact the lives of women by maintaining recognized health standards and by increasing longevity. Childbirth automatically places the health of most of the world's women in jeopardy at some point during their lives, often at many points during their lives, and it is a risk which only women assume. About 80 percent of all maternal deaths among developing nations are direct obstetric deaths resulting from complications experienced during pregnancy, labor, and the post-partum period. Of these deaths, unsafe abortion accounts for about 15 percent, infection resulting from squalid conditions and limited or no access to health care facilities accounts for about 15 percent, and violence against women significantly adds to the percentage of global maternal deaths.

The principal means of reducing maternal deaths is equal access to health care technologies and practices, which stems from increasing literacy and education. In Africa, several nations have established programs to provide local support and education mechanisms linked directly to primary health care centers. Such programs have already reduced maternal death rates by redirecting health care resources toward women at the community level, and by combining education and health care issues.

Another staggering health care problem among women, especially in some Asian nations with deeply ingrained prostitution cultures, is HIV. The World Health Organization has estimated that three of every four female prostitutes in Thailand, for example, are infected with HIV or another sexually transmitted disease. Equally staggering is the fact that many such women are mere children between the ages of ten and eighteen, forced into bondage beyond all acceptable standards of human dignity. While equal access

to health care would certainly provide some relief, the emerging development agenda for women seeks to address this culturally ingrained system of gender inequality by providing alternative, sustainable means of livelihood for young women and their families. Education and literacy, by providing access to the world around them, is the key to empowering women caught within ingrained cultural systems of subservience and domination.

The International Center for Research on Women (ICRW) has developed a program to foster collaboration between scientific researchers and NGOs to address the health needs of such women. The program documents and analyzes research efforts on women at the rural level, identifies restraints on collaboration between researchers and community action organizations, conducts in-country forums and seminars to bring researchers and local populations together, and disseminates its findings to researchers and policy makers around the world.

#### POPULATION and WOMEN

In many paternalistic societies, women are physically and culturally unable to place restrictions on the number of children they produce. In some cultures, having many children is viewed as an indicator of male virility and status. In such cultures, women's access to political institutions and education mechanisms that might redress such inequality is denied through a formal, centuries-old tradition of religious doctrine and social custom. As was made clear at the ICPD, the question of women's roles in matters of human reproduction is a point of contention that pits a traditional perspective of female subordination against a modern perspective of women's reproductive rights. While women's issues regarding reproduction rights and health care were incorporated in the ICPD document, it also became apparent that women's reproductive freedom is perhaps the single hottest flashpoint for fundamentalist movements. Who controls the means of reproduction is another way of asking: Who controls women?

**SOURCES:** *Women and Environments*, Spring '87; *Scientific American*, July '94; *Women and Environments*, Winter '91; *Society*, May/June '95; *Economic Reform and Development Prospects in Latin America*, UNDP, March '95; *Washington Post*, 5/14/95; *The Economist*, 5/15/95; *UNIFEM News*, March '95; *Africa Report*, January '95; *ECOSOC Commission on the Status of Women*, December '94; *Regional Solutions*, March '95; *New York Times*, 5/14/95; *UNIFEM Briefs*, April '95; *Earth Times*, March '94; *UNFPA, Global Populations Assistance*, 1993; *New Statesman & Society*, August '94; *WHO Annual Report*, '94; *ICRW Report*, March '95; *INSTRAW Report*, March '95.

## Women and International Human Rights Law

In the struggle for reproductive rights, victories are hard-won. To win their rights, women have had to coax, appeal to, and do battle with men and the societies they've built at virtually every level, from basic beliefs to legal systems. They have had to overcome patriarchy, unequal opportunities in education and other means of empowerment, and various forms of physical violence such as rape and sexual harassment.

Yet, the struggle's gains are being withheld by intransigent state bureaucracies and legislative zealots in various industrialized and developing countries.

Women continue to suffer widespread disadvantages through governmental neglect of their reproductive rights. This is a violation of human rights embodied in international law, although with few exceptions a woman's right to control her own sexuality and fertility is seen simply as one of a number of "women's issues." Neglect of preventable causes of reproductive ill-health and pregnancy-related death is an affront to human dignity and is part of a larger, systematic discrimination against the "other half" of humanity.

If international human rights law is to be truly universal, it must be applied both to require states to take effective preventive and curative measures to protect women's reproductive health and to afford women the capacity for reproductive self-determination.

International human rights treaties, including the Convention on the Elimination of All Forms of Discrimination Against Women, also known as the Women's Convention, require governments to ensure that women:

- are free from all forms of discrimination;
- achieve their rights to liberty and security, to marriage and foundation of families, to private and family life, and to increased information and education; and
- have access to health care and the benefits of scientific progress.

The right to regulate one's fertility—

reproductive self-determination—under international human rights law is a composite right founded on these separate rights.

Most states have fallen far short of ensuring reproductive self-determination, as is apparent in policies that require husband's authorization for their wives to obtain contraceptive services.

The right to reproductive self-determination includes the rights to liberty and security of the person and the rights to receive and impart information. High rates of maternal mortality and morbidity are an obvious violation of the right to liberty and security of the person. The violation occurs when states deny women access to means of fertility control, and leave them at risk of unintended pregnancies.

Other elements of the right to reproductive self-determination include the rights to health care and the benefits of scientific progress. The Committee on the Elimination of Discrimination against Women, which monitors the implementation of the Women's Convention, questions member governments as to whether they are providing comprehensive reproductive health services and if not, whether they are violating women's rights to equality in health services. Moreover, governments that are not moving to provide modern, safe, effective, and acceptable methods of fertility control increasingly are being challenged to do so.

International protection of women's reproductive rights requires that governments eliminate all obstacles to reproductive self-determination and provide the necessary reproductive health services. In the struggle to hold on to the gains made by earlier generations of advocates and to finally put the "universal" into human rights, victories will remain hard-won.

Rebecca Cook, Associate Professor of Law in the Faculty of Law at the University of Toronto in Canada, Director of its International Human Rights Programme

**SOURCE:** Reprinted from *POPULI*, Vol. 20

## DEVELOPMENT AND WOMEN: *A Selected Reading List*

Articles on development are numerous, and can be difficult to understand. Economists often are not speaking to lay people but to other economists, for example, while policy makers often are addressing their constituencies. The social sciences have produced some of the more readable treatments of development issues, maybe because social scientists tend to place human interaction and social discourse on a par with micro- and macro-economic fluctuations. Here is a selected reading list for those who want to further explore the debate, about women's roles in development agendas.

■ *Sociology, Anthropology, and Development: An Annotated Bibliography of World Bank Publications*. Michael Cernea (ed). Washington, DC: World Bank, 1994. A good resource for lay and professional audiences alike.

■ *Linkages Between Population, Environment, and Development: Case Studies from Costa Rica, Pakistan, and Uganda*. Krishna Ghimire. Geneva: United Nations Research Institute for Social Development (UNRISD), 1994. Easy reading and good geographically disparate case study comparisons.

■ *Human Development and the Arab World: The Role of Non-governmental Organizations*. Beirut: Regional Meeting of Arab Non-governmental Organizations, 1995. Topical, and a good way to appreciate the link between regional concerns and U.N. conference programming.

■ *Putting Gender on the Agenda: A Guide to Participating in United Nations World Conferences*. New York: UNIFEM, 1995. For NGOs to interact effectively with international policy makers and institutions.

■ "Development Banks: An Idea Whose Time Has Gone," by Paul Roberts in *Business Week*, 7/11/94. Are international lending agencies addressing the needs of people, or are they promulgating outdated projects and policies?

■ "Africa: Falling Off the Map?," by Tom Callaghy in *Current History*, January 1994.

Africa may be even more marginalized from the world economy than it was during the era of colonialism, when it was perceived as having greater economic importance to Western nations.

■ "Appreciating Agrodiversity," by H. Brookfield and C. Padoch in *Environment*, June 1994. Indigenous peoples provide an essential resource for scientists and development policy makers trying to create ecologically responsible methods of sustainable agriculture.

■ "Investing in Development" in *The Economist*, 6/25/94. Poor maintenance, location, management problems, and state-controlled pricing often erode the value of developing countries' economic infrastructures.

■ "There's More than One Way to Play Leapfrog," by P. Coy et. al. in *Business Week*, 11/18/94. Isolation rather than poverty may be dooming developing countries' communications advancements.

■ "Optimism and Overpopulation," by Virginia Abernathy in *The Atlantic*, December 1994. Economic development will not control the populations of developing countries because population growth results from a perception that economic opportunities are expanding.

■ Boserup, Ester. *Women's Roles in Economic Development*. London: Allen & Unwin, 1970. Groundbreaking work questioning the systematic exclusion of women in the resources development process.

■ Merchant, Carolyn. *The Death of Nature: Women, Ecology, and the Scientific Revolution*. New York: Harper & Row, 1980. A mechanistic worldview of science has promoted exploitation of nature, unbridled economic growth, and an economic model subordinating women.

■ Caldecott, Leonie and Leland, Stephanie (eds.). *Reclaim the Earth*. London: Women's Press, 1983. Series of articles presenting a broad range of social and environmental development issues and ideas from a feminist perspective.



**Women's economic roles among African nations are changing as literary rates increase**

SOURCE: ICROW Report, March 1995

■ Spretnak, C. (ed.). *The Politics of Women's Spirituality*. Garden City: Anchor Press, 1982. Historical conception of Earth as alive and female, and effect of this perspective on ethical uses of natural resources.

■ "NGOs and Caribbean Development," by David Lewis in *Annals of American Academy of Political and Social Science*, May 1994. Caribbean NGOs have devoted most of their energy, in contrast to international NGOs, to regional political and economic priorities.

■ "Population and Development: Toward a Social Justice Agenda," by Asoka Bandarage in *Monthly Review*, September 1994. Colonialism's economic effects have acted to decrease birth rates among imperialist countries, while increasing them among colonized countries. Only changes in social structures for both can reduce global population growth rates.

■ *Women and the New Trade Agenda*. S. Joekes and A. Weston. New York: UNIFEM, 1994. Economic restructuring and new trade policy agendas affect women in all regions of the world. Contains hard-to-find gender perspectives among various developing nations.

# HEALTH AND ENVIRONMENT: *The Health/Environment Knot*

1995 marks the 25th anniversary of Earth Day, created to honor the natural environment. A flurry of articles has appeared recently in the American press evaluating gains and losses in the environmental movement over the past quarter century. There is general agreement that environmental issues have moved from the margins into the mainstream of public debate. However, the issue that WIT focuses on remains almost as neglected now as it did twenty five years ago: the impact of environmental degradation on human health.

WIT's concern is that analyses of health issues generally omit environmental causes and consequences, and that environmental questions usually incorporate public health matters only when related to a specific topic or problem. The international environmental debate as it is currently framed associates economic growth and social development with environmental resources. This approach ignores the underlying reality that environmental degradation is a human health issue. Though apparent at the inception of Earth Day, this truism has since been diluted, as policy makers have forgotten how healthy lives are intricately bound up with a healthy natural environment. Most environmentalists connect human health effects to environmental issues only when that connection is patently obvious, like toxic wastes and residues or nuclear accidents.

The groundbreaking concept of sustainable development is a case in point. The United Nations Conference on Environment and Development (UNCED) in 1992, better known as The Rio Earth Summit, formalized the connection between economic development, ecological impact, and poverty alleviation. Health concerns are present in *Agenda 21*, the document that resulted from UNCED, but for the most part remain detached from the main principles and plans of action. The basic understanding that a healthy environment, and therefore a productive population, requires an uncontaminated natural world seems difficult to integrate into mainstream environmental debates.

Integrating environmental concerns with public health debates is equally problematic. The concept of sustainable development has become politicized and links between the environment and human health have been pushed into the political arena. How can this gap be bridged?

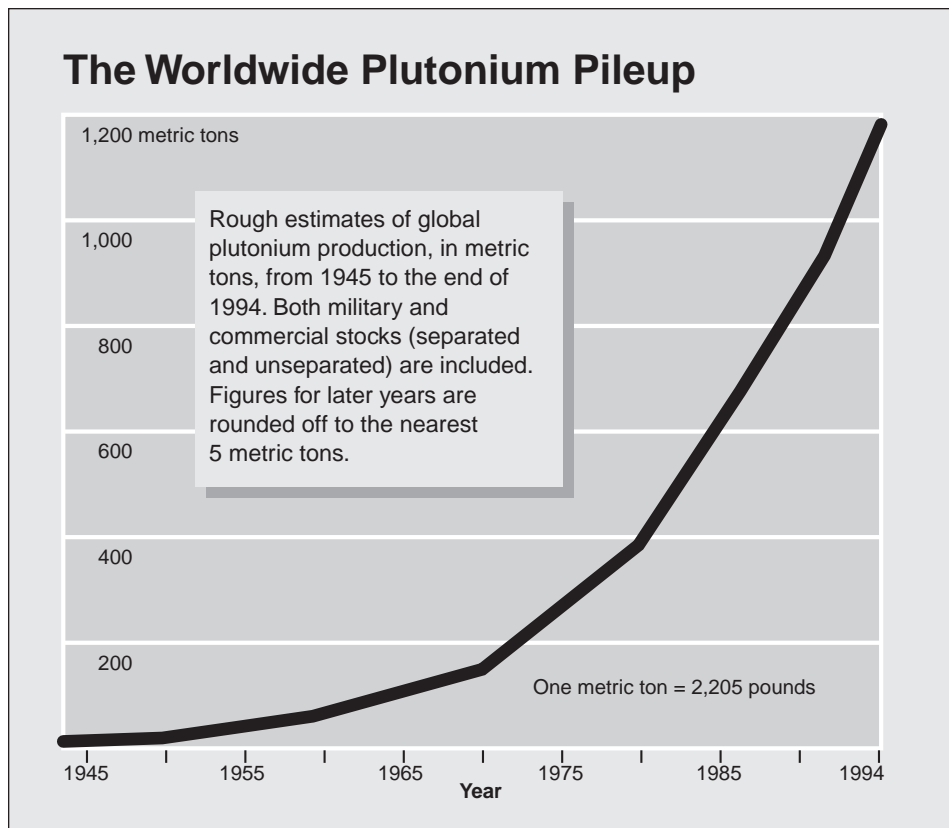
The first step is to objectively analyze

why environmentalists, medical practitioners, and health care specialists shy away from the environmental degradation/human health connection. Perhaps it is too frightening to readily accept our own responsibility for the degradation we ourselves cause. Perhaps it is too difficult for people to understand the consequences of actions that are not directly in view. Possibly it is too complex, for current health problems are not only the result of politics, but also of degraded resources such as arable land and potable water.

The second step is to influence policy makers. The year 1995 marks not only a quarter century of global environmentalism, but also commemorates the U.N.'s 50th anniversary and the 50th anniversary of the end of the Second World War. During that half century, much of Europe, Asia, Latin America, and Africa were rebuilt, and the United States experienced a 20-year period of economic prosperity, roughly 1950-1970, unparalleled in recent U.S. history.

Yet, during this same postwar period, the world's population has more than doubled, rising from 2.5 billion in 1950 to almost 6 billion today. Until the HIV-AIDs pandemic, increases in worldwide cancer rates, and the reemergence of drug-resistant strains of viruses and diseases once thought to have been eradicated, the postwar era seemed threatened by only one danger: nuclear war.

The notion that environmental degradation favors human illness may be as unimaginable today as global thermonuclear war was during the Cold War. The newly emerging crisis in global human health has to be viewed in the context of global environmental deterioration, because a significant part of the solution lies in reversing environmental damage. The 50-year anniversary of Earth Day in the year 2020 may mark the celebration of the crucial link between human health and the environment as one integrated issue. Hopefully we will reach that realization sooner.



SOURCE: Institute for Energy and Environmental Research

## Chernobyl Update

According to the World Health Organization, the rate of thyroid cancer among children living near the site of the 1986 nuclear explosion at Chernobyl is 80 times higher than normal. A University of Hiroshima study shows that the rate of birth defects has doubled. Not only are there 16 Chernobyl-type reactors still operating in Eastern Europe, but the Russian Federation is currently marketing its nuclear technology among other nations, notably Iran.

The government of Ukraine agreed this April to permanently close Chernobyl by 1999. Their decision broke a months-long stall in talks between Ukraine and Western nations about Chernobyl's fate, and has been applauded by Western nuclear industry and government officials.

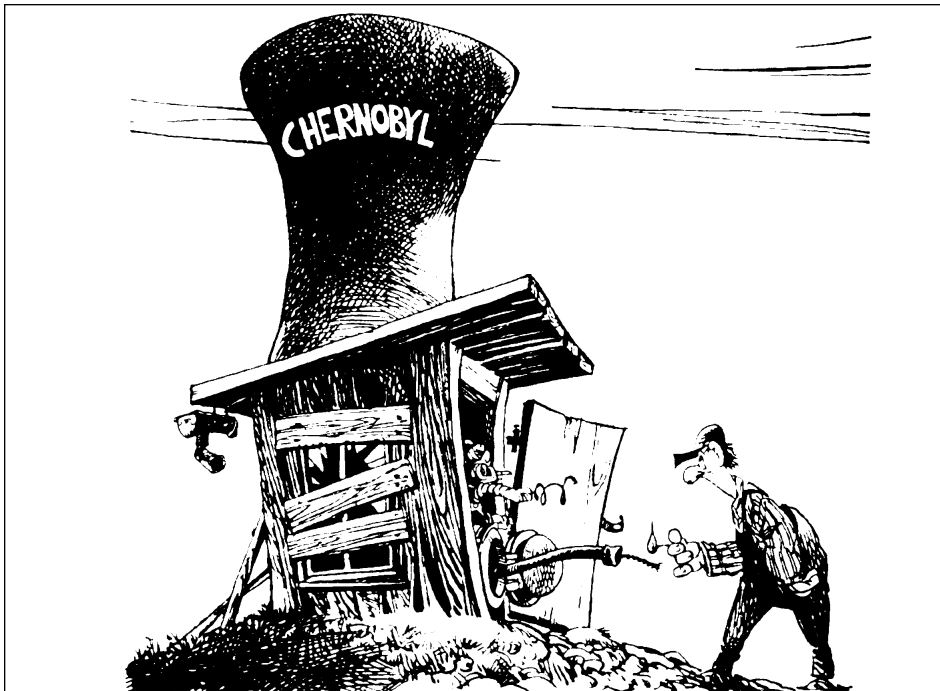
While old Soviet atomic ministry bureaucrats and conservatives in the Ukrainian Parliament are infuriated, Ukraine President Leonid Kuchma has noted that closing Chernobyl is part of his government's aggressive economic reform policies. Such policies, coinciding with Western worries about Russian military aggression and radioactive waste disposal practices, have won Ukraine new attention and respect among international development institutions and lending agencies, especially the International Monetary Fund and World Bank. With the financial backing and goodwill of such institutions,

Ukraine intends to explore alternative forms of energy production, most notably natural gas and wind power.

But scientifically determining the impact of Chernobyl on the health of local populations remains extremely difficult, given the gross irregularities in the former Soviet Union's system of gathering and reporting public health data. Accurate information about Chernobyl's nuclear legacy simply does not exist in a form that might be of use to the scientific community because of the Soviet government's efforts to cover up the disaster's potential harmful impact. As late as 1991, the International Chernobyl Project issued a report claiming that no significant health disorders among local populations could be directly linked to radioactive fallout.

Ukraine's momentous decision to finally shut down Chernobyl and to explore alternative energy sources should act as a model for other nations with energy production concerns. The overwhelmingly disastrous impact of a nuclear accident affects the global community because radioactivity does not respect national boundaries. It is in everyone's best interest to insure beyond question that no such incident ever occurs again.

**SOURCES:** *Chernobyl Committee of Washington*, March 1995; *Washington Post*, 4/15/95; *New Republic*, 4/27/92; *World Press Review*, August 1994; *Europe Environment*, 5/31/94.



**SOURCE:** *World Press Review*, August 1994

## Toxic Sites

There are more than 33,000 toxic waste sites in the United States, according to the federal Agency for Toxic Substances and Disease Registry in Atlanta, Georgia, USA. Potential health problems have caused the Agency to develop a list of seven priority health conditions, broad categories of diseases, disorders, and dysfunctions, for which health studies and chemical-specific research are needed. The list aims to assist in evaluating health risks for people living near toxic sites and to determine program and applied health research activities involving specific substances.

Established by U.S. Congress in 1980, the Agency has conducted public health assessments for about 1200 of the 1300 toxic sites identified on the EPA's National Priorities List. The seven disease categories are: birth defects, cancers, immune function disorders, kidney dysfunction, liver dysfunction, lung and respiratory diseases, and neurotoxic disorders. To further evaluate health risks to exposed populations, the Agency will apply these categories to assess the occurrence of adverse health effects and the relation between specific effects and specific substances.

To encourage public health, medical, and university researchers to address these priority health concerns, the Agency acts as a conduit for collecting and disseminating information about the relationship between toxic substances, environmental degradation, and human health. Contact: ATSDR, Division of Health Studies, Atlanta, GA, 404-639-6200.

**SOURCE:** *Journal of the American Medical Association*, April '94.

**"Every part of the earth is sacred. . . Every shining pine needle, every sandy shore, every mist in the dark woods, every clearing and humming insect is holy. . . We are part of the earth, and it is part of us. . . The earth does not belong to man; man belongs to the earth. Man does not weave the web of life; he is merely a strand in it. Whatever he does to the web, he does to himself. . ."** —Chief Seattle, 1854



## GOOD NEWS

■ Northrup Grumman, an aerospace company in California that has had to retool since the end of the Cold War, has developed a lightweight bus shell constructed from space age polymers. The new shell eliminates 10,000 pounds from the standard bus frame, which will save significantly on fuel consumption and decrease the amount of carbon dioxide that buses usually emit into the atmosphere.

*SOURCE: Wall Street Journal, 4/10/95.*

■ Auto emissions control devices filter pollutants before they emerge from the tail pipe. A new emissions control system developed by Engelhard Corporation has developed a new type of emission control system that would turn cars into air cleaning machines. The new technology involves coating a car's radiator with catalysts that convert smog into oxygen and carbon monoxide into carbon dioxide, reducing auto pollutants by as much as 90 percent.

*SOURCE: Wall Street Journal, 4/16/95.*

■ Collaboration between pharmaceutical companies, research institutes, and governments continues in the search for medicinal plants from the world's rainforests. In Belize, traditional healers have joined with the government in creating a 6,000 acre sanctuary dedicated to preserving and propagating medicinal plants. The New York Botanical Garden's Institute of Economic Botany and Pfizer, Inc., are working to collect a broad sample of United States specimens, and the U.S. National Cancer Institute has invested in a large-scale project to collect plant materials by contracting with the University of Illinois and the Missouri Botanical Garden.

*SOURCE: Healthstate, Spring 1995.*

■ A new global initiative to create volunteer rapid-response teams called the White Helmet Initiative was launched by the United Nations Volunteers, a division of the U.N. Development Programme (UNDP). The White Helmets are organized to respond quickly toward bridging the crucial gap between an emergency and the period when rehabilitation may begin. Cosponsored by 65 nations, the aim is to expand the White Helmet Initiative into a multinational, non-governmental organization that will recruit its own volunteers and raise its own funds.

*SOURCE: UNDP, April 1995.*

■ As part of the U.N.'s 50th Anniversary programming, a worldwide, year-long programme of activities and celebrations will culminate in a special commemorative meeting of the General Assembly in New York City. The meeting is expected to adopt a Declaration reaffirming the principles of the 1945 U.N. charter.

*SOURCE: UNDP Update, February 1995.*

■ The 1995 Review and Extensions Conference of the Parties to the Treaty on the Non-proliferation of Nuclear Weapons (NPT) convened in New York City recently, and all participating nations ratified its main principle: to work toward dramatically reducing and eliminating the number of stockpiled nuclear weapons in the world.

*SOURCE: UNDP Update, May, 1995.*

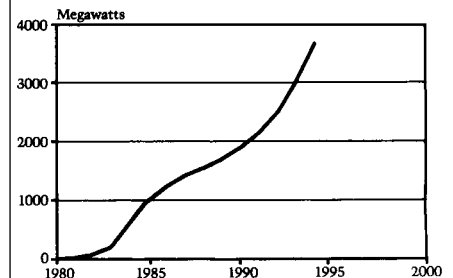
■ The Conference on Straddling Fish Stocks and Highly Migratory Fish Stocks convened in March-April in New York City, and the first session of the Conference of the Parties to the United Nations Framework Convention on Climate Change recently met in Berlin. At the Berlin climate conference, participants agreed to allocate monies toward the implementation of remedial policies and the reduction of greenhouse gasses.

*SOURCE: Vital Signs 1995, Worldwatch Institute.*

■ In 1995, the international community is celebrating the United Nations Year for Tolerance, as well as the World Year of People's Commemoration of the Victims of the Second World War. Preparations are underway for the International Year for the Eradication of Poverty (1996), the International Year of the Ocean (1998), and the International Year of the Elderly (1999).

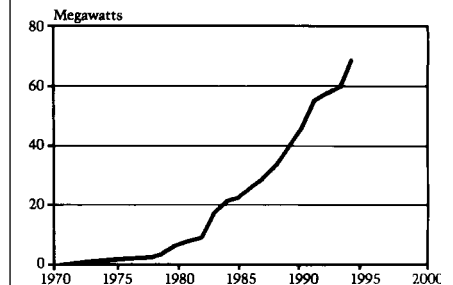
*SOURCE: UNDP Update, March 1995.*

**World Wind Energy Generating Capacity, 1980-94**



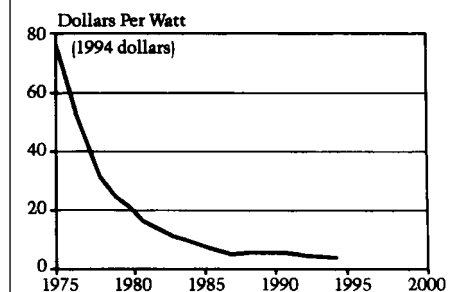
*SOURCE: Gipe and Associates, BTM Consult*

**World Photovoltaic Shipments, 1971-94**



*SOURCE: Maycock*

**Average Factory Price for Photovoltaic Modules, 1975-94**



*SOURCE: Maycock*

■ As part of the international effort to discover and promote new ways in which industrial and developing nations might increase their productivity without destroying the environment, UNESCO will endow a chair at New York's Columbia University in the area of global environmental problems. The UNESCO chair, which is to be affiliated with Columbia's new Program on Information and Resources, will be held by Graelcla Chichilnisky, a professor of economics and mathematics who is Director of the program.

*SOURCE: UNESCO News, May, 1995.*



■ Like natural swamps, wetlands built by environmental engineers strain and treat suspended solids, dissolved chemicals, and other materials in drainage waters. They also serve as an important habitat for fish and wildlife, and provide flood and erosion control. Research into built wetlands has recently gained prominence in environmental engineering circles, as international concern over wetlands degradation and reduction has grown.

**SOURCE:** *Earth Times*, May 1995.

■ Global windpower generating capacity jumped 22 percent in 1994, to 3,710 megawatts. The net increase of 660 megawatts from 1993 is an all-time high for the growing wind power industry, which offers a clean, renewable alternative to traditional energy sources. Nations with the largest existing wind power generation include Germany, Great Britain, and India, but they are rapidly being approached by Argentina, Brazil, Bolivia, Chile, China, Egypt, Indonesia, Mexico, and Morocco. Overall, developing countries appear to have a good chance of dominating global wind power generation by the end of the century.

**SOURCE:** *Vital Signs 1995*, Worldwatch Institute.

■ World shipments of photovoltaic cells, the small, silicon-based chips that directly produce electricity from sunlight, increased by more than 15 percent in 1994. The cost of producing solar cells fell significantly last year, and technological improvements have added to this clean, renewable energy source's economic viability. The private sector is increasingly active in developing and expanding international solar energy markets, which have the potential to decrease annual environmental degradation rates dramatically by replacing fossil fuel consumption and nuclear generated electricity.

**SOURCE:** *Vital Signs 1995*, Worldwatch Institute.

■ The U.S. federal Centers for Disease Control and Prevention are planning a research project on the U.S. Arizona-Mexico border for a two-year study of environmental health problems. The project was initiated following complaints from border residents about air pollution from illegally burning landfills, illegal dumping of hazardous wastes, and poor sewage treatment, which is adversely affecting the health of all area residents.

**SOURCE:** *American Medical News*, 5/15/95.

## Toxic Cleanup

Cleaning up military toxic wastes at former U.S. bases is no small task, and the Department of Defense cannot manage it without the active participation of local populations and public interest groups. One such group is ISIS, the Institute for Science and Interdisciplinary Studies, headquartered in Amherst, Massachusetts.

When nearby Westover Air Force Base closed in the late 1980s, local residents wanted its landscape returned to the community. ISIS, which has been developing ways and means to use science and technology to empower individuals and communities since the 1970s, is helping to improve the military's cleanup efforts by keeping the community informed and involved, and by facilitating community/military interaction at personal and institutional levels.

ISIS organizes meetings, publishes newsletters, and develops outreach tools to enhance awareness and bring people together. They conduct oral histories and coordinate Geographic Information Systems to identify irreplaceable community memory about the site. Easy-to-read resource materials written by ISIS clarify social and technical issues, and the educational meetings they host help identify and explain citizen roles.

ISIS is staffed by experts with interdisciplinary training, so they are able to address a broad range of concerns about base cleanups. The work at Westover is providing a model for programs nationwide, and ISIS hopes it may prove successful among other countries as well. For information, contact: ISIS, Prescott House C-5, 893 West St., Amherst, MA 01002; 413-582-5582/5129

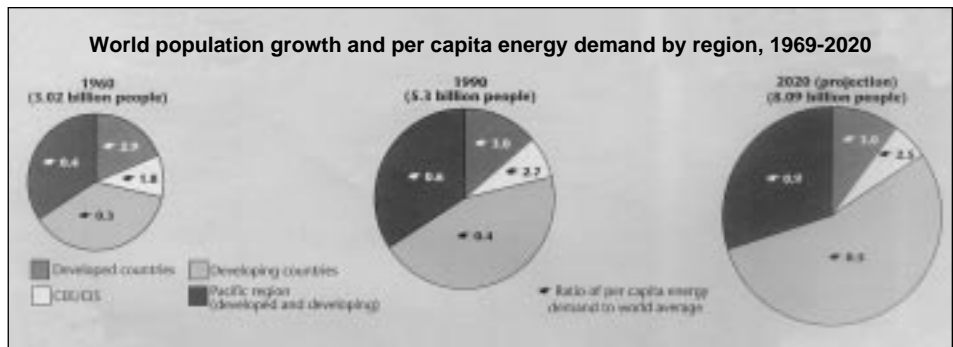
## Spring Thaw Exposes Russian Oil Spill

Last October in Russia's remote Komi region, about 1,000 miles northeast of Moscow, a major environmental disaster occurred when an oil pipeline ruptured, spilling eight times more crude oil into the fragile tundra ecosystem than the Exxon Valdez spilled into the Gulf of Alaska in 1989. Shortly after reports of the Komi spill's proportions began filtering in through western media, winter set in and turned the entire area into a vast oil-soaked morass.

With the spring thaw, the extent of the environmental devastation is becoming apparent. One hundred and seventy acres of streams, bogs, and marshland were subsumed by hot crude oil during 1994, and, due to the government's policy of strict secrecy, "cleanup" efforts last year involved setting fires to avoid world publicity.

Led by the Australian Emergency Service and Hartec, a private cleanup company based in Alaska, cleanup equipment and prevention technology now in place will probably prevent any more discharge of crude oil into the Pechora River, the region's main waterway which empties directly into the Barents Sea. Spring rains and runoff from the Ural Mountains will complicate the operation, but the spill response team plans to be in place throughout this summer. Their objective is to create a situation that would allow natural organic process to biodegrade as much of the spilled oil as possible.

**SOURCE:** *Washington Post*, 5/23/95



**SOURCE:** *Energy for Tomorrow's World*, WEC (1993)



## DID YOU KNOW?

■ According to "Health in Social Development," a World Health Organization position paper released in March, there is no group that better illustrates the combined effects of poverty, unemployment, and social disintegration on human health than women. The poor health of women in many developing countries impedes economic development. Women comprise more than 70 percent of the agricultural workforce in many parts of Africa, and are the sole income providers in a quarter to a third of the world's households. The economic costs of this relatively low health status in terms of losses to productivity are high, especially as mothers have less ability to care for and support children when their health is impaired.

**SOURCE:** World Health Organization, March 1995.

■ This winter, concentrations of protective ozone over much of the northern hemisphere were below normal, though not low enough to be considered a hole. Chemical pollution and natural weather patterns are cited as the causes.

**SOURCE:** Science News, 5/6/95.

■ A Population Action International Report says global population is growing eight times faster than arable land area, placing food supply security for millions in jeopardy into the 21st century. Currently there are nine countries with a scarcity of arable land, including the Netherlands, South Korea, and Egypt.

**SOURCE:** The Earth Times, 4/15/95.

■ A recent United Nations Environment Programme report focuses on how the poor are both victims and agents of envi-

ronmental degradation. The link between poverty and environmental decay is gaining increasing recognition, and the report includes case studies from Indonesia, Spain, the United States, India, and Brazil, as well as recommendations for promoting sustainable economic and agricultural development.

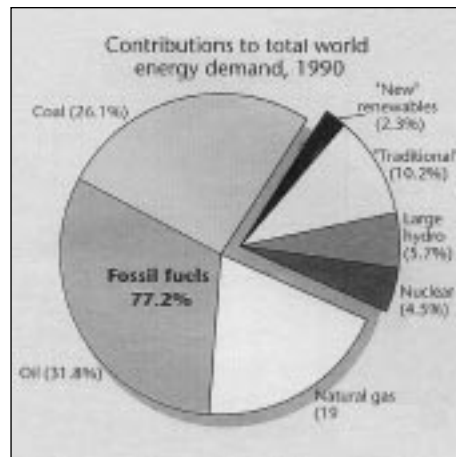
**SOURCE:** UNEP, *Poverty and the Environment: Reconciling Short-term Needs with Long-term Sustainability Goals*, March 1995.

■ A giant iceberg broke off the floating Larsen Shelf along the Antarctic Peninsula this winter. Investigators from the British Antarctic Survey report that three major pieces were broken off by rises in regional temperatures since the 1940s.

**SOURCE:** Science News, 4/29/95.

■ The 49th Session of the United Nations General Assembly adopted several resolutions that establish new days for observing specific environmental issues. The new days, which begin in 1995, are: World Day to Combat Desertification and Drought, June 17; International Day for the Preservation of the Ozone Layer, September 16; and International Day for Biological Diversity, December 29.

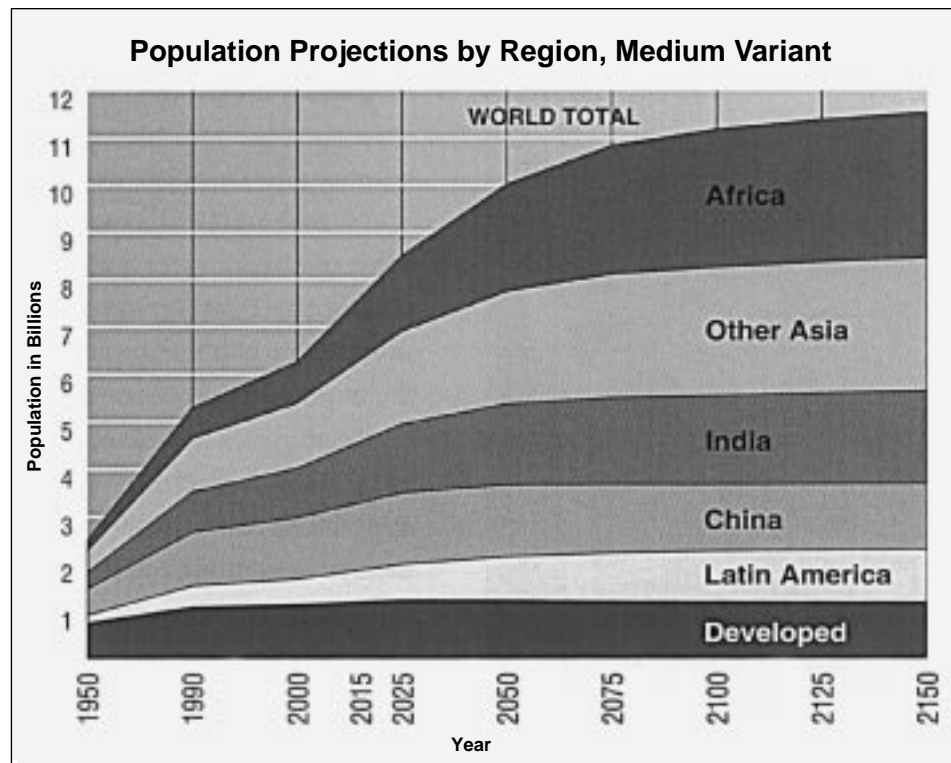
**SOURCE:** UNDP/ Update, 3/31/95.



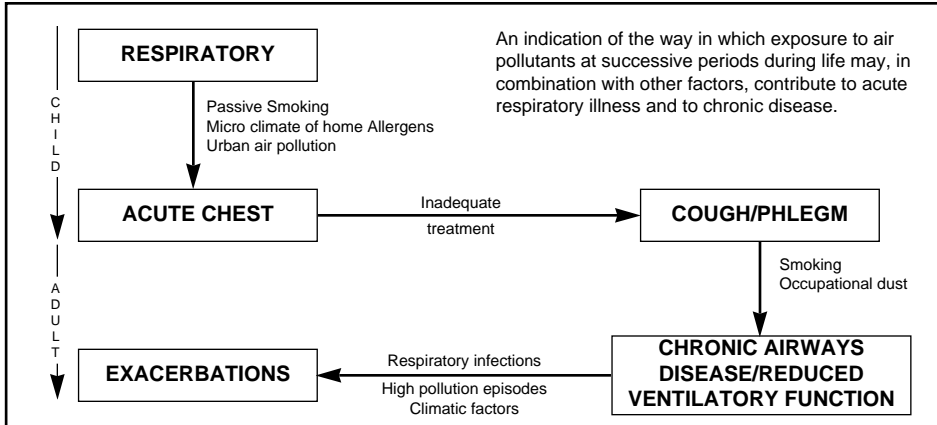
**SOURCE:** Energy for Tomorrow's World, WEC (1993)

■ The Chairman of the U.S. Nuclear Regulatory Commission has announced his resignation, effective July 1. Ivan Selin says that America "is awash in electricity," and that utilities investors are choosing plants that can be built less expensively than the costly nuclear power plants. No new atomic plants have been ordered since the 1970s, and Selin himself has chosen to go into business in Asia selling gas-fired turbines.

**SOURCE:** New York Times, 3/15/95.



**SOURCE:** UNFPA



SOURCE: WHO Commission on Health and Environment

Japan, as the world's largest consumer of tropical forest products, is the primary cause of rapid deforestation in Thailand, Indonesia, the Philippines, and Malaysia. Japan also contributes to industrial pollution worldwide building metallurgical processing plants, car and electronics assembly plants, and chemical industries.

SOURCE: Vital Signs 1994, Worldwatch Institute.

Habitat destruction threatens biodiversity in the Philippines. Studies reveal there are over 175 species of terrestrial mammals in the Philippines, with 115 species found nowhere else in the world. Extreme habitat loss caused by deforestation, forest degradation, and forest fragmentation is threat-

ening several species with extinction.

SOURCE: WIT, Philippines Regional Office.

The United States is responsible for almost 25 percent of the world's total energy consumption, and uses one million gallons of oil every two minutes. Energy wasted by cars, homes, and appliances in the U.S. equals over twice the known energy reserves in Alaska and the Outer Continental Shelf. By using energy more efficiently, the U.S. could reduce its energy consumption by 50 percent in 25 years, and promote economic growth in the process by saving consumers \$2.3 trillion and by creating a new growth industry.

SOURCE: Earth Times, May 1995.

# Population Statistics

World population is now 5.43 billion, and is expected to reach 7 billion by 2010. China, with 1.16 billion people, has the world's largest population, followed by India (882 million), the United States (255 million), Indonesia (184 million), Brazil (150 million), the former Soviet Union (149 million), and Japan (130 million). Studies show birthrates have been increasing among developed nations due to an increase in immigrants, who tend to have large families, and due to the rising numbers of divorced people who remarry and begin new families. Worldwide, women average four children, with the exception of parts of Africa where the average reaches as high as eight or ten children.

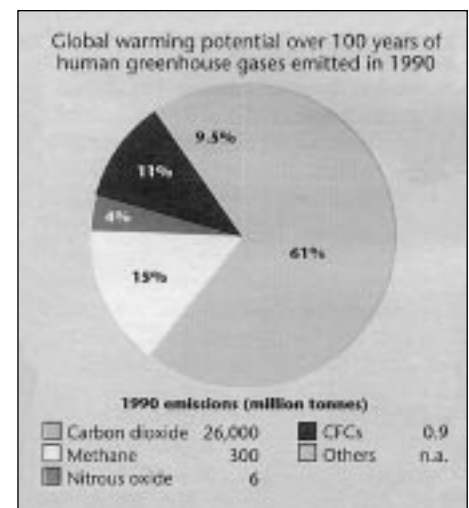
China has legislation limiting couples to only one child. Population growth in China is now almost zero, with a national average of two children per woman. After China, the biggest drop in birth rates is in Latin America and East Asia. Korea's fertility rate has fallen from an average of 6.1 per woman to 2.1 since 1970. Sri Lanka's dropped to 1.4 despite a low per capita GNP, and probably resulted from the Sri Lankan government's policy of addressing the needs of the poor and promoting education and jobs for women, increasing life expectancy among Sri Lankan women and raising the adult literacy rate to 87 percent.

SOURCE: Vital Signs 1994, Worldwatch Institute.

## Some Examples of Emerging Viruses and Factors in Their Emergence

Virus	Symptoms	Distribution	Natural Host	Probable Factors in Emergence
Influenza	Respiratory	Worldwide	Fowl (and pigs)	Integrated pig-duck farming
Seoul	Hemorrhage fever with renal syndrome	Asia, Europe, U.S.	Rodent	Population density, urban rate
Rift Valley	Fever +/- hemorrhage	Africa	Mosquito	Dams, irrigation
Oropouche	Fever	Brazil, Trinidad, Panama	Midge	Cacao farming (vector breeds in hulls)
O'nyong-nyong	Arthritis, rash	Africa	Mosquito	Civil disruption
Yellow Fever	Fever, jaundice	Africa, South America	Mosquito, Monkey	Storage of water in small vessels
Dengue	Fever +/- hemorrhage	Asia, South America, Africa, Caribbean	Mosquito, Human/Monkey	Increased urban population, factors favoring mosquito breeding
Rocio	Encephalitis	Brazil	Mosquito, Birds	Ecological factors plus recombination of Ilcus virus with unknown virus
Junin	Fever, hemorrhage	South America	Rodent	Extension of farmlands favors host
Ryanosur Forest	Encephalitis	India	Tick, Rodent	Deforestation

SOURCE: F. A. S. Public Interest Report, Vol. 46, #6



SOURCE: Climate Change, the IPCC Scientific Assessment (1990)

# FOOD FOR THOUGHT: *The Environment and the World Summit for Social Development*

The World Summit for Social Development, or the Social Summit, held in Copenhagen March 6-12, 1995, produced some important gains in the international debate on enhancing the quality of individual lives. One of the Summit's most significant outcomes was the role played by NGOs, many of which organized into caucuses, lobbied government delegations, and addressed the plenary sessions. The keen interest within the global NGO community was reflected in the large number of participants at both the Social Summit and the NGO Forum.

The three main issues tackled at the Social Summit were: elimination of the most severe forms of poverty, unemployment, and social disintegration. The Summit produced a document containing a Declaration of Principles and a Program of Action. Yet, advances made in environmental awareness and protection at the 1992 Rio Earth Summit seem to have been all but forgotten in Copenhagen. Sustainable development, the crucial phrase linking environmental protection and economic growth with poverty alleviation, was substantially weakened.

The original concept of sustainable development limited the notion of economic growth by associating it with impact on the current and future availability of resources. That clear association disap-

peared in the language of the Social Summit document by pairing economic growth and sustainable development. This coupling appears throughout the document, and dilutes the original ideas behind sustainable development.

The groundwork for this conceptual vagueness was laid in the language of the Declaration of Principles. Commitment Nine states: "We commit ourselves to increase significantly and/or utilize more efficiently the resources allocated to social development in order to achieve the goals of the Summit... To this end, we will...implement macroeconomic and microeconomic policies to ensure *sustainable economic growth and sustainable development* to support social development..." [italics added]. And further:

"Economic development, social development, and environmental protection are interdependent and mutually-reinforcing components of sustainable development, which is the framework for our effort to achieve a higher quality of life for all people.

Equitable social development that recognizes empowering of the poor to utilize environmental resources sustainably is a necessary foundation for sustainable development...broadbased and sustained economic growth in the context of sustainable development is necessary to sustain social development."

The contradictions between sustained economic growth, sustainable development and economic growth, and sustainable utilization of resources reflected the conflicts within the political debate. For the most part, developing nations do not want to be restricted from economic growth by limiting resource use and extraction, a limitation which is inherent in the docu-

## Historical Perspectives

Prior to post World War II international development policies, the term sustainable development was used in the U.S. by American Progressives. The original term sustainable development comes from conservation science and the sustained-yield techniques of the American Progressives Era (roughly 1890-1910). In its original meaning, sustainable development treated large scale resources—i.e., forests, minerals, and animals—as crops. Sustained-yield which was part of the early use of sustainable development meant that a resource regenerated naturally or with human help. The Progressives articulated their ideas about sustainable development using language that grew out of their beliefs on social value and moral virtue. They thought science was the key to mastering the natural world. U.S. agencies created public relations mechanisms in the early 20th century that institutionalized the rhetoric linking sustained-yield land management with moral virtue.

This link is alive in today's global resources debate and may account for some of the conflicts between Northern and Southern perspectives on development.

**SOURCES:** Samuel Hays (1959), *Conservation and the Gospel of Efficiency: The Progressive Conservation Movement*.

ment's language pertaining to sustainable development. Developed nations are not yet interested in imposing trade restrictions or in readjusting their own consumption habits, especially since their own waste products have recently become an international commodity. The Copenhagen Document's linguistic inconsistency further diminishes the authority of this concept. It would be a great step backwards if social development policies for poverty alleviation continue to neglect the crucial limitations on economic growth posed by considerations of environmental impact.

**SOURCE:** U.N. World Summit for Social Development (WSSD), *Conference Papers, 1995*.



**Women's tree nursery, Cameroon. Development initiatives for and by women make empowerment a reality.**

**SOURCE:** UNFPA

## Voices of the Planet

■ *The Coming Plague: Newly Emerging Diseases in a World Out of Balance.* Laurie Garrett. New York: Farrar, Straus & Giroux, 1994. *The Hot Zone.* Richard Preston. New York: Random House, 1994.

Microbes have always preyed on *Homo sapiens*, taking advantage of war, poverty, overcrowding, and poor sanitation to attack human populations. At the end of the 20th century, microbes have gained opportunities from a combination of factors to potentially wreck havoc, unless people recognize the danger and find solutions, such as global surveillance and disease early warning systems. So warns Laurie Garrett in *The Coming Plague*, a study of emerging and reemergent diseases. Written like an adventure story, Garrett tells of the discoveries of modern epidemics, including the Marburg virus in Germany, Lassa fever in Nigeria, the Ebola virus in Zaire, the Sudan, and the United States, meningitis in Brazil, swine flu, Legionnaires Disease, and the hantaviruses in America. Garrett explores the various responses of authorities, from local public health officials to World Health Organization medical professionals, and documents the international role of national disease centers such as the United States' Center for Disease Control and France's Institut Pasteur.

By taking a biographical approach toward some of the medical "heroes," Garret infuses her narrative with close-up views of the doctors and patients who are directly involved. In addition to analyzing newly identified disease outbreaks, Garret examines episodes of reemergent, drug-resistant diseases: tuberculosis, cholera, malaria, and yellow fever. Of special interest is the treatment of development policies in relation to "Third World-ization," a concept incorporating the large population increases in developing nations, which set conditions that exacerbate illnesses. Once a disease gains a foothold among humans in a particular location, it can quickly spread to new locations, mutating along the journey.

Garrett also addresses the impact of ozone depletion and global warming in creating a microbial "soup" that favors a rise in epidemics. The reader wonders what might happen if HIV/AIDs became airborne. Given the emergence of the global village, with its inherent changes in conditions that support the growth and transport of microbes, Garrett warns that the real danger of a global plague must be confronted. The book offers highly detailed and comprehensive research, includes numerous source materials, and is written in an eminently readable style.

In *The Hot Zone*, Richard Preston provides a fast-paced account of a specific encounter with a strain of the lethal Ebola virus in Reston, Virginia, USA. Monkeys from the Philippines were admitted to the United States for research purposes at a military laboratory near

Washington D.C., where they soon began dying. Following the trail that led to the cause of their death involved a race against time, as the possibility that their disease might be airborne was quite real. Indeed, the cause of death was eventually traced to an airborne strain of Ebola virus.

■ *Material World: A Global Family Portrait.* Peter Manzel. San Fransisco: Sierra Club, 1994.

The United Nations recently held an exhibition of some of the photographs from this collection of exquisite images of family life in thirty member nations. Peter Manzel's book of these photographs is presented in medium Big Picture format, with the first illustration in a set showing the family and its possessions, often arranged as a formal portrait outside their home. Possessions are numbered and identified on a subsequent page, and scenes from daily life are accompanied by information pertaining to national wage data, fertility rates, population densities, literacy, mortality, and other data. Statistics on the families represented include the member's most cherished possessions, household size, parent's workweek, hours spent watching television, aspirations, and possessions most likely to be stolen.

*The Material World* was made possible by a grant from various U.N. agencies, including the Population Fund (UNPF), the Development Program (UNDP), the International Year of the Family, and the Environment Programme (UNEP). Its portraits illustrate "both the common humanity and the great differences in material goods and circumstances that make rich and poor societies." Most importantly, the book

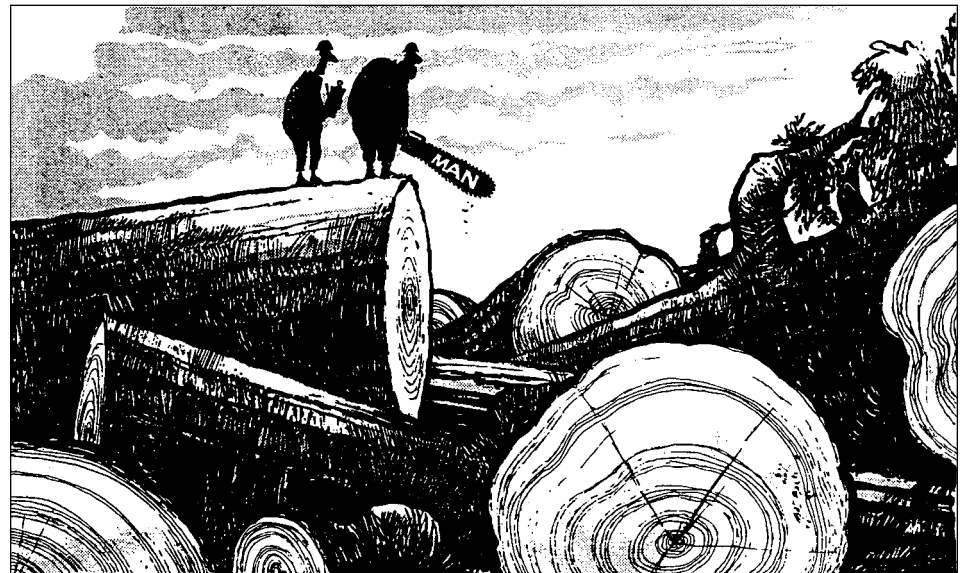
**"Even if the evidence was not as compelling, it would still be right to resist anthropogenically-induced change to the natural environment until we can categorically state that we know no harm will result."**

—Elizabeth Dowdeswell,  
Executive Director of UNEP

highlights the fact that family structure and fertility rates define the greatest difference between rich and poor societies. The book is also available on CD-ROM.

■ *The Least Developed Countries, 1993-1994 Report.* New York: U.N. Conference on Trade and Development (UNCTAD), 1995.

This most recent study of the forty seven Least Developed Countries (LDCs) is divided into two large sections, the first serving as an overview of this decade's LDCs and the second focusing on education and health services. Tables and statistics support the report's narrative, but the bulk of the book consists of data presented in an appendix. Several general recommendations are outlined: LDC governments must focus on the free delivery of primary health and education services for economic and social reasons; LDC governments must find the means to provide modern higher education, research, and professional training for health; LDC governments must restructure their health and education spending; and NGOs must assist



"...ON THE BRIGHT SIDE, THE ENDANGERED SPECIES LIST IS DOWN TO ONE."

SOURCE: By Jim Borgman for the Cincinnati Enquirer

LDC governments in funding.

■ *The City as a Human Environment*. D.G. Levine And A.C. Upton (eds.). Westport: Praeger, 1994.

The studies presented here focus on the United States, yet the implications of the research apply to both developed and developing nations. These studies address the planning issues of building, transportation, and land use as they apply to the growing challenges of urbanization. The editors recommend several strategies for designing urban environments, among them improving indoor environments, increasing security and livability, improving transportation planning and access, and providing opportunities for open space integration. The importance of citizen participation is underlined.

■ Those interested in the continuing debate about *The Bell Curve* may want to read *The Bell Curve Debate: History, Documents, Opinions*. (Russell Jacoby and Naomi Glauberman, eds. New York: Random House, 1995.) The editors present a collection of critical responses and, of historical interest, present essays from the 1970s, as well as writings from late 19th century and

early 20th century authors.

■ *Toxic Nation: the Fight to Save Our Communities from Chemical Contamination*. F. Setterberg and L. Shevelson. New York: John Wiley, 1993.

In California's Central Valley, four decades of unbridled pesticide use and chemical fertilization have created serious hazards to human health among many local populations, especially among communities of farmworkers and laborers whose residents must handle agricultural products and machinery. The town of McFarland has incidences of childhood cancer so far in excess of national averages that many local residents and medical experts believe there must be a connection. Yet health officials and government authorities have persistently refused to allocate public money to pursue theories relating toxic chemical exposure to birth defects and cancer until a scientific link has been proved.

As the authors of *Toxic Nation* point out, that's a bit like *Catch 22*: we think there may be a link but we won't pursue it until the link is proved. Unfortunately, this kind of situation exists all across America, mostly in small towns and communities without the political clout and

access to revenue sources needed to fight for public health and safety, and for the well-being of their offspring. This book focuses on the potential for using democratic, grassroots activism so that ordinary people may depend as much on their own common sense as on the scientific proof required for official action.

The authors employ a somewhat erratic, novelistic style in an attempt to put a human face on their narrative, and the book's pages are complemented with many photographs of local citizens coupled with quotes and anecdotes from their own mouths. The authors also tend to see the world through a lens of stark contrasts, continuing a centuries-old national tradition of dividing America into virtuous people and evil interests. This makes for disjointed reading, but the book is nonetheless extremely persuasive and, although it cannot

be considered a scholarly undertaking in the accepted sense of the word, it is a serious attempt at a serious subject.

*Toxic Nation* accords women a central role in community action, because they are the primary health and caregivers. Mothers in particular, say the authors, possess the moral authority needed to change official policy, and to gain the attention of national media. Organized and led by such concerned and committed activists, citizens groups do have the potential to challenge and change this unacceptable situation.

■ *Cleaning Up the Mess: Implementation Strategies in Superfund*. T.W. Church and R.T. Nakamura. Washington, DC: Brookings, 1993.

The end of the Cold War has, in the United States at least, led to the closing of military bases across America and overseas. Many of these bases had not been subjected to public scrutiny for decades, and the toxic legacy of unregulated, unpublicized military/industrial use is proving devastating to local populations trying to reclaim their landscapes. To address national concerns about military environmental degradation at public expense, the federal government set up "Superfund" for cleaning up this toxic heritage.

Administered by the Environmental Protection Agency, Superfund operates under three primary implementation strategies: prosecution, accommodation, and public works. Depending on the specific situation, the EPA decides which of these strategies to move forward with. In *Cleaning Up the Mess*, the authors examine the EPA's experiences at six hazardous waste sites to assess the effectiveness of their strategic framework in alleviating environmental degradation.

This is the first clear, accessible description of how Superfund actually works to make it to bookstores. The book's limitations, particularly the relatively small number of cases examined (there are thousands of military toxic waste sites), don't diminish from this singular accomplishment. The narrative is savvy and informative, and discusses options for further cleanup solutions in view of emerging health, economic, and political considerations. Recommended for those interested in environmental policy, and may provide an informative perspective about federal and local cooperation to those facing similar problems in other parts of the world.

■ *The Threat at Home: Confronting the Toxic Legacy of the U.S. Military*. Seth Shulman. Boston: Beacon Press, 1992.

According to the author, the biggest problem America has in trying to clean up the military's toxic legacy is overcoming an institutional mindset that holds public participation and accountability not only as dangerous, but actually in contempt. Fifteen chapters are devoted each to a specific military site, and the environmental legacy of uncontained aviation fuel, solvents and sludges, unexploded ammunition rounds, and solid wastes is documented. The narrative suffers from an overpersonalized approach and



**Toxic waste to be moved to a New Mexico, USA, salt mine in 1998, but communities along the way fear accidents.**

SOURCE: *Smithsonian*, May 1995

a novelistic style, and an excessive litany of official wickedness vs. whistle-blower virtue is repetitive and unorganized. The vignette format doesn't add up to a coherent analysis, but it does provide the general reader with a good overview of existing problems and potential hurdles. At this early stage in military downsizing and toxic cleanup, those in search of more substantive and informative treatments would do well to complement their reading of general works like *The Threat at Home* with specific reports from those actually doing the work.

■ The Environmental Education and Communication Project (GreenCOM) operates an Information Exchange Center accessible via mail, fax, and e-mail to environmental educators and communicators in developing countries. It currently houses more than 3,700 publications, curricula, newsletters, brochures, posters, videos, and other materials on environmental education and communication (EE&C). The Center is also continually looking for additional information and welcomes donations of materials to make know to the EE&C community.

The Center provides bibliographies, articles, photocopied samples, and suggestions for further contacts. Requests for information should be as specific as possible, recognizing that the collection contains EE&C materials only. Contact the GreenCOM Information Exchange Center by mail at 1255 23rd Street NW, Washington, DC 20037, USA; by fax at (202) 884-8997; or by e-mail at <greencom@aed.org>.

■ The United Nations Department of Information/Non-Governmental Organizations will hold their 48th Conference at the U.N. headquarters in New York, September 18, 19, and 20. The theme this year is "The United Nations at the Turn of the Century: Global Issues, Global Actors, Global Responsibility." For further information contact Ms. Leona Forman, Chief, NGO Section, U.N. Department of Public Information (DPI) United Nations, N.Y., N.Y. 10017, Tel: 212-963-7234.

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**Telephone: (212) 702-3750**  
**Fax: (212) 888-4960**  
**E-Mail: wit@igc.apc.org**

Dr. Christine K. Durbak  
*Founder & Editor-in-Chief*

Christopher Findlay  
*Managing Editor*

Dr. Claudia Strauss  
Dora Rak

Dr. Pamela Wible  
Mrs. Naomi Farrell  
Dr. June Reed

*Contributing Editors*

Carolyn T. Comitta  
*Circulation Manager*

Alan Geoghegan  
*Video Production*

**Carolyn T. Comitta**

WIT Regional Director - North America  
18 West Chestnut Street  
West Chester, PA 19380  
Tel: (610) 696-3896 Fax: (610) 430-3804

**Dr. Andriy O. Demydenko  
Taras Boitshouk**

WIT Regional Directors - Eastern Europe  
27 Chervonoarmiytska, Suite 22  
2500 Kiev, Ukraine  
Tel/Fax: (044) 212-3597  
E-Mail: ademidenko@glas.apc.org.  
11a Tadzyska, Suite 75  
290038 Lviv, Ukraine  
Tel: (9322) 7129-31  
E-Mail: taras@wit.lviv.ua

**Christopher Geoghegan  
Leon Hauser**

WIT Regional Directors - Western Europe  
EPO Patentlaan 2  
Rijswijk 2288EE Holland  
Tel: (70) 340-2040 Fax: (70) 340-3016

**Dr. M. R. Khawlie**

WIT Regional Director - Middle East  
American University of Beirut  
Beirut, Lebanon  
Tel: (350000) Ext. 4160 Telex: 20801 LE

**Dr. Rashmi Mayur**

WIT Regional Director - India  
73 A Mittal Tower, Nariman Point  
Bombay, 40021, India  
Tel: 91-22-204-5758 Fax: 91-22-287-1250

**Adelisa Almario Raymundo**

WIT Regional Director - Asia  
91 Manning Ning St.  
Teachers Village, Diliman  
Quezon City, Philippines  
Tel/Fax: (632) 924-2299

**Christopher J. Moorehead, P.Eng.**

WIT Regional Director - Canada  
30 Whitewood Road  
Toronto, Ontario Canada M45 2X7  
Tel: (416) 923-2918 Fax: (416) 923-7521

**Prof. Dr. Vilen N. Tikhonov**

WIT Regional Director - Russia  
Novosibirsk - 90, Russia, 630090  
Zolotodolinskaya 1-12  
Tel: 7-383-235-6851 Fax: 7-383-235-6558  
E-mail: tikhonov@CGINSK.SU

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## POINT OF VIEW: *Natural Healing*

Data is emerging about the long-term ecological effects of oil spills in Prince William Sound and the Arabian Gulf. A 1989 Exxon Corporation tanker accident spilled 11 million gallons of Prudhoe crude into Prince William Sound, part of the Gulf of Alaska, and in 1991 the firing of Kuwaiti oil fields by retreating Iraqi troops spilled 250 million gallons of Kuwaiti crude into the Arabian Gulf. Both spills were considered disastrous to ecosystem and human health, and close monitoring by scientists has been ongoing.

Crude oil is a mixture of thousands of different hydrocarbons that fall into four classes: aromatics, polar compounds, asphaltenes, and saturates. These classes differ in their susceptibility to natural biodegradation, and crude oils containing large proportions of aromatic hydrocarbons can linger for years while those containing large portions of saturates and asphaltenes can biodegrade in two or three seasons. Prudhoe crude is 25 percent aromatics and Kuwaiti crude is about 20 percent aromatics, not especially high fractions for world crudes.

The Gulf of Alaska and the Arabian Gulf are two quite different ecosystems: the Gulf of Alaska is a polar marine environment and the Arabian Gulf is a tropical marine environment. When considering organic hydrocarbon biodegradation in marine ecosystems, the two most important factors are oxygen content and mixing action. The bacteria that degrade hydrocarbons need oxygen to breathe, and water temperature signifies oxygen content. They also have to be

able to physically get to the oil, so a higher degree of mixing action will cause greater emulsification and make the hydrocarbons more accessible. The Gulf of Alaska has low water temperature and high mixing action, while the Arabian Gulf has high water temperature and low mixing action.

Crude oil is less dense than seawater, so it doesn't sink, and 90 percent of a slick is only microns thick along the surface. This makes for a jarring visual image, and the progress of the uncontaminated slick as it spread throughout the Gulf of Alaska was broadcast by television cameras from helicopters. Exxon, faced with a severe public relations problem, used surfactants, which sink oil below the water line out of sight of cameras.

Surfactants are many times more toxic than crude oil, and scientists are pointing to this event as having had the most harmful long-term impact on ecosystem health, as well as having caused a greater hazard to human health. Human response to the Alaska oil spill was completely bungled, especially by response officials and corporate executives, but responsibility for long-term ecosystem damage must be shared by the media. It is often forgotten that media interests are for-profit corporations and, after the *Exxon Valdez* ran aground, those interests went into production. Perhaps if their energies had included helping with cleanup more might have been done to avert long-term ecosystem damage.

By contrast, in the Arabian Gulf

there was no continuous live TV coverage of the spreading slick, and no one was aware of its extent until a year after the war ended. No surfactants were used, and the Arabian Gulf ecosystem responded organically. According to UNEP's impact assessment, cyanophytic bacteria merged with other microbial marine organisms to form large algal mats with hydrocarbon biodegrading properties. Organic process, coupled with the cessation of tanker traffic during hostilities (the area has the world's highest volume of tanker traffic), made the Arabian Gulf cleaner after the war than it had been for 25 years, perhaps longer. By far the worst ecosystem damage from the war was to terrestrial systems, especially those desert areas that don't host many oil degrading micro-organisms.

What can we learn by contrasting these events? Oil spills are not acceptable. But crude oil *is* organic, and marine ecosystems can often accommodate huge hydrocarbon inputs with minimal human intervention, as in the Arabian Gulf. In the Gulf of Alaska, the response did more damage than the spill. While Exxon certainly bungled the response at every turn, it must be remembered that a worsening public relations situation for a big oil company is a media bonanza, especially in America. In Alaska, the adversarial relationship between corporation and media made a bad situation worse. In Arabia, the ecosystem didn't have to contend with this traditional rivalry, and healed itself.

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***"Never doubt that a small group of thoughtful committed citizens can change the world. Indeed it's the only thing that ever has."***

Margaret Mead

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