In fact, 20 per cent of the world's population live in cities where the air is not fit to breathe. Combine air pollution with water shortages, toxic waste, inadequate sewerage, congestion, a proliferation of slums, crime and social alienation and the prognosis is grim indeed - especially as mass urbanization is one of the distinguishing features of the new millennium.

With the advent of the 21st century, for the first time in human history, half the world's population of more than six billion will be living in cities. The ways in which the urban need for food, water, shelter and social organization are met will not only determine the course of human civilization, but the very future of this planet.

Historically, cities have generated tremendous energy, ideas and opportunities. It is no accident that the Latin word for city – civitas – is the root of the word civilization; cities have always been the cultural engines that advanced civilization.

> The city first took form as the home of a god: a place where eternal values were represented and divine possibilities revealed. Though the symbols have changed, the realities behind them remain.
>
> LEWIS MUMFORD, THE CITY IN HISTORY

But the kinds of environmental and social pressures facing cities today put their very sustainability to the test. In order to survive, changes must be made in how they provide food and water, in how their land is used, how people and goods are transported, and in waste disposal.

Ironically, change is occurring. The problem is that, all too often, it is the wrong kind. Cities are growing by leaps and bounds. Increasingly unable to make a living on the land and lured by the hope of urban jobs and other opportunities, millions of people are leaving the country and migrating to cities.

While this migration is happening everywhere, some places are harder hit than others. The Worldwatch Institute, an independent, non-profit, environmental research organization based in Washington, D.C. reports that, between 1990 and 1995, cities in developing countries grew by more than 260 million people. This is the equivalent of another Los Angeles or Shanghai being created every three months. By 2050, cities - mostly in poorer countries - will have absorbed between two and four billion more people than currently live there now.

"No precedent exists for feeding, sheltering, employing or transporting so many people in so dense an area, under such severe financial and environmental constraints," says Janice Perlman, president of the Mega-Cities Project, a transnational, non-profit network of organizations committed to solving mega-city problems. "Cities are reaching the limits of their carrying capacity to support human life."

The environmental and social problems of mass urbanization constitute a global challenge. Gone are the days when problems were localized. The resources that cities use, and the pollution that they create, extend far beyond their own borders. Everyone is affected by the fact that cities undermine Earth's life support systems.

Yet as Maureen O'Neil, president of Canada's International Development Research Centre, points out: "Our global village connects us so intimately that not only do the problems in one region have an impact in quite separate, disparate regions – but so do the solutions."

Cities are capable of aligning their consumption with realistic needs, with producing more of their food and energy, and of putting much of their waste to productive use. But tremendous obstacles must first be overcome – not least of which is the proliferation of urban poverty.

Klaus Tœpfer, Acting Executive Director of the United Nations Centre for Human Settlements (Habitat) says that "at least 600 million people in developing countries live in housing of such poor quality and with such inadequate provision of water, sanitation and drainage, that their lives and health are under continuous threat."

The urban poor are often compelled to live in a toxic environment in which the only available water is bad, high-fat street food is unhealthy, and where they are surrounded by casually discarded toxic materials and chemicals. Diseases and violence run rampant.

The World Bank puts urban poverty levels at around 25 per cent. Yet in several of the poorest nations in Asia and Africa, they top 50 per cent. Today, 90 per cent of Latin America's poor live in cities.

Although rich and poor breathe the same air, the urban poor suffer more from environmental degradation and a lack of supports. The rich, meanwhile, benefit most from the provision of urban services including water, sewage, police protection, and green spaces. Such blatant inequalities not only present a moral crisis, but create the potential for civil unrest and economic disaster.

Obviously, even the best environmental improvement policies will not work unless they are connected to poverty alleviation policies.

As Alejandro Encinas, Environment Secretariat of Mexico City's Cardenas government, puts it: "Social equity and solidarity, cultural identity, education, institutional capacity building, and citizen participation are key determinants in achieving sustainable and equitable urban environmental management."

Just as cities are increasingly characterized by housing two cities – one for the rich and one for the poor - so is the global community. Urbanites in industrial countries consume ten times more per capita than their neigh-

Resources

General

The International Development Research Centre
http://www.idrc.ca

United Nations Programs

U.N. Centre for Human Settlement (Habitat)
http://www.unchs.org/

Sustainable Cities Programme
http://www.unchs.org/scp/

Best Practices Database
http://www.bestpractices.org/

Global Urban Observatory
http://www.urbanobservatory.org

Public Private Partnerships for the Urban Environment Programme
http://sdnhq.undp.org/ppp/

World Health Organization Center for Urban Health/Healthy Cities Project
http://www.who.dk/healthy-cities

Worldwatch Institute
http://www.worldwatch.org/

Mega-Cities Project
http://www.megacities.org

The International Council for Local Environmental Initiatives
http://www.iclei.org

Friends of the Earth
http://www.foe.org/

The Sierra Club
http://www.sierraclub.org/

Food First
http://www.foodfirst.org/

Global Action
http://www.globalaction.org/

City Farmer
http://www.cityfarmer.org

Centre for Human Settlements
http://www.interchange.ubc.ca/chs/

National Round Table on the Environment and the Economy
http://www.nrtee-trnee.ca/

The Urban Agriculture Network
E-MAIL: urbanag@compuserve.com

Books, Reports & Publications

Managing the monster:
Urban waste and governance in Africa
Onibokun, A.G., ed., IDRC (Ottawa) 1999

For hunger-proof cities:
Sustainable urban food systems
Koc, M.; MacRae, R.; Mougeot, L.J.A.; Welsh, J., ed., IDRC (Ottawa) 1999

Thirsty cities: Urban environments and water supply in Latin America
Danilo Anton, IDRC (Ottawa) 1993

Buiding a New South Africa
Koc, M.; MacRae, R.; Mougeot, L.J.A.; Welsh, J., ed., Volume 2, IDRC (Ottawa), 1995

Cities feeding people: An examination of urban agriculture in East Africa
Egziabher, A.G.; Lee-Smith, D.; Maxwell, D.G.; Memon, P.A.; Mougeot, L.; Sawio, C.J., IDRC (Ottawa) 1994

Women and Survival in Mexican Cities
Sylvia Chant, Manchester University Press (Manchester and New York) 1991

The Gaia Atlas of Cities: New Directions for Sustainable Urban Living
Herbert Girardet, Gaia Books (London) 1996

Environment, Scarcity, and Violence
Thomas F. Homer-Dixon, Princeton University Press (Princeton) 1999

Reinventing Cities for People and the Planet
Molly O'Meara, Worldwatch Paper 147, June 1999

Endangered Mexico: An Environment on the Edge
Joel Simon, Sierra Club Books (San Francisco) 1997

Basic Facts on Urbanization
United Nations Centre for Human Settlements (Habitat), (Nairobi), May 1999

The City in History
Lewis Mumford, Penguin Books (Great Britain) 1961

Essential Information

What is IDRC?
IDRC works with researchers in developing countries to help them find practical, long-term solutions to the social, economic and environmental problems facing them. In particular, support is directed towards developing the local research capacity necessary to sustain policies and technologies that will build healthier, more equitable, more prosperous societies.

The International Development Research Centre was established in 1970 by an Act of the Parliament of Canada.

IDRC Briefings
IDRC Briefings is an occasional series dedicated to exploring cross-cutting international development issues. It focuses on subjects that are particularly deserving of greater North-South cooperation in researching and achieving practical solutions to problems of the day and long-term challenges to sustainable and equitable development. Contents may be freely copied and quoted. Please mail tearsheets or electronic versions of printed material to IDRC.

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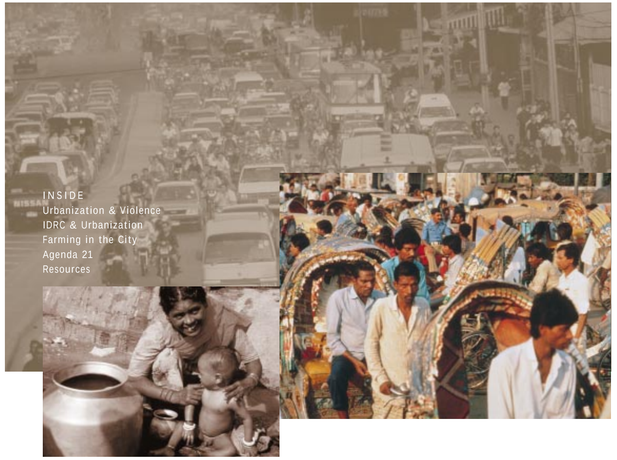

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Room to Live

Healthy Cities for the Urban Century

In Mexico City, when children paint their world, they colour the sky black. This is no political statement, just a simple representation of what they see. And what they see is an environment plagued by air pollution. Situated in a closed basin more than 7,000 feet above sea level and surrounded by mountains, the city is forced to inhale its own waste. Despite geographical variations, Mexico City is not alone. Between 1994 and 1996, China reported at least three million deaths from urban air pollution. Beijing, Shanghai, Tehran and Calcutta – along with Mexico City - share the distinction of being the five worst cities for exposing children to polluted air.

BY LOIS SWEET

bours in the South. And they generate up to 100 times more refuse per person than their counterparts in developing countries.

Interestingly, even within the North, there are vast discrepancies. The average Dutch resident of a high-density city, for example, produces 10 tonnes of carbon dioxide pollution a year. The average Canadian living in a low-density city produces double that amount.

Canadian ecologist William Rees helps provide context. He conjures up the image of an "ecological footprint." This is the surface area required to feed cities, to supply them with forest products and to reabsorb their wastes. Rees calculates that Europeans average an ecological footprint of approximately three hectares: for North Americans the average is between four and five hectares.

But worldwide, only one and a half hectares is available per person.

"What is our inheritance to our children?" asks Ricardo Villalba of the Mexican Ecology Movement, a non-governmental organization.

A good question – and one that not only knows no geographic boundaries, but is being addressed world-wide. In the North, in particular, there is a popular movement to create healthy cities - a movement that lobbies for stricter controls on pollution, encourages less material consumption, and promotes sustainable activities like urban agriculture.

In some areas of the South, there is increasing recognition of the interconnectivity of cities. In 1998, for example, at a conference on citizen participation and environmental management, representatives from ten Latin American countries and Canada met in Mexico City. The mayors, planners, members of NGOs, and politicians recognized that solving their environmental problems can best be accomplished by exchanging experiences and strategies.

In a Declaration entitled Social Participation in the Management of Urban Environments, they vowed to eliminate marginality and poverty "both of which are an inherent part of the ecological agenda." Creating public awareness of environmentally-sound practices and habits was another.

But when all is said and done, the bottom line is this:

Urban sustainability depends on urban democracy. Unless all sectors of society are able to participate fully in defining the life and shape of their communities, urban sustainability will remain unattainable.

And the dream of creating a place where "eternal values are represented and divine possibilities revealed" will be lost forever.

Urbanization and Violence

Worldwide, urban violence has risen by four per cent a year during the last two decades – regardless of age or gender. Why this is happening is a cause of considerable research and concern.

Mitchell J. Rycus, Professor of Urban Planning at the University of Michigan, points to a complex variety of factors contributing to the growth of urban crime: social, political and economic.

"If individuals from an ethnic or racial minority feel that they are disenfranchised, and that their only hope for economic success is through crime, there will be high crime rates," he says. "If, in addition, these disenfranchised individuals have access to weapons, you will have violent crime. This pattern is seen in many places throughout the world."

In fact, one World Bank official has observed that in countries with high unemployment, "You have a lot of people sitting around idly, and a lot of guns. All you need is a little ideology and you can get your own army."

Thomas Homer-Dixon, Director of the Peace and Conflict Studies Program at the University of Toronto, outlines three types of urban violence: Political (directed both against the state and by the state against challengers), communal and ethnic, and criminal/anomic. With regard to the latter, he says that rising crime rates quickly followed on the heels of increasing numbers of urban squatter settlements and slums in Africa, Asia and Latin America.

"For example, in the early 1990s, Rio de Janeiro led Brazil in negative urban indicators; the largest concentration of slum dwellers (1 million), the highest murder rate (one of 700 residents per year), and the highest kidnapping rate (four per week)... Almost one-quarter of all homicides occurred among people between the ages of 10 and 19."

"In such circumstances," says Homer-Dixon, "organized crime gains an easy foothold. Drug lords establish retail centres in the city's shantytowns, while children serve as sentries and distributors of the illegal product. Male teenagers and young adults are recruited into death squads in the war against rivals and authorities."

When societies are characterized by inequality, deprivation, homelessness and social exclusion a persistent cycle of violence and crime is set in motion. Urban programs and policies to promote literacy, employment, and social justice not only improve the lives of individuals, but can help shield communities from crime and violence.

IDRC and Urbanization

Since the 1970s, Canada's International Development Research Centre has worked with researchers in Africa, Asia, Latin America and the Caribbean on such urban issues as waste management, housing, food and nutrition for urban populations, coastal zone management, disaster prevention, ground water management, and urban governance.

Projects included:

- Research in Sao Paulo, Brazil that investigated the urban environmental causes of respiratory diseases in childhood, and developed strategies to prevent and treat these diseases;
- Investigating the governance of waste management systems of major African urban centres;
- A Chilean research project that examined air pollution health effects on children;
- In Kathmandu, a ecosystem approach to echinococcosis, a disease caused by a small tapeworm also found in dogs and cattle that was once only found in rural areas, but as a result of urbanization, was rapidly spreading to cities;
- Disaster prevention: With community involvement, a team of Canadian and Brazilian engineers and scientists developed, tested, and applied a new technology (from used tires) for constructing retaining walls in areas at risk of landslides.

An ecohealth system approach to human health focuses on the role that ecosystem approaches play in integrating human needs with protecting the environment. Projects include:

- Researching the role of decision-makers in urban management;
- Implementing a strategy to prevent water-borne diseases in the urban community of Santiago de Cuba;
- Promoting the exchange of water specialists from Latin American countries.

Today, urban issues are tackled through a variety of approaches: An environmental management secretariat facilitates the transfer of information on managing the urban environment among local governments, research institutions and civil society in Latin America and the Caribbean region. Projects include;

- Building the capacity of municipalities to improve their decision-making on environmental issues by promoting partnerships between municipalities, research centres and local stakeholders;
- Supporting a network of Southern Cone coastal cities to revitalize degraded and impoverished urban areas;
- Supporting a small grants program for municipalities to help them deal with such urban environmental problems as managing urban wastes, water and sewage;
- Providing information to local governments on urban environmental issues, as well as an inventory of donor initiatives on environmental management in Latin American countries.

An urban agriculture program:

- Provides training and research to enable countries to support and manage urban agriculture;
- Supports research which addresses obstacles facing urban farmers and interventions to improve urban food security, income, public health, and waste and land management;
- Supports research into urban forestry, the re-use of solid and liquid waste, rooftop agriculture, animal husbandry, vertical horticulture, hydroponics and fish micro-hatcheries.

Other urban-related projects supported by IDRC include:

- Fostering alternative learning opportunities for marginalized, urban Africans. This program supports research that will promote policies and strategies for the millions of children and adults who were failed by the education system and who largely survive through prostitution or begging;
- Enhancing the capacity of developing countries to undertake effective social policy reforms. This is done by examining the nature, causes and consequences of social policy reforms that address the risks of violence among adolescents in large urban centres;
- Designing and implementing a model of organization and financing for community-based health care in urban areas in China.

Farming in the City

Chickens on housetops, Swiss chard sprouting out of abandoned tires on high-rise rooftops, grape vines cascading down apartment balconies, corn stalks lining a tiny city lot. This is farming in the city – a.k.a urban agriculture. An estimated 800 million people harvest 15 per cent of the world's food supply by growing vegetables and raising livestock in cities. In the process, they are continuing a tradition that is probably as old as cities themselves.

High-intensity farming was a defining characteristic of early civilizations on Java and in the Indus Valley. The Aztecs created artificial farmland in today's Mexico City by dredging mud from the bottom of Lake Texcoco and piling it along the shores. These artificial fields, called chinampas, or "floating gardens," produced more than 45 000 tons a year of maize alone.

And one-sixth of 19th century Paris was devoted to urban gardens that were fertilized by urban-produced horse manure.

"The divorce of agriculture, of food production, from our urban economies is really a very recent development in urban history," says Luc Mougeot, Senior Program Specialist and head of the Cities Feeding People Program of IDRC. "Most likely the practice began with the European Renaissance and spread to former European colonies. It is by no means universal."

Modern urban agriculture is a life-line. At the micro level, it provides urbanites with better diets, and higher incomes, as well as the opportunity to contribute to the urban environment. At the macro level, idle and underutilized resources are put to work – whether it is manpower, space and land, or solid and liquid waste.

And urban agriculture directly attacks many of the problems endemic to large cities. It reduces unemployment, poverty, and because of women's participation, plays a pivotal role in improving human health.

In addition, urban agriculture reduces the cost of waste collection, treatment and disposal. And it has enormous environmental significance because human waste can be turned into compost, domestic wastewater can safely irrigate many crops, and aqua-culture can stabilize animal manure.

Despite the benefits, urban farmers face a variety of obstacles. Much of urban agriculture is unrecognized and unassisted – if not actually outlawed. Planning departments are often suspicious of farming practices, neighbours object to the smell of manure, and vacant lots require toxicity tests.

Women face even greater barriers. Many cannot use available land because of transportation costs and the risk of leaving a home or a field unattended. And their access to land is often further constrained by customary laws.

Still, it is easier for people to farm in cities outside North America. Hong Kong, among the most densely populated places in the world, for example, produces two-thirds of the poultry and nearly half the vegetables it consumes. Singapore, which licenses approximately 10,000 farmers, is self-sufficient in meat and produces a quarter of its own vegetables. And as much as 70 per cent of all poultry eaten in Kampala is raised in the city.

Regardless of location, however, health precautions must be taken.

"Human and environmental health risks stem from a variety of sources," says Mougeot. "From inappropriate handling of agrochemicals by producers, to using unsorted or insufficiently treated solid and liquid organic wastes on vulnerable crops, to choosing crops, and crop locations, without considering ambient pollution in the air, soil or water."

But these hazards are not formidable. In fact, Mougeot says that simple, inexpensive treatment methods exist to meet epidemiological and microbiological standards for using wastewater in agriculture. Other health risks can be dealt with through better education.

Urban farming is not only flourishing, but has given rise to some very interesting experiments. For example:

- Argentina has devised a communal gardening system in which producers are allowed to seed public lands under negotiated, mutually-beneficial conditions;
- In Tacna, Peru farmers can use treated wastewater in exchange for maintaining public green areas;
- In Santo Domingo, a centre for the physically and mentally challenged uses urban agriculture as a way of integrating its clients into society. They grow leaf lettuce on the rooftop of their building and sell it to local stores;
- In Fortaleza, Brazil, the upkeep of an orphanage is being done by the children themselves. They grow the food they eat and sell the surplus. They are also creating a "live" drugstore where local plants and herbs will be grown, processed, and sold.

MODERN URBAN AGRICULTURE IS A LIFE-LINE. AT THE MICRO LEVEL, IT PROVIDES URBANITES WITH BETTER DIETS, AND HIGHER INCOMES, AS WELL AS THE OPPORTUNITY TO CONTRIBUTE TO THE URBAN ENVIRONMENT.

Agenda 21

A critical step towards putting global environmental problems squarely on the international agenda came in 1972 with the United Nations Environment Conference in Stockholm. Discussions were wide-ranging and unspecific, but a seed was sown; not long after, the Club of Rome, an international think-tank, proposed its "Limits to Growth" theory.

This approach argued that mushrooming levels of growth and consumption place an impossible burden on the natural world, and that people must adopt the principle of "sustainability" in all they do. To that end, specific issues were targeted including species protection, the destruction of the ozone layer, and global warming.

In 1992, the United Nations Conference on the Environment and Development was held in Rio de Janeiro. Again, the notion of sustainable development came to the fore – particularly with the adoption of Agenda 21. This policy plan outlines actions that governments can take, nationally and internationally, to achieve sustainable development. Included in it are the kinds of environmental interventions needed to take place in urban environments.

Developing local environmental policies through citizen participation is key. Successful ventures are being documented and include:

- The "Participatory Budget" in Porto Alegre, Brazil. Through a series of meetings, citizens scrutinize past expenditures, agree on current priorities, and allocate funds for new projects before sending them to the city's executive council. (Between 15 and 25 per cent of the city's annual budget is determined according to this model);
- The Naga City People's Council in the Philippines (a counterpart to the city council) works closely with local government in designing, implementing, and evaluating the city's development agenda. As a result, the Naga River is being cleaned up, procedures for solid waste management are being implemented, and its hospital is being revitalized.

The Agenda 21 Path to Sustainable Urban Development

- Provide adequate shelter for all;
- Improve human settlement management;
- Promote sustainable land-use planning and management;
- Promote the integrated provision of environmental infrastructure: water, sanitation, drainage, hazardous and solid waste management;
- Promote sustainable energy and transport systems in human settlements;
- Promote human settlement planning and management in disaster-prone areas;
- Promote sustainable construction industry activities;
- Promote human resources development and capacity-building for human settlement development;
- Local authorities should engage citizens, local organizations, and private companies, and adopt Agenda 21 plans at the community level.

Key Facts

- In 1900, 160 million people (one-tenth of the world's population) lived in cities; by 2006, half the world (3.2 billion people) will live in urban areas;
- In Asia, one-third of the population lives in cities;
- By 2015, there will be 27 cities with populations exceeding ten million – 22 of which will be in developing countries;
- Cities - mostly in poorer nations – will have to absorb between two and four billion more people by 2050;
- Cities consume 75 percent of the world's resources and produce most of its waste;
- Between one-half and one-third of city trash goes uncollected in the developing world;
- 25 per cent of all urban dwellers live in poverty;
- In Asia, Africa and Latin America, urban poverty levels exceed 50 percent;
- 90 percent of Latin America's poor live in urban centres;
- By 2025, six out of every ten children in developing countries will live in cities, and more than half of them will be poor;
- In cities of the developing world, 220 million people lack clean drinking water, 420 million have no access to basic latrines, 600 million have inadequate shelter (of these 100 million are absolutely homeless), while 1.1 billion suffer from unhealthy levels of air pollution;
- One-fifth of the world's population live in cities where the air is not fit to breathe;
- 800 million urban farmers harvest 15 per cent of the world's food supply;
- Urban farmers in China's 18 largest cities meet more than 90% of their cities' vegetable demands and over half of their meat and poultry demands;
- Urban violence has grown by four percent a year over the last two decades;
- Violent crime accounts for 25 to 30 percent of offences in cities of developing countries;
- Citizens in the North consume ten times more per capita than their Southern neighbours;
- Urbanites in industrial countries generate up to 100 times more refuse per person than their counterparts in developing counties;
- If the needs of everyone in the world were met to the same standard as a city such as London, three more Earths would be required.