



World Ecology Report

Critical Issues in Health and the Environment

Knowledge brings new choices. Education brings new knowledge.

SPECIAL FOCUS: *The Future is Urban*

One of the most dramatic demographic issues which will confront the delegates of the United Nations Habitat II Summit which will take place in June 1996 in Istanbul, is the worldwide phenomenon of rapid urbanization. Urban areas owe much of their growth to immigration and migration caused by population increases throughout the world. In developing countries, most migrants head for towns and cities. Urban areas thus expand not only as a result of their own population increases, but from the overflow of people from rural areas.

Cities have traditionally been the heart of trade, science and culture, but whenever cities grew rapidly or passed a certain size threshold, there have been increases in crime, congestion and pollution. Modern towns and cities pose a challenge to environmental sustainability. They produce little or none of their own food, fuel or water, and use immense quantities of energy and raw materials for transport, communication, construction and production. They generate vast amounts of solid wastes and dangerous concentrations of air and water pollutants. The sheer pace of urban growth in developing countries has often outrun all attempts to provide housing,



Seaside, New Jersey, U.S.A.

SOURCE: Thomas A. Comitta

these are in the developing world, where in 1950 there were none. Developing countries, which in 1950 had only 39 percent of the world's urban population, by 1990 had nearly 61 percent.

The future looks even more urban. During the 1990's no less than 72 percent of the world's population increase is expected to take place in towns or cities. Every year, 68 million people, the equivalent of eight extra cities the size of Moscow, Delhi, Paris or Lagos are added. Annual additions to world population are expected to peak in the 1990's, but urban increments will keep on growing.

In many developing countries, national policy

in areas such as job creation, education, housing policy and tax incentives have unduly increased the attractiveness of urban areas to potential rural migrants. "Urban biased" policies have contributed to high rates of urbanization in much of the developing world.

LEGAL ISSUES FOR URBAN POPULATION CRISIS IN DEVELOPING COUNTRIES

Most developing country governments have limited resources to be spent on social programs. Under the circumstances imposed by rapid

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Produce and poultry section of vast open-air market in the Treichville section of Abidjan

SOURCE: Newark Sunday News

cient water supplies, sanitation, removal of solid and liquid wastes, and health care and emergency services. David Satterthwaite in an article entitled *The Four Environmental Revolutions* writes that "those not serviced are obliged to use water from streams or other surface sources which in urban areas are often little more than open sewers, or to purchase water from unsanitary vendors. It is little wonder that their children suffer frequently, often fatally, from diarrhoeal diseases."

In this way the pressures brought on by increasing urban populations can prevent governments from instituting the pro-active programs which are necessary for long-term stabilization. Foreign aid programs rarely provide funding for urban planning, and debt repayment schedules, which are often met at the expense of such undertakings, can delay anticipatory programs indefinitely.

UNCONTROLLED GROWTH

More common than countries with no urban plans are countries which are unable to enforce the blueprints they have. Even if a plan has not been rendered obsolete by the sheer numbers of the unforeseen urban inhabitants, problems associated with explosive growth have diverted fund-

development's long-term effects will be very costly. In this unfortunate situation, it is often the case that the more urgent the need for urban organization, the longer the delay in accomplishing it.

ILLEGAL DEVELOPMENTS

The most common form of illegal occupation is that which occurs on private or communally owned land. If a landlord develops his land and sells or rents it, the sale could be perfectly legal, but the development itself may not. These illegal projects generally occur on lands which the government has not set aside for development and often do not comply with local construction standards or provide the necessary amenities.

Frequently land is sold or granted under the auspices of old systems and traditional ways but is not formally approved. According to Jean Riveolois, Head of Researchers at ORSTROM (French Institute of Scientific Research for Development and Cooperation), 23% of Guadalajara's annual growth and 25% of its current population are illegally housed. Of these 800,000 people, 75% rent space on land which was originally granted under a state tenure system for private occupation and not development.

water, education and health services to the area.

POSSIBLE SOLUTIONS:

Identifying landowners

Recognizing the occupancy rights of the inhabitants of these unauthorized settlements is often seen as the necessary first step in providing services for a city's rapidly growing periphery. Until recently planners feared that legal recognition of the claims of unauthorized inhabitants would generate more illegal activities. Now, planners increasingly admit that such views might impede the development of new and better systems of urban land management.

Likewise, traditional belief in the necessity for deeds of title is giving way to the recognitions that less comprehensive rights avoid many of the problems associated with titles while providing many advantages. According to Durand-Lasserre, "The populations themselves regard immediate security of occupation as much more important than legal status." The holder of a right of occupancy on a state owned parcel can both transfer that right and offer it as collateral for a loan. By avoiding the divisive effects of increasing market pressures for real estate, a state can also combat breakdowns in social cohesion and encourage community cooperation.

Problems confronting local authorities include choosing the criteria by which they will identify landowners for taxation purposes and for compensation when their land is condemned to fulfill a role pre-designated by the city plan. Determining which lands are to be taxed plays a major role in the budgetary decisions of developing towns and cities.

Decentralization

Many experts view decentralization of government authority as a necessary first step in addressing urban housing problems. Local administrators need the power to implement local programs. According to Jean Riveolois, decentralization would alleviate stresses in both the capitals and in regional centers. Likewise, in an article entitled *Urbanization and Structural Adjustment Programmes: The Zambian Experience*, Dr. Ngila Mwase blames administrative failures in coping with unplanned settlements on "urban councils' weak financial and administrative capacity."

Jonathan Baker, of the Scandinavian Institute of African Studies in Uppsala, Sweden, agrees and notes that, "Government policies...can do much to stimulate the development of small towns provided they are willing to permit greater decentralization of decision-making. This means allowing local authorities more power to decide on important issues. This entails, among other things, giving them the ability to raise taxes and

advocate less extreme delegations of power than complete decentralization.

To the contrary, Mr. Durand-Lasserve concludes that decentralization will be necessary before any new land management program could be successfully implemented, "All studies on the topic of placing land use on a formal footing reveal the absence or weaknesses of intermediate levels of management and decision-making endowed with real powers." Unfortunately, significant delegations of authority from the president to regional governors and from the governors to city mayors are unrealistic expectations in many developing countries today. Officials with sufficient power to adopt new approaches to urban planning often become obstacles to changes as they are reluctant to jeopardize the monopoly power they enjoy over property.

Democracy

The importance of adopting democratic principles is also regarded by some as an essential first step. According to Mr. David Satterthwaite, Director of the Human Settlements Programme at the International Institute for Environment and Development, "Democratic structures are also essential in that without them, government authorities rarely respond to the needs of lower-income groups and seldom ensure that enterprises meet pollution control and occupation health regulations. Democratic structures also help ensure that needs and priorities are determined within each city and not imposed by external agencies."

Other commentators would add that democratic governance is essential for sustainable development and social harmony. Jean-Philippe Peemans contends that democratic self-determination will ensure better use of natural resources and advance the new concepts of government required for sustainable development. And Bernard Schlemmer, in an article entitled "Crises et Recomposition des Identifies a Madagascar, asserts that open political systems reduce incidents of violence by abating racial tensions."

Judiciary

A strong judicial branch is also essential. Creative local authorities are hampered in their ability to implement long term plans, "without an appropriate institutional or legal framework," notes Durand-Lasserve, "they are unable to have a long-term effect on the process of consolidation of the living environment and integration into the towns and cities of the districts in question."

Guadalajara is a case in point. Jean Riveleois claims that a majority of decisions of the Mexican courts were based on social consensus and were valid only until the temporary alliances failed.

successful intervention in one area which is not accompanied by significant amelioration elsewhere will on offer temporary relief." A health clinic on its own, without improvements in nutrition and water quality, will be hard pressed to significantly improve the overall health status of a city slum. The authors cite a 1986 study which concluded that, "shelter alone cannot form (the) solution to the root causes of urban poverty...shelter programmes for the urban poor must be planned along with other programmes aimed at raising (their) income earning opportunities."

Financing

The private sector could also play a key role in providing low-income housing. Until the 1970's, Guadalajara successfully combated the problems of urban growth by creating ways for the private sector to contribute money and participate in the decision-making process. Before agricultural and economic crises drove investors from public works projects, the system showed promise. Ogbu and Ikiara recognized the potential of private involvement and suggest governments "devise a more effective way of enhancing the private sector participation in the supply of housing...Donors and Egos should work as partners within the framework established by governments."

Likewise, the potential contributions of the informal economy have not gone unnoticed. Jean-Philippe Peemans thinks that integrating the informal sector will be helpful in making the transition to sustainable development. Ogbu and Ikiara agree but note that, "Unfortunately, at a time when the [informal] sector is becoming a major source of employment and income, strong supportive institutions are lacking and there is no public policy stance...In spite of the recent recog-

inition, public policy support for the urban informal sector has been mainly ad hoc, piecemeal, and contradictory."

Conclusion

Urban migration is likely to continue. Though urban housing shortages pose serious problems for developing country governments and ought to be addressed as soon as possible, promising solutions have been identified and ought to be explored. It is important that planners not lose sight of the potential positive impacts of urbanization. Newly industrialized countries can benefit from inexpensive labor forces which could be tapped to stimulate economic growth. Urban planners ought to couple these gains with programs which cultivate the informal economy and attract private investment in public works.

SOURCES: *The Courier, Brussels, Belgium: Commission of the European Communities; no. 149, January-February, 1995:* Jonathan Baker, "Urban Development and Rural Change," p. 59; Alain Durand-Lasserve, "Access of the Poor to Urban Land," p. 68; Jean-Pierre Elong M'Bassi, "Decentralisation in sub-Saharan Africa," p. 85; Babar Mumtaz, "Training for Urban Development," p. 87; Ngila Mwase, "Urbanisation and Structural Adjustment Programmes: The Zambian Experience," p. 64; David Satterthwaite, "The Four 'Environmental Revolutions' for Cities," p. 63; J.F. Tribillon, "Urban Land Questions in French-Speaking Africa South of the Sahara," p. 66. *Atlas of the Environment, Geoffrey Lean and Don Hinrichsen, Santa Barbara, CA: ABC - CLIO, Inc., 1994.* *Review Tiers Monde, Presses Universitaires de France:* *l'Institute d'Elude du Developpement Economique et Sociale de l'Universite de Paris-I, Pantheon, Sorbonne, Jan-Mars, 1995:* Jean-Philippe Peemans, "Modernisation, Globalisation, et Territoires," p. 17; M. Haubert et P.-Ph. Rey, "Societes en Mutation," p. 15; Jean Riveleois, "La Planification Urbaine a l'Epreuve de la Culture Politique," p. 67; Bernard Schlemmer, "Crise et Recomposition des Identites a Madagascar," p. 129. *Review Tiers Monde, Presses Universitaires de France:* *l'Institute d'Etude du Developpement Economique et Sociale de l'Universite de Paris-I, Pantheon, Sorbonne, Oct-Dec, 1994:* Veronique Dupont and Francoise Dureau, "Role des Mobilites Circulaires Dans les Dynamiques Urbaines," p. 809. *Various United Nations Publications.*

List of Major Pollution Issues and Priority Substances in the Coastal Marine Environment

The table below lists the major pollution issues and priority substances from land-based sources which constitute the greatest threat to the marine environment. Assignments under the heading "Status of science management" relate to routine operations; they do not relate to catastrophic accidents.

Substances	Status of science and management targets	Effects
Sewage	Science adequate Management deficient	Human health Pathogens Eutrophication
Nutrients	Science limited Conservative management possible	Eutrophication Potential harmful algal blooms
Synthetic organic compounds	Science limited Conservative management possible	Human health Animal health
Sediment	Science limited Conservative management possible	Destruction of amenities (habitats/organisms) Decreased biological productivity
Litter	Science adequate	Animal health

HEALTH AND ENVIRONMENT: *Human Impact on Climate Change and Human Health*

The Second Assessment of the Intergovernmental Panel on Climate Change has just completed its final review as the member governments throughout the World approve the Policy Maker's Summaries for the three Working Groups. These assessments represent the current "state of knowledge" about the effects of human impacts on the global climate system.

The Science Assessment will report on the state of knowledge about the projected effects of emissions of greenhouse gases, aerosols and clouds on future climate changes. The Impacts, Mitigation and Adaptation assessment reviews how sources and sinks of greenhouse gases can be managed to reduce or offset emissions or technologies to adapt to climate change. The Economic Assessment reviews the state of knowledge about effects of sociocultural changes and costs and benefits of mitigation and adaptation.

There are several sectors associated with the emission of greenhouse gases. These include energy production, energy demand, transportation, human communities, and agriculture and forestry. This brief overview, stemming from the Working Group II meeting in Montreal, Quebec, focuses on the sectors associated with the agricultural and forest industries. It is important to recognize that this includes more than just primary production. It includes the manufacture and delivery of goods and services; the systems of commodity production; and the storage, processing, transportation and marketing of the commodities.

The primary concern is on emissions of greenhouse gases from and the effects of climate changes on agriculture and forestry sectors. Policies will need to focus on mitigating the atmospheric composition of the greenhouse gases, that is to reduce emissions as well as to reduce the quantities in the atmosphere. Since

the agricultural and forest sectors have the only economically feasible means for sequestering carbon at this time, implementing near term policy options are likely to receive positive consideration. Policy options, however, will also need to focus on adapting agriculture and forestry to climate change. The primary reason is that there will be a need to adapt to a future global atmospheric warming, short of implementing draconian measures—like an immediate decrease of over 60% in global emissions—which may be technically but not socially or economically feasible at this time.

The Science Assessment Report points out that greenhouse gas concentrations are still increasing. These increases will lead to a positive radiative forcing of climate, tending to warm the surface and to produce other climate changes. These trends can be attributed largely to human activities, mostly fossil fuel use and land use conversions between agriculture and forestry.

- The atmospheric concentration of carbon dioxide, methane, and nitrous oxide have grown significantly since pre-industrial times: by about 30%, 145% and 15% respectively.

- The growth rates of carbon dioxide, CH₄ and N₂O experienced large anomalous reductions in the late 1980s and early 1990s. Current data indicate that growth rates have returned to those resembling the long-term trends.

Many greenhouse gases remain in the atmosphere for a long time (for carbon dioxide and N₂O, many decades to centuries), hence they affect radiative forcing on long time-scales. Compared to human life spans the resulting radiative forcing from the long-lived gases will persist for long periods.

- If carbon dioxide emissions were maintained at or near today's levels, they would lead to a nearly constant rate of increase in atmos-

pheric concentrations for at least two centuries, reaching about 500 ppmv (approaching twice the pre-industrial concentration of 280 ppmv) by the end of the 21st century.

- A stable level of carbon dioxide concentration at values up to 1000 ppmv could be maintained only with anthropogenic emissions that eventually drop below 1990 levels.

- To a first approximation the eventual stabilized concentration is governed more by the accumulated anthropogenic carbon dioxide emissions from now until the time of stabilization, and less by the exact path taken to reach stabilization. This means that, for a given stabilization scenario, higher emissions in early decades imply lower emissions later on.

New information has now emerged regarding other anthropogenic factors that affect radiative forcing:

- Tropospheric aerosols (microscopic airborne particles) resulting from the combustion of fossil fuels, smelting, and biomass burning give rise to a negative radiative forcing over particular regions.

- The estimated net contribution of chlorofluorocarbons to radiative forcing, while still positive, is less than originally believed because of the depletion of stratospheric ozone by the CFCs. Further, the growth rates of CFC concentrations have slowed to about zero and concentrations will start to decrease through implementation of the Montreal Protocol and its Amendments.

Climate has changed over the past century. At any one location, year-to-year variations in weather can be large, but analyses of meteorological and other data over large areas and over periods of decades or more have provided evidence for supporting some important changes.

- Global mean surface temperature has increased by between about 0.3 and 0.6°C since the late 19th century; the additional data available since 1990 and the re-analyses since then have not significantly changed this range of estimated increase.

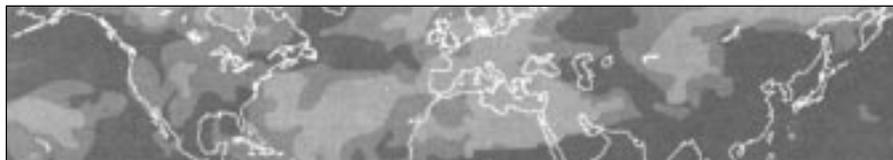
- Recent years have been among the warmest since 1860, the period of instrumental record.

- Night-time temperatures have generally increased more than daytime temperatures.

- Despite the cooling effect of the Mt. Pinatubo volcanic eruption, the years since 1990 have been some of the warmest in the instrumental record, as were many of the years in the

Impending Impact of Erosion of Ozone Layer: New Estimates

Satellite measurements, taking cloud cover into account, predict ozone erosion will make increased UV radiation a peril in the lighter bands within the next 30 years. Lightest areas have already been affected.



variability or the frequency of extreme events have increased or decreased over the 20th century on a world-wide scale, there have been significant changes in certain regions:

- The behavior of the El Niño-Southern Oscillation has been unusual since 1989.
- Antarctica has calved an iceberg half the size of Laborador this year, which is now free floating.

For the mid-range IPCC emission scenarios, models project an increase in global mean surface temperature, relative to the present, of 2°C by 2100 with the lowest estimate projecting a 1°C rise. A corresponding projection for the highest emissions scenario would lead to a warming of 3.5°C.

In all cases the average rate of warming would probably be greater than any seen in the last 10,000 years.

Sea level is projected to rise as a result of thermal expansion of oceans and melting of polar ice. For the mid-range scenario, models project a rise in sea level of about 50 cm by 2100 with the lowest estimate projecting a 15 cm rise by 2100. Sea level could continue to rise in the future centuries beyond 2100 even if concentrations of greenhouse gases were stabilized by that time.

Options To Reduce Emissions and Enhance The Sinks of Greenhouse Gases

Human activities are directly increasing atmospheric concentrations of several greenhouse gases. Significant reductions in net greenhouse gas emissions are technically possible and can be economically feasible. These reductions can be achieved by utilizing an extensive array of technologies, and policy measures that accelerate technology development, diffusion, and transfer in all sectors, including the energy, industry, transportation, residential/commercial, and agricultural/forestry sectors.

By 2100, the world's commercial energy system will in effect be replaced at least twice, offering opportunities to change the energy system without premature retirement of capital stock. Significant amounts of capital stock in the industrial, commercial, residential, and agricultural/forestry sectors will also be replaced. These cycles of capital replacement provide opportunities to utilize new, better performing technologies.

Energy Demand

Global energy demand has grown at an average annual rate of approximately 2% for almost two centuries, although energy demand growth varies considerably over time and between different regions. In the published literature, different methods and conventions are used to

dioxide releases, including energy conversion), residential/commercial buildings (28%) and transport (22%) with agriculture, forestry and other sectors accounting for 7%. Of these, transport sector energy use and related carbon dioxide emissions have been the most rapidly growing over the past two decades.

Numerous studies have indicated that 10-30% energy efficiency gains above present levels are feasible at little or not net cost in many parts of the world through technical conversion measures and improved management practices of the next two to three decades. Using technologies that presently yield the highest output of energy services for a given input of energy, efficiency gains for 50-60% would be technically feasible in many countries over the same time period. Achieving these potentials will depend on future cost reductions, financing and technology transfer, as well as measures to overcome a variety of non-technical barriers. Because energy use is growing world-wide, even replacing current technology with more-efficient technology could still lead to an absolute increase of carbon dioxide in the future.

In the industrial sector energy use in 1990 was estimated to be 98-117 exajoules. Without new greenhouse gas mitigation, this might grow to 140-242 exajoules in 2025. Countries differ widely in their current industrial energy-use and in the transportation sector, energy use in 1990 was estimated to be 61-65 exajoules. Without new greenhouse gas mitigation measures, this might grow to 90-140 exajoules in 2025. This could be reduced to 60-100 exajoules through the adoption of vehicles using very efficient drive-trains, light-weight construction and low-air-resistance design, without compromising comfort and performance. Further energy use reductions are possible through the use of smaller vehicles; altered land-use patterns, transport systems, mobility patterns and lifestyles; and shifting to less energy intensive transport modes. Greenhouse gas emissions per unit of energy used could be reduced through the use of alternative fuels and fuel cells and electricity from renewable sources.

The removal and storage of carbon dioxide from fossil fuel power-station stack gases is feasible but reduces the conversion efficiency and significantly increases the production cost of electricity. Another approach to decarbonization uses fossil fuel feedstock to make hydrogen rich fuels. The future availability of conversion technologies such as fuel cells that can efficiently use hydrogen would increase the relative attractiveness of the latter approach. Both approaches generate a by-product stream of carbon dioxide that can be stored, for example, in depleted natural gas fields. Alternative hydrogen sources

of the existing forested area of the world, primarily in the temperate and boreal regions. The regional changes are likely to entail broad vegetation type changed with shifting canopy and understory dominance. Climate change is expected to occur at a rapid rate relative to the speed at which forest species grow, reproduce, and reestablish themselves. For mid-latitude regions a global average warming of 1-3.5°C over the next 100 years would be equivalent to a poleward shift of the present isotherms by approximately 200-400 km or an altitude shift of about 300-500 meters. This compares to some past tree species migration that are believed to be in the order of 4-200 meters per century. Therefore, *species composition of forests* is likely to change. Given the ecologic amplitude and genetic plasticity of species, new assemblages of species and thus new ecosystem composition may be established.

Although net primary productivity could increase, the total standing biomass of forests may not, because of more frequent outbreaks and extended ranges of pests and pathogens, and increasing frequency and intensity of fires. Large pulses of carbon could be released into the atmosphere during transition from one forest type to another due to fire and mortality of existing canopy. There would, however, be subsequent rapid uptake of carbon as new species take over a community and dominate the canopy.

In tropical rangelands, mean temperature increases should not lead to major alterations in productivity and species composition, but rainfall amount and seasonality and increased evapotranspiration will cause such changes. Increases in atmospheric carbon dioxide concentrations may raise the carbon to nitrogen ratio of forage for herbivores, thus reducing its food value. Shifts in temperature and precipitation in temperate rangelands may result in altered growing seasons and boundary shifts between grasslands, forests, and shrublands.

Crop yields and changes in productivity due to climate change will vary considerably across regions and among localities, thus changing the patterns of production. Productivity is projected to increase in some areas and decrease in others, especially the tropics and subtropics. However, existing studies show that on the whole, global agricultural production could be maintained relative to baseline production in the face of climate change modeled by general circulation models if doubled equivalent carbon dioxide equilibrium. Regional effects would vary widely. This conclusion takes into account the beneficial effects of carbon dioxide fertilization but does not allow for changes in agriculture and the possible effects of changing climatic

Asia; and tropical areas of Latin America, as well as some Pacific Island nations.

Adaptation—such as changes in crops and crop varieties, improved water management and irrigation systems, and changes in planting schedules and tillage practices—will be important in limiting negative effects and taking advantage of beneficial changes in climate. The extent of adaptation depends on the affordability of such measures, particularly in developing countries; access to know-how and technology;

the rate of climate changes; and biophysical constraints such as water availability, soil characteristics, and crop genetics. The incremental costs of adaptation strategies would create a serious burden for developing countries; adaptation strategies may result in cost savings for some countries. There are significant uncertainties about the capacity of different regions to adapt successfully to projected climate change.

SOURCE: Gary R. Evans, *Special Assistant/Global Change Issues*, USDA, Washington, D.C., USA

Criteria Pollutants: THEIR EFFECTS, SOURCES, AND STANDARDS

POLLUTANT: Carbon Monoxide (CO)

DESCRIPTION: Colorless, odorless, tasteless gas

EFFECTS: Interferes with the blood's ability to carry oxygen. Headache, dizziness, suffocation.

MAIN SOURCES: Motor vehicle exhaust. Incomplete combustion of fossil fuel.

CONTROLS: Better combustion, tune-ups, fewer cars, better traffic flow, engine modification.

HEALTH STANDARD: 1-hour average: 35 ppm* (40 mg/m³); 8-hour average: 9 ppm (10 mg/m³)

ENVIRONMENTAL STANDARD: Same as health (primary) standard.

POLLUTANT: Nitrogen Dioxide (NO₂)

DESCRIPTION: Yellowish to reddish brown pungent gas, depending on concentration

EFFECTS: Respiratory irritant, increases susceptibility to respiratory disease. Acid rain.

MAIN SOURCES: Motor vehicle exhaust; combustion of fossil fuel.

CONTROLS: Reduce combustion temperature in cars; catalytic converters. Smokestack controls.

HEALTH STANDARD: 12 month average: 0.05 ppm (100 ug/m³)

ENVIRONMENTAL STANDARD: Same as health standard.

POLLUTANT: Ozone (O₃)

DESCRIPTION: Gas, odorous at high concentrations.

EFFECTS: Eye, nose, throat, irritant; decreases lung function. Decreases resistance to some infections. Vegetation and materials damage.

MAIN SOURCES: Not emitted: formed in air by chemical reaction of hydrocarbons and nitrogen oxides in sunlight.

CONTROLS: Reduce emissions of volatile organic compounds and nitrogen oxides from vehicles and industry. Vapor recovery.

HEALTH STANDARD: Maximum daily 1-hour average: .12 ppm (1.5 ug/m³)

ENVIRONMENTAL STANDARD: Same as health standard.

POLLUTANT: Lead (Pb)

DESCRIPTION: Small particles suspended in air.

EFFECTS: Accumulates in bone. When released to blood, causes neurologic damage.

MAIN SOURCES: Industrial processes. Fugitive dust (e.g. lead paint). Old plumbing. Lead in gasoline (nearly eliminated).

CONTROLS: Industrial pollution control. Remove old lead paint, replace plumbing, and eliminate new uses.

HEALTH STANDARD: 3-month arithmetic mean: 1.5 ug/m³

ENVIRONMENTAL STANDARD: Same as health standard.

POLLUTANT: Sulfur dioxide (SO₂)

DESCRIPTION: Pungent gas.

EFFECTS: Eye, nose, throat irritant; decreases lung function. Acid rain. Materials damage.

MAIN SOURCES: Combustion of fossil fuels (motor vehicles, power plants burning high sulfur coal). Petroleum refining. Ore smelting.

CONTROLS: Lower sulfur content of fuels. Scrubbers and pollution control technology.

HEALTH STANDARD: 24-hour average: 0.14 ppm (365 ug/m³); 12 month average: 0.03 ppm (80 ug/m³)

Chernobyl Update

“Chernobyl area is turning into an international scientific laboratory for atomic disaster and some feel as if they are laboratory rats the rest of the world is coming to study, not to help; but even that is welcome by the authorities because it helps maintain some focus and interest on this issue.”

—Peter Hansen, *Undersecretary-General for Humanitarian Affairs, United Nations*

The American writer **George Santayana** reminded us that **“those who cannot remember the past are condemned to repeat it.”** This wisdom is the lesson of Chernobyl nuclear accident almost ten years ago. As of this writing, Ukraine has not shut down all of the Chernobyl reactors because it is waiting for funds and a comprehensive plan from western nations. Ongoing negotiations are promising, however, Ukraine remains concerned that critical related issues such as the crumbling sarcophagus surrounding the station's fourth reactor are not, as yet, being considered.

While Chernobyl reactors continue to power electricity in the region, the health effects of the world's worst radiological catastrophe grow. Scientists attending a World Health Organization (WHO) conference in Geneva, November 20-23, 1995, on the health effects of the Chernobyl accident identified three main concerns: the increased incidences of pediatric thyroid cancer and its health consequences; future cancers; the large increases of psychological disorders. Scientists acknowledged a clear rise in thyroid cancer mostly in children but also in adolescents after the Chernobyl accident on April 26, 1986. Close to 400 cases have been identified in Belarus, 220 cases in Ukraine and 62 cases in the Russian Federation. In its cautious manner, WHO states that, “There is strong circumstantial evidence that an increase in thyroid cancer in these three countries is due to radioactive fallout” following the Chernobyl accident.

The circumstantial evidence for this conclusion has been demonstrated by the following: the geographical distribution of the incidences of thyroid cancers which corresponds

factors such as genetic predisposition, iodine deficiency and other environmental contaminants.

Scientists warned that although at present the most identifiable disease resulting from Chernobyl was pediatric thyroid cancers, other illnesses may soon show themselves. These diseases include leukemia and similar blood disorders, breast cancer, bladder cancer and kidney diseases.

Psychological disorders similar to those experienced by Japanese atomic bomb survivors have become more apparent as well. Chernobyl survivors have experienced physical symptoms unrelated to physical illness including headaches, chest pains, sleep disturbances, intestinal disorders, loss of concentration. Growing alcohol abuse further indicates the rise in psychological disorders. Scientists recommended that the psychological aftermath of Chernobyl should be studied more seriously by the three affected nations.

It is evident that almost ten years later, the consequences of the nuclear tragedy at Chernobyl continue to impact the health of the area's residents. It is important to remember as the anniversary approaches, that there may be millions affected by Chernobyl who lived thousands of miles away, but who, nevertheless, breathed contaminated air and ate contaminated foods. The amount of radiation necessary, at what rate of exposure, in combination with what other physical and environmental factors to cause disease or genetic defect remain unknown. It is certain that exposure to radioactivity in the background and in the foreground increased on April 26, 1986, with untold global effects. The impact of Chernobyl grows whether we remember or ignore this devastating nuclear accident.

A summary of recognized effects of exposure to radioactive fall-out produced by the meltdown and fire at the Chernobyl nuclear power plant follows:

1. At least nine million people in Ukraine and Belarus as well as Russia have been affected by the disaster, with several million living in areas with radiation that is excessive in the long term. About 400,000 people had been evacuated from heavy contaminated zones and cannot return for about 30 years.
2. Death rates are 30 percent higher for those in contaminated regions in the Ukraine compared to the rest of the country.
3. Birth rates in Belarus have fallen 50 percent.
4. Thyroid cancer, particularly among children, is up 285 percent in Belarus.
5. About 7,000 people in Russia alone who helped put out the fire and seal the reactor are

Monsanto Provides Major Grant to Children of Chernobyl for Rural Health Program

(Brussels, Belgium)

The European division of the Monsanto Company, a multinational corporation specializing in chemical manufacturing and agriculture has awarded a major grant to the Children of Chernobyl Relief Fund, based in Short Hills, New Jersey. The grant of up to \$263,000 will be designated for rural health care programs in several Ukrainian oblasts, including Vynnytsia, Dnipropetrovsk and Luhansk where Monsanto has made large investments in agricultural development. Funding will be made available for health programs which have been designed by CCRF to reduce infant mortality and to promote community education on a wide range of issues related to prenatal care, fetal alcohol syndrome, childhood nutrition. Significant resources will also be allocated for strengthening the immune systems of children exposed to radiation and other environmental hazards.

In a letter to CCRF's office dated November 22nd, Monsanto's General manager for the CIS and Central Europe, Robert A. Noels stated, "[W]e're proud to be part of the project and look forward to discuss with your team as to how we can best participate in the programmes as a principal sponsor..."

The rural health program will be coordinated by CCRF and a network of hospitals under the direction of the Kyiv Institute of Pediatrics, Obstetrics and Gynecology (POG). Since 1992, POG has worked closely with CCRF and has established a strong track record in distributing and monitoring Western medical aid shipments at the grassroots level. Past shipments from CCRF have included neonatal incubators, cancer medications, and post-operative drugs.

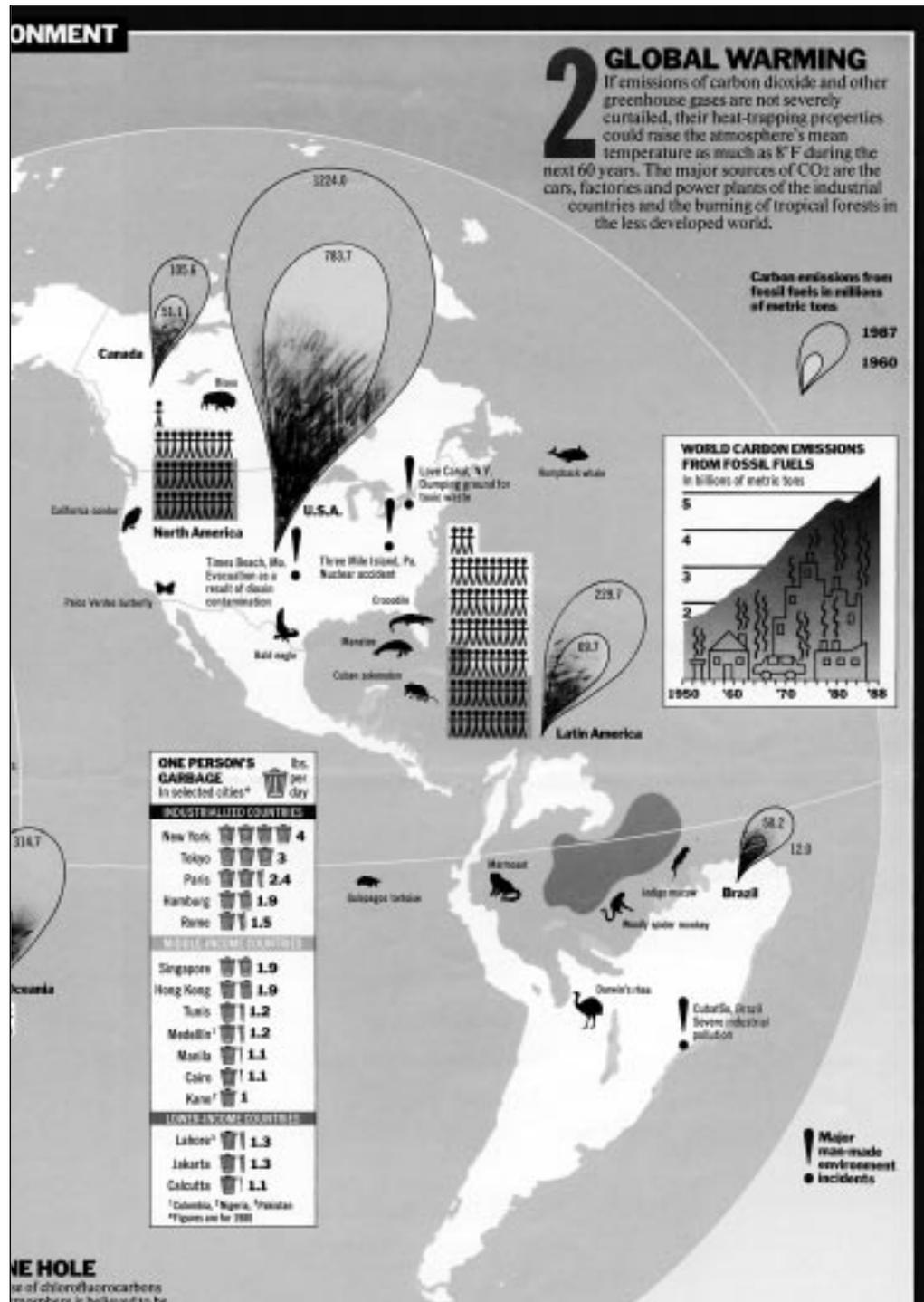
Last summer, Monsanto and its subsidiary, Searle Pharmaceuticals provided a large donation of gynecological medicine to CCRF as part of the Fund's 15th airlift to Ukraine. The grant is a direct result

of Chernobyl but also by a wide variety of other health factors which are environmental, economic and sociological in nature," said Dr. Zoreslava Shkiryak-Nizhnik, the research director at the Institute of Pediatrics. Beginning in 1993, Dr. Nizhnik and a team of researchers based in 6 regions have been tracking the health of 15,000 patients over a 7-year period. "Thanks to Monsanto and CCRF, we will now have the resources to address many of the problems we have witnessed in the villages and rural clinics which have been participating in our study."

Since 1990, CCRF has established itself as the leading U.S.-based charity involved in providing aid to children and families affected by the 1986 Chernobyl nuclear disaster. The Fund has organized 16 airlifts, and delivered more than \$38 millions dollars worth of medical aid including cancer medication, diagnostic equipment, antibiotics, and surgical supplies to hospitals which specialize in the treatment of children affected by radiation and environmentally-caused diseases.

The rural health program comes in response to growing evidence that Ukraine is suffering from a sharp decline in population. Infant mortality in Ukraine stands at 14 deaths per 1,000 live births - more than twice the European average. Stillbirths and birth defects have doubled since the Chernobyl accident, and the rates of infectious disease, anemia and immune deficiencies have also risen. CCRF hopes to reverse this trend through physicians' training, community outreach, technical assistance and through the delivery of antibiotics, vaccines and other basic commodities needed to protect children's lives.

"We are deeply grateful for Monsanto's contribution," said Assistant Executive Director Alex Kuzma. "The medical crisis in Ukraine is so great that it requires a massive infusion of resources. Monsanto



The End of Guinea Worm

Of all Nature's miracles, few are as revolting in their habits as the guinea worm. Beginning its journey through the human frame in a mouthful of dirty water, a larva is stimulated by the stomach's acidity to burrow through the gastric wall and find a home near the thorax. There it meets a chum, mates and, if it is male, expires. But the female grows for a year or so and then, half a meter (20 inches) long, slithers down beneath the skin to the leg. To ease the painful blister that ensues, a sufferer often immerses it in water. When the immersed blister bursts, the worm begins its slow emergence and releases hundreds of thousands of larvae. These are gobbled up by tiny crustaceans, in which they live until another luckless human victim swallows them.

This hideous cycle may be about to end—forever. After smallpox, the guinea worm looks likely to be the second human disease to be eradicated. The World Health Organization had hoped that the worm would be extinct by the end of this year. It will miss that target but not, with luck, by much. The number of reported cases, which was nearly 900,000 worldwide as recently as 1989, was down to 163,000 last year and in most countries is halving every year. Only in Sudan is the worm holding out. There were 50,000 cases last year, proving that war and disease go hand in hand. If the war ends soon, the worm should be gone by the end of the decade. On December 4th a celebration will be held in Washington, D.C. to declare a partial victory.

The eradication—guinea worm has already gone from Pakistan, Central Asia and several West African countries—is a triumph for health education and "appropriate" technology. The worm is a purely waterborne scourge, so supplying clean water is the best way to eradicate it. But that is costly. A cheaper answer is to teach people to filter all drinking water through a cloth, and to prevent those who are infected from bathing in water from which others drink. To ensure that the last few cases are tracked down and treated, UNICEF, the United Nations Children's Fund, has run a programme to train village health workers to keep records and dispense

FOOD FOR THOUGHT: *On the Road to Istanbul—Habitat II: The City Summit*

The last of a series of major United Nations conferences that ushered in the Decade of the Nineties will take place in Istanbul, Turkey, from 3-14 June, 1996. Over twenty thousand representatives of government, non-governmental organizations, local authorities and other members of the civil society are expected to participate in the Second UN Conference on Human Settlements, Habitat II, named by Secretary-General Boutros Boutros-Ghali "The City Summit." Sustainable human settlements development in a rapidly urbanizing world and adequate shelter for all are the two themes adopted by the UN General Assembly for the Conference.

Benefiting from lessons learned since the first UN Conference on Human Settlements held in Vancouver in 1976, Habitat II has taken up the relevant messages from recent UN conferences and developed them into an agenda for human settlements, the Habitat Agenda. Beginning with the UN Conference on Environment and Development (Rio, 1992), through the UN Conference on Human Rights (Vienna, 1993), the International Conference on Population and Development (Cairo, 1994), the World Summit on Social Development (Copenhagen, 1995) and finally the Fourth UN Conference on Women (Beijing, 1995) a wealth of information, declarations, recommendations and commitments were produced with a view to enhancing sustainable economic and social development.

These conferences, as well as the ones on Small Island States (Barbados, 1994) and on Natural Disaster Reduction (Yokohama, 1994) addressed important sustainable development issues for which successful implementation requires action at the local, national and international levels. Indeed, most of the goals reflected in *Agenda 21 Programme of Action* can be realized only through increased international attention. These include pollution, inadequate sanitation, water supply and water management. As the world's urban population continues to increase dramatically, these problems can only worsen unless effective measures are taken without further delay.

In 1950, only 30 percent of humanity lived in towns and cities. Today over 45 percent of the world's population live in urban areas, and UN projections indicate that half of humanity will live in urban areas by the turn of the century, rising to two-thirds, or about 5 billion by the year 2025. While urban population explosion is

seventh place.

The Global Report on Human Settlements, An Urbanizing World, to be released in early 1996 by the UN Centre for Human Settlements (Habitat) projects that 80 percent of the world's urban residents will live in developing countries by 2025. Uncontrolled population explosion in major cities of the developing world, coupled with lack of adequate planning and poor management can lead to disastrous consequences. Homelessness and poor housing conditions are at the root of environmental, social and economic problems that the world will face in the coming century. With better management of resources and elimination of waste, urban areas should be able to cope with these problems.

Habitat II will address the mounting challenges of rapid urbanization, and will focus on people and our relationship to our living environment. It advocates the recognition by Governments that they alone cannot provide for the needs of their populations. Instead, Governments should play an enabling role through reforming policies, institutions and legal frameworks. It urges Governments and local authorities to embark on partnerships with urban dwellers to improve management of cities.

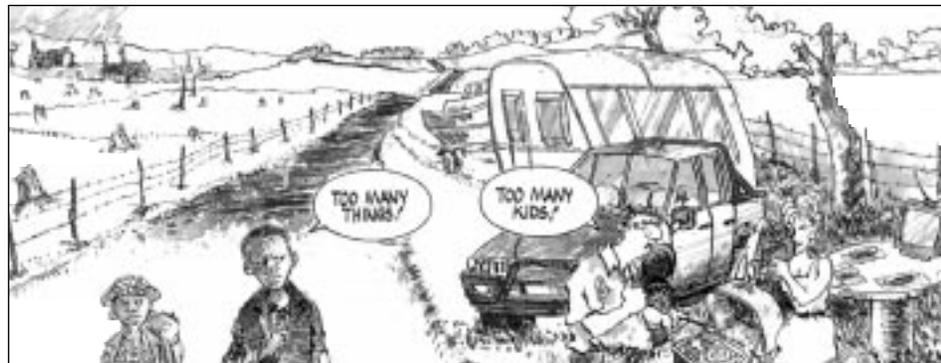
On their part, Member States encourage the active participation of non-governmental organizations, local authorities, the private sector, community based organizations and the academic and scientific communities. Partnerships between and among all actors from public, private and community organizations and individuals are essential to the development of sustainable human settlements and the provision

of adequate shelter and basic services. The active participation of these major groups is built into the structure of the conference, whereby their recommendations and commitments will be taken up by the Second Committee of the conference. Additionally, NGO representatives are included in the informal negotiating group that produced the draft Global Plan of Action.

A major feature of Habitat II is the identification of best practices for improving the living environment. Successful and sustainable approaches to a wide range of issues that affect the quality of life in cities will be documented and disseminated widely. The main objective is to facilitate learning from successful and sustainable initiatives which have improved people's living conditions. A Global 100 Best Practices Catalogue will be distributed at the Istanbul Conference, and five special recognitions will be made. There will also be video presentations of best practices.

In the words of Secretary-General Boutros Boutros-Ghali, "The City Summit encompasses many issues. There are hard questions to answer. How can we improve the governance and finance of human settlements? How can we ensure basic hygienic conditions in urban areas, while avoiding long-term damage to the environment? Can we ensure that, by a target date, adequate shelter will exist for all? What must be done to mitigate the effects of natural disasters and war? Can the cycle of deprivation, conflict, devastation and failure to develop be broken?"

SOURCE: Farouk Mawlawi, U.N. Senior Advisor, Habitat, Executive Vice Chair WIT.





DID YOU KNOW?

■ According to the 1995 *Human Development Report* which focuses on women, Ireland is the safest nation in the world in which to give birth. Yet, among the developed nations, Ireland has the third highest unemployment rate. Women in Ireland earn about 69 cents to every dollar earned by men, roughly the average wage disparity found around the globe. Only six nations have more than 30% female representation in government. Those nations are Denmark, Sweden, Norway, Finland, Netherlands and the Seychelles.

SOURCE: *United Nations Development Programme, Human Development Report, 1995.*

■ Reports issued by the Intergovernmental Panel on Climate Change (IPCC) have concluded that the human impact on global warming is clear and no longer debatable. The findings of the IPCC's first study on climate change in 1990 were ambiguous about the causes and effects of emissions from the so-called greenhouse gases. In the current study, scientists changed their search patterns so that they could detect the cooling influence of sulfates from sulfur pollution. This approach led to the firm conclusion that human activity is altering earth's climate in observable ways. The 1995 IPCC study projects that the temperature will rise 1 to 3.5 degrees by the year 2100. This is a reduced estimate from the 1990 prediction of a 3 degree increase by 2100. The lowered projection is based on current trends to reduce greenhouse gas emissions. The current IPCC study also revised downward its estimate of sea level rise from 65 centimeters in 2100 to between 15-90 cm over the same period. Anticipated warming

been linked to heart failure. A research team at the Medical College of Wisconsin measured records of meteorological conditions in seven US cities against hospital admissions for heart failure. The study concluded that the only outdoor air pollutant associated with heart-failure hospital admissions was carbon monoxide. Exhaust from motor vehicle traffic is the main source for carbon monoxide which diminishes the blood's capacity to carry oxygen. The cities analyzed were Chicago, Detroit, Houston, Los Angeles, Milwaukee, New York, and Philadelphia.

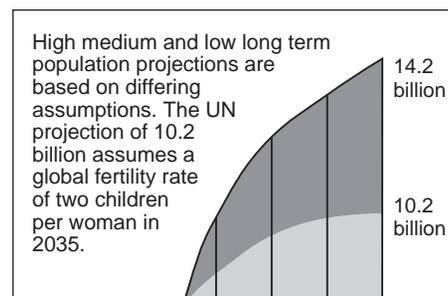
SOURCE: *Science News, Vol. 148, No. 16, Oct. 14, 1995*

■ The smog that hangs over Mexico City most of the time may have another source besides industrial and vehicular emissions. The culprit is leaking canisters of liquefied petroleum gas or LPG. F. Sherwood Rowland, who recently received the Nobel Prize in Chemistry for his research on stratospheric ozone depletion by CFC's, and his colleague Donald R. Blake of the University of California at Irvine identified LPG as a source of smog. The researchers suggest that about one million canisters all over Mexico City may be leaking. Close to 20 million households use LPG as fuel. Rowland and Blake further suggest that LPG leakage affects other cities including Taipei, Taiwan, and Athens.

SOURCE: *Science News, Vol. 148, No. 8, Aug. 19, 1995.*

■ Dr. Wally N'Dow, Secretary General of the United Nations Habitat II Conference to be held in Istanbul in June, 1996, sees a direct link between the Fourth World Conference on Women held in Beijing, Sept. 1995 and Habitat II. 70% of the world's 1.3 billion people living in abject poverty are women. As the number of poor people living in cities expands from 2.4 billion in 1995 to a projected 5 billion in 2025, the number of poor urban women is expected to increase. In an interview with *The Earth Times*, N'Dow stated, "What was started in Beijing must be put into practice in Istanbul."

SOURCE: *The Earth Times, Sept. 28, 1995.*



THE POLITICS OF LANGUAGE IN THE BEIJING CONFERENCE: Sex vs. Gender

The Beijing Women's Conference highlighted the way terminology that is clear and well defined in one venue can be rendered meaningless in another. The words gender and sex have been used distinctly in academic discussions of women's issues, feminist theory and the study of women's history for more than two decades. Sex refers to biology, whether a member of a species is male or female, or a bit of both as in the case of some fish. Gender signifies socially constructed roles based on biology. Sex role is another way to describe gender. Note the necessary addition of the word "role" to distinguish the biological reference from the social one. Sex roles or gender vary from culture to culture. Men are weavers in some African societies. In Europe, women have done the weaving. The United Nations Commission on the Status of Women (CSW) is charged with examining the social, political and economic conditions under which women live. Or put another way, the CSW examines the conditions of gender under which the female sex lives.

During the third preparatory meeting of the Fourth World Conference on Women some governments attempted to confuse these well defined terms by calling for debates on the meanings of sex and gender. The apparent objective for such a discussion was to interfere with the negotiation of substantive issues, though the claim was made that sex and gender had become devoid of meaning because the terms were used interchangeably. Anyone who used the word sex to mean gender or vice versa had probably never learned the long standing sociological concept of social role. Or, perhaps since the focus of the conference was women, some government delegations made the prejudicial association of women to sex - as in sex object and sexual intercourse. Some delegates just didn't or wouldn't "get it." By the time the Beijing Conference convened, gender was correctly used and sex once again meant the biological distinctions of male and female.



GOOD NEWS

■ United States' foreign policy makers are assessing environmental factors in furthering their understanding of the causes of war and in developing their ability to identify places where war might occur. The US government is examining potentially destabilizing factors like famine and drought which advanced the strains of tribal conflict in Somalia; rapid population growth and density which played a significant role in the war in Rwanda; the spread of the Sahara desert; and the rapid growth of water hyacinths in Lake Victoria. Water hyacinths are beautiful, but proliferate so fast that they can choke the lake which provides 120,000 tons of fish annually to Uganda, Kenya and Tanzania. Though there is some disagreement among intelligence gathering officials, the trend is clear that US forming policy has adopted a greener face.

SOURCE: *New York Times*, Oct. 9, 1995

■ As examples of sustainable development projects that enable women to become better managers of natural resources, the United Nations identifies three projects in developing countries. A project begun in 1988 in Ghana, enables women farmers to replant trees closer to their homes, in woodlots, alleys, farms and along streams. Women, therefore, spend less time traveling to collect firewood. The project has enhanced soil fertility and is expected to reduce the need for fertilizer. In Indonesia, a group of rural women began a community awareness program to improve sanitation and health. Their activities included radio broadcasts which attracted large audiences. Members of the targeted community installed latrines and

Dutch scientist at the Max Planck Institute for Chemistry in Mainz, Germany; Mario Molina of M.I.T. in Boston, Massachusetts, USA; and F. Sherwood Rowland of the University of California at Irvine, USA. Crutzen's 1970 research demonstrated that nitrogen oxides react with ozone to speed up its depletion. This important finding led to research on the effect of nitrogen oxide spewing supersonic transport planes on the protective ozone layer. Molina and Rowland proposed in 1974 that chlorofluorocarbons (CFS's) could change into ozone depleting compounds in the stratosphere. Stratospheric ozone depletion leads to increased incidences of skin cancers, cataracts, and immune system diseases.

SOURCE: *Science News*, Vol. 148, No. 17, Oct. 21, 1995.

■ The government of Czechoslovakia in cooperation with three American energy companies and the Danish government will construct a natural gas cogeneration plant outside the Czech city of Decin, near the German border. The plant is expected to reduce greenhouse gas emissions in Decin by 6,000 tons annually, eliminate sulfur dioxide contaminants and ash production. A series of illnesses in Decin, problems in pregnancy and premature deaths have been associated with severe air pollution, according to studies by the Center for Clean Air Policy in Washington, D.C.

SOURCE: *The Earth Times*, Sept. 28, 1995

■ Zimbabwe is one of the few African countries that have embarked on projects to exploit the sun to provide energy in rural areas. The Government, with the support of the United Nations Development Programme (UNDP), in 1993 launched a nine-million dollar five year Global Environmental Facility (GEF) solar energy pilot project which will see 10,000 to 20,000 solar-installations mounted in rural homes, schools and hospitals by 1998. Currently seventy-five percent of Sub-Saharan Africa's populations has no access to electricity. Energy sources are taken directly from the surrounding environment, and that usually means cutting down trees in regions that already suffer severe environmental degradation. With energy consumptions relatively low in rural areas, it is considered economically unwise to extend electricity supply to them. However, Sub-Saharan Africa's population is expected to double within the next 35 years—most of it in rural areas.

SOURCE: *UNESCO Sources*, #69, 1995

Nuclear Plant Halted

Under intense international pressure the Slovak Republic suspended its application for a \$275 million loan to finish building the Soviet-designed Mochovce nuclear power plant. The move ended a bid by Electricite de France to complete the reactors and convinced Ukrainian officials to abandon their demand that the G-7 nations finance the completion of three of their own partially-constructed Soviet designed reactors in order to shut down Chernobyl.

The decision to pull back from the Mochovce project was provoked by strong pressure from European, environmental groups, which are concerned about the dangers of having additional Soviet-designed nuclear plants operating within a few hundred kilometers of west European borders. Although nuclear vendors claim that they will be able to do a cost-effective retrofit of Soviet plants with Western safety systems, severe technical and safety problems have been identified. These concerns have been expressed in resolutions of the European Parliament and the government of Austria, which sits just a short distance from the Slovak border.

In addition to opening an opportunity to develop a sustainable energy system in Slovakia that will replace the antiquated one of the past, the Mochovce campaign set a number of significant precedents. For the first time, public hearings were held in neighboring countries to discuss the potential transnational consequences of an accident, and both the economic analysis of the plant's viability and the safety assessment for the project were made publicly available for comment. For the first time, the citizens of Slovakia have to opportunity to participate in decision-making about an energy project that will shape their futures.

"We won the first battle, stopping more uneconomic and unsafe nuclear power development, commented David Schwarzbach of the Washington, D.C.-based Natural Resources Defense Council. "The next, tougher step is to actually build a viable and sustainable alternative. Winning this first fight doesn't mean walking away."

SOURCE: *World Watch*, Volume 9, 1996.

Fewer,
Healthier

10 — Average number of children per woman

300 — Under 5 mortality rates (per 1,000 live births)

International Environmental Law at the United Nations

The Rio Conference, UNCED, marked a turning point in the United Nations approach to environmental law. After dominating discussion, the concept of sustainable development, became the central theme and primary goal of Agenda 21, Chapters 8, 38, and 39 forge a new mandate for the UNEP, refocusing its efforts and obliging the agency to review and develop international environmental law in keeping with the principles of sustainable development while providing developing countries with the technical assistance to do the same.

In Chapter 39 Agenda 21 states, "The overall objective of the review and development of international environmental law should be to evaluate and to promote the efficacy of that law and to promote the integration of environmental and developmental policies through effective international agreements or instruments taking into account both universal principles and the particular and differentiated needs and concerns of all countries."

Shortly after UNCED, in September, 1992, the Governing Council met to address these two new responsibilities. As soon as May, 1993 they committed UNEP to that meeting's proposed goals, strategies, and activities by adopting the Montevideo Programme II.

As central element, the Montevideo Programme II calls for UNEP to foster the progress of environmental law in developing countries. Far from new, this 'capacity building' objective was first introduced twenty years earlier in a UN General Assembly Resolution of 1975. UNCED reinforced it as part of UNEP's mandate and, recognizing that environmental protection and sustainable development are inter-dependent, the Montevideo Programme II provides that the UNEP should coordinate its activities with UNDP.

Through technical assistance, training and simple exchanges of information, UNEP/UNDP joint activities have made substantial progress in a short time. Projects take a variety of forms. One of the most dynamic is the Joint Project on Environmental Law and Institutions in Africa. The partnership harmonizes development know-how and environmental expertise. Steering Committee meetings for this project are attended by representatives from UNEP, UNDP, FAO, and the World Bank.

Chosen to participate the Project's 'Sub Regional Project in Africa,' Kenya, Tanzania, and Uganda will receive technical assistance to help them establish environmental law frameworks which are tailored to sustainable development. A draft bill has already been submitted for debate in

the only one of the Project's 'First Phase' countries which is behind schedule. Although constitutional debate concerning the division of powers between federal and provincial governments has stalled progress, UNDP was recently invited to consult government officials regarding activities which might be undertaken in the interim.

In another joint initiative in the Seychelles, UNEP's ELI/PAC (Environmental Law and Institutions/Programme Activity Centre) will team up with UNCHS (Habitat) as consultants to give technical assistance and help design town and country planning legislation.

Other African projects for UNEP's ELI/PAC include Cameroon and Moroccan consultancies to inventory and examine international environmental conventions to which each country is a party. Officials will then evaluate the effectiveness of national legislation and suggest improvements and strategies for implementation.

In Southern Asia ELI/PAC, ROAP, SACEP (South Asia Cooperative Environmental Programme), and Jawaharlal Nehru University are planning a workshop for December, 1995, to relate sustainable development issues to their environmental legislation. SACEP countries include Afghanistan, Bangladesh, Bhutan, India, Iran, Maldives, Nepal, Pakistan, and Sri Lanka.

In the Caspian Sea Region ELI/PAC joined UNDP and World Bank officials in a fact finding mission in March, 1995. Their proposal for a regional convention for cooperation between the Russian Federation, Kazakhstan, Iran, Azerbaijan, and Turkmenistan was well received, and the agencies are currently finalizing a project to provide funding by the Global Environmental Facility.

In the Region of Latin America and the Caribbean, UNEP recently helped Chile draft a Law on General Bases for the Environment. Both Uruguay and Panama develop law on environment impact assessment with UNEP technical assistance.

In Western Asia, UNEP has agreed to do a needs assessment at Yemen's request.

Regional capacity building projects are not the only activities in which UNEP coordinates its efforts with other agencies. Perhaps the leading example of the progressive development of international environmental law is the UN Framework Convention on Climate Change. The green house gas issues are as diverse as their producers. Developed and developing countries, countries with economies in transitions, the Association of Small Island States, and others have introduced a myriad of concerns, all of which are being addressed through comprehensive Agency inter-

efforts. The agreement establishes voluntary standards of conduct in an effort to ensure safe handling, establish responsible trade practices, and assist in developing countries in adopting controls which regulate pesticide use. It addresses international organizations, the governments of exporting and importing countries, industry, environmental groups, consumer groups, trade unions, and more, and thought it is administered by FAO, implementation requires close collaboration with UNEP, WHO, and GATT as well as the OECD, CEC, CEFIC, CMA, GIFAP, and the IOCU. The FAO and UNEP are currently working together to implement the principle of prior informed consent (PIC) which would provide countries with information regarding the use and shipment of banned or severely restricted pesticides.

A similar convention regarding the use and transport of chemicals is administered by UNEP. The London Guidelines for the Exchange of Information on Chemicals in International Trade encourages its members to create or strengthen national databases on toxic chemicals and to participate in a PIC system regarding the transport of banned and severely restricted chemicals. UNEP coordinates its administration with FAO, OECD, ILO, and the WHO.

In a new initiative, UNEP and the UN Economic Commission for Europe (ECE) met recently in Sweden to discuss the conformity of military establishments' hazardous waste policies to national environmental standards. Experts in the field are preparing a study comparing general practices and principles (if they exist) with existing national legal systems and international regimes already operating.

Nowhere is UNEP's commitment to fulfilling the mandates of Agenda 21 and the Montevideo Programme II more evident than in the regular Coordination meetings of UNEP and International Convention Secretariats. Preparatory documents include recommendations for improving the relationship between UNEP and Convention Secretariats, improving informational exchange, and a recently completed in depth study of Trade Related Mechanisms and Implementation and Compliance Mechanisms in UNEP administered Conventions.

These early joint projects have been successful, and perhaps their most valuable achievement has been increased confidence among participants who are beginning to believe that in partnerships they might have found the means to tackle sustainable developments most menacing obstacles. UNEP will continue to refine the process in future

Voices of the Planet

■ WIT is preparing its Fifth International Conference on Health and the Environment: Global Partners for Global Solutions which will be held at the United Nations headquarters in New York City on April 25 and 26, 1996. The topic will be Toxic Waste: Its Effect on Human Health, with a special session commemorating the 10th year anniversary of the Chernobyl nuclear accident on April 26. The Conference is co-sponsored by the Government of Lebanon. Many prominent experts will participate in the Conference. Please call our office for further information.

■ The United Nations Environmental Programme (UNEP) has established an internet subscription list on the issue of environmental impact assessment (EIA). The topics expected to be covered are: economics, industry, technology, legislation, environmental health, site sourcing and social factors. This service is a joint venture between UNEP and the European Data Request Facility (CEDAR). Access to the list is available via Gopher at pan.cedar.univie.ac.at, and on the World Wide Web at <http://pan.cedar.univie.ac>.

■ The World Meteorological Organization and UNEP have collaborated on a pamphlet for the 50th anniversary of the UN. The 24 page pamphlet is titled, *The Changing Ozone Layer*, written by Rumen D. Bojkov. The inside front cover contains a chronology, "Milestones in the history of ozone," beginning in 1839 with the discovery of ozone by C. F. Schonbein. The last entry in the chronology is 1995, "Record low ozone values (exceeding 25% below long-term average) observed January to March over Siberia and a large part of Europe." The pamphlet is easy to read with color illustrations to explain the chemical processes involved in ozone depletion and its effects. [ISBN 92-63-10828-5].

■ *The Earth Summit NGO CD-ROM* is a compilation of NGO documents on the United Nations Conference on Environment and Development (UNCED). The CD-ROM includes official documents from the Rio conference and the preparatory meetings, regional and national reports, Global Forum documents, a list of organizations that participated in the Global Forum, articles related to children, press coverage, publications produced during UNCED including *Crosscurrents* and *Terra Viva*, comics and cartoons, a bibliographic database on environment and development (NGOBIB) and a database for contacts (NGODAT). The software requires an IBM compatible computer running Windows 3.0 with a CD-ROM drive

decline. The assessment states that 5,366 animal and 26,106 plant species are at risk of extinction in the near future largely due to human activities. Species extinctions have been documented since the seventeenth century. 484 animal and 654 plant extinctions have been recorded since that time. There is strong suspicion among the authors of the biodiversity assessment that species extinctions may be greater than documented because of habitat destruction.

■ It is already axiomatic that human life has altered ecological systems globally, yet differently in different places. Two books, only one of them new, look at patterns and consequences of our abusive interaction with the natural environment. The new book, *Earth Cancer* by Van B. Weigel (Westport, CT, Praeger, 1995) examines human attitudes towards the natural world and argues that humans function as a cancer upon earth's resources causing imbalances if not destruction of ecosystems. Weigel urges us to recognize our lethal behavior, so that we can develop an ethic of interdependence with other species and natural resources. The second book is a fascinating history of the patterns of human illness and adds important historical insight into an examination of the consequences of human alteration of the natural environment. Written by William H. McNeill, one of America's senior historians, *Plagues and People* (New York: Doubleday, 1977, reissued 1989) is an exploration of disease patterns in relation to the development of civilization around the world. Disease shaped migrations into areas inhabited by other species and affected the rise and fall of empires. McNeill studies Eurasia from 500 BC to AD 1200, the Mongol Empire from 1200 to 1500, European colonization of the Americas including the slave trade, 1500-1700. The last chapter considers the ecological impact of medical science since 1700. Because of the current emergence of new diseases and the re-establishment of old illnesses like cholera and tuberculosis, *Plagues and People* is especially timely and finds its way into the bibliographies of books that examine new disease patterns.

■ The first International Conference on Community Health Centers will take place in Montreal, Quebec, Dec. 3-6, 1996. The conference, sponsored by the World Health Organization, the Organization for Economic Cooperation and Development and the World Bank, will be an opportunity for experts, managers, health care practitioners and primary health service providers to examine the activities of community health centers. Experts from five continents are expected to attend. For further information contact Jeanne-d'Arc Vaillant, spokesperson for the conference

and All Kinds of Seas (chapter 17); and Protection of the Atmosphere (chapter 9). The cross-sectoral issues to consider are the following: Trade and Environment (chapter 2); Combating poverty (chapter 3); Changing Consumption patterns (chapter 4); Demographic dynamics of sustainability (chapter 5); Integrating environment and development in decision-making (chapter 8); Major groups (chapters 23 to 32); Finance (chapter 33); Transfer of environmentally sound technologies (chapter 34); Promoting Education and Public Awareness (chapter 36); Capacity building in developing countries (chapter 37); International arrangements (chapter 38); International legal instruments and mechanisms (chapter 39); Information for decision-making (chapter 40). For further information about the upcoming CSD session and for information on participation, contact Zehra Aydin, Major Groups Focal Point, Division for Sustainable Development, DPCSD, 2 UN Plaza, 22nd Fl., NY, NY 10017, USA; Tel.: 212-963-8811; fax: 212-963-1267; email: aydin@un.org. Information on the CSD is available on the Internet through the Gopher utility at gopher.undp.org under "Economic and Social Council." For subscribers to Econet, CSD material can be accessed

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in Econet.igc.apc.org under conferences, "un.cds.docs". The work of the CSD is also recently accessible on the World Wide Web at <http://www.un.org.DPCSD>

■ Habitat II documents can be access on the Internet in a variety of ways. The documents available include comprehensive material produced by the Habitat II secretariat, from the 1976 Habitat I Conference in Vancouver to the most recent draft agenda for the Habitat II preparatory meeting in February, 1996. Related documents as well as descriptions of up-coming activities produced by non-governmental groups participating in the preparations for the Habitat II Conference are also available through links to other Internet services. Habitat II Internet sites: (1) World Wide Web—<http://www.igc.apc.org/habitat/> (2) Gopher—type "o" when using the gopher and select gopher.un.org/Conferences (3) Listserv, (an electronic mailing list that enables participants of the list to send messages to everyone on the list and to receive messages from list members) allows members to receive announcements of new Habitat II related documents posted on the World Wide Web. To participate in the general Habitat II list send an email message to listproc@cedar.unvie.ac.at. In the message include only the following text: "Subscribe Habitat2 your name> (fill in your name after the number 2).

■ Published in 1993, Paul Hawken's *The Ecology of Commerce* remains among the most eloquent and pragmatic books ever written about the environment, yet, its lessons are still barely heard. Hawken says we are drifting sleepily toward a cataclysm and our descendants will be horror stricken by our inattention today.

Hawken believes that instead of living off our income, we are living off and destroying our capital (our natural resources). The situation is so perilous that even if every business became suddenly "environmental," we could not forestall disaster. Human population is increasing at close to 100 million people a years, almost all of our ancient forests are lost and the environment is degrading rapidly.

What should we do? Recognize that we are in transition from an industrial to an ecological age. Redesign, literally, everything we do ecologically. Because it possesses creativity, initiative, power and money, business must take the lead. So far it

has not. It has been dishonest and greedy, fought regulation and plundered the earth for short term profit. As an idealistic businessman himself Hawken believes the purpose of commerce is not to make money, but to better the world.

Many businesses have acted nobly, but the bit, powerful ones almost universally have not.

It is a mistake, he says, to wait for some sort of collective change of consciousness to set tin. Rather, commerce should be governed essentially by a set of rewards and punishments. "Green taxes," for one, would provide incentives for business to avoid bad acts. They would spur good environmental behavior because that course ultimately would be cheaper and more profitable. These taxes, phased in over 20 years, would actually reduce income and payroll taxes.

Energy is a very big problem. The alternatives are all there: wind, solar, insulation. We must reduce energy by 80% over the next 50 years. If we don't, we will pollute ourselves to death. Tobacco, pesticides, and weapons are other major areas for redress.

Hawken's central idea is that we must have as our goal a sustainably managed earth. Give the earth a chance, he says, and it will restore itself. Key to this transformation is the recognition that costs (smog, acid rain, poisoned wildlife, health and food chain) must be factored in to market prices. Now it's the reverse. What is the cheapest and most wasteful is most profitable. Instead of "externalizing" costs, true cost, business must "internalize" it. Organic farming and preventive healthcare systems for example, do just that.

■ Voyage Publishing Launches an Electronic Environmental magazine for students entitled, *Science and the Environment*. This monthly, "paper-free" publication has been specifically targeted for high school and university educators and students. The magazine provides objective environmental news summaries with colorful photos and graphics that can be either printed or downloaded to a floppy disk, photocopied and distributed to the class. Stories are selected and summarized from over 500 sources including popular news magazines, research journals and specialized environmental publications. Educators and students can select their material from different chapters by connecting online to <http://www/voyagep>

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POINT OF VIEW: *The Future is Urban: The Illusion of Change*

Cities are exhilarating, challenging places to work and live where comfortable residents utilize attractive spaces rich in services and the arts. How wonderful it would be if all urban dwellers could enjoy the economic and cultural prosperity that is the potential of urban life. Given the size and distribution of the world's population and resources this is unlikely to occur in the predictable future. It is more conceivable that cities will continue to reveal national inequities and global imbalances in health, wealth, education and training, population growth and immigration. The upcoming United Nations conference on urban communities known as Habitat II, offers an opportunity for changes in urban policy related to sustainable development. Yet an opportunity for change does not ensure its occurrence. Too often individuals at all levels, including government delegates and NGO representatives, think that *attending* a United Nations conference and *signing* statements of principles and non-binding action plans, especially after arduous debate, mean that change has occurred or is in process. The challenge for governments, UN agency advisors and NGOs is to be able to recognize and reinforce *concepts* that will produce *behaviors* required to sustain healthy, prosperous urban life.

The United Nations conference known as Habitat I, held in Vancouver, Canada, May 1976, set forth lofty and worthwhile goals to attempt to address shared national problems that affected urban life notably among the poor. The main principles of that first conference on human settlements included equity, social justice and solidarity followed by human dignity, free choice and free movement. These great goals resulted in few concrete policies and consequently in the twenty years that passed between the Vancouver conference and the upcoming Habitat II conference to be held in Istanbul, Turkey, in June, 1996, many of the issues debated have worsened. The growth in the world's population

especially in developing nations, huge loan repayments, civil and local wars have all contributed to the expansion of the numbers of poor people which in turn has advanced the degradation of the natural environment. Suffering from "donor fatigue" and substantial economic downturns, governments in the developed world, whose poor populations have also increased, claim that money for development aid is less available. The gap between rich and poor within nations and among countries has widened. Why was so little achieved in 1976? Can Habitat II accomplish more?

One reason that Habitat I produced few concrete results is that the principles of the conference were too many and too diffuse to be turned into national or international policies. The goals for Habitat II are similar but configured more concisely into three themes: civil engagement, sustainability, and equity. The themes themselves reflect changes in the international debate, and reinforce central ideas developed in previous United Nations "mega" conferences of the 90s. Here again, the three themes are lofty and broad but the opportunity for firm policy formation exists because of precedents set in recent prior conferences.

A second reason that Habitat I produced so little is that a global urban crisis did not as yet exist. Many cities all around the world were still viewed in relation to their cultural achievements rather than municipal decay. Unlike the present, the world's population in 1976 was not so pressed into urban centers which are stressed to their limits. Urban health had not deteriorated in as clear a way and among so many people as today. In 1976, it was still possible to move to another city with fewer problems. Today, however, most cities around the globe including New York, London, Manila, Beijing, Cairo, Rio de Janeiro, Nairobi, etc. have impoverished, ill populations living in conditions that are more similar

than their diverse cultures would attest. The poverty of the South has become globalized most harshly in the urban centers of the world.

The third and perhaps most significant reason that Habitat I was ineffective is that international discussions on social problems were still framed in political terms in relation to the impact of policy on governments contoured by the Cold War. Since the Children's Summit in 1990, the international debate has shifted away from the requirements of governments to the basic needs and rights of individuals. "Putting people first" is this decade's slogan for development policy, and it is precisely because of this shift, made possible by the dissolution of the Soviet Union, that Habitat II has a real chance for achieving its three objectives. However, it must also be recognized that governments, and donor institutions are no longer the only makers in the establishment of sustainable urban policy. The range and power of transnational corporations has to be incorporated into policy plans especially with regard to funding.

Debating international policy issues can lull one into thinking that a major task has been achieved because so much intellectual energy has been spent. A more productive expenditure of such energy would come from rigorous discussions on *key concepts of sustainable behaviors*. The most critical concepts that would sustain viable urban communities are population reduction, specifically the right of women to control their reproduction, together with decreased abuse of natural resources and enhanced awareness that human health rests on abundance and diversity of the natural environment. A focus on concepts that produce sustainable behaviors has a particular advantage in judging whether change has occurred. Thus behaviors can be seen and quantified, challenging the ever present illusion of change.