



Ecohealth Works

Health in Urban Environments

Cities attract millions of people seeking a better life and greater opportunities. But cities can also be home to poverty, inequality, and environmental hazards. By looking at urban environments as ecosystems, researchers tease apart tensions between ecology, social inequities, and health to help government and the private sector make decisions for healthier, more sustainable ecosystems.

THE CHALLENGE

According to the World Health Organization, by 2030, nearly two-thirds of the world's population will live in cities, almost 70% of them in Africa and Asia. Most people in cities will be poor, living in unplanned settlements. Already, nearly 1 billion people live in slums around the world. Urban environments are changing, exposing people to new opportunities and to new threats.

Slums present a huge challenge for equitable and sustainable development. Overcrowding and violence are rampant. Social disorganization deprives many people of a political voice and leaves them vulnerable to abuse. Poor urban governance and planning means that services such as

clean water and sanitation, schools and health care are rudimentary. Chronic unemployment and dismal labour conditions abound. Since slums often crop up in marginal areas prone to flooding and landslides, their populations face increased physical vulnerability.

WHAT'S HAPPENING?

Responding to the challenge, the International Development Research Centre (IDRC) supports ecohealth research and networks to develop sustainable responses to urban environmental and health problems. Ecohealth projects generate sound scientific knowledge and build capacity of local researchers and communities while seeking to influence policies to effectively protect

the environment and health of developing-country urban communities. Projects in Mexico, Ecuador, and India illustrate such achievements.

GENERATING KNOWLEDGE

IDRC-supported researchers have successfully applied ecohealth approaches to produce knowledge on a number of urban issues in developing regions of the world, including water and sanitation, waste management, infectious disease transmission, and air pollution.

Dengue fever in Cuba

Dengue fever is transmitted by mosquitoes; new epidemics have emerged across the Americas, especially in poor communities. In its most severe manifestation, dengue hemorrhagic fever, the disease can be fatal.

Following several dengue fever epidemics in Cuba in the 1970s and 1980s, health authorities developed rigorous house-to-house searches to control mosquitoes. An ecohealth research team took an innovative approach when dengue re-emerged in 2002. Researchers working with community members and local government in Cotorro and in Central Havana systematically identified various risk factors, mostly related to water storage, where mosquitoes could breed.

A surveillance system with environmental (to identify risky conditions), entomological (to search for mosquitoes), epidemiological and clinical elements was implemented in these 2 sites. Using geographic information systems technology, software was developed to analyze the data and present results in tables or maps. The system allows decision-makers to identify areas at risk at a glance, helping them prevent and control outbreaks.

Water issues and gender relations in Lebanon

In Lebanon, IDRC-supported researchers implemented ecohealth approaches to a different set of challenges: water, sanitation, and water-borne diseases. In the town of Bebnine, although women are not as visible as men in public community affairs, they play the greatest role in managing water at the household level.

“We recruited more than 25 Bebnine women who were instrumental in allowing us to gain access to their experiences in the community,” explains Dr Iman Nuwayhid, who led the research. “In this way, researchers learned that some women preferred to use untreated well water rather than to pay for access to a new water network, even when they could afford to do so. They rejected the new network because they believed it was affiliated with certain political views or families, and refused to contribute to its shared costs.” Researchers hence found that, among other factors, social perceptions could increase the risk of diarrhoea.

Further, monthly water quality monitoring revealed high levels of fecal contamination. Drinking water tested in 423 households revealed the presence of fecal bacteria in 84% of samples. These findings led the municipality to install a water disinfection unit in one neighbourhood and to develop a health promotion communication strategy.

Water, behaviour, and diarrhoea in Cameroon

In 1998, the city of Yaoundé in Cameroon could only provide each resident with 13 litres of drinking water per person each day — less than half of the country’s target. More than 70% of households dumped sewage into ditches, which ultimately emptied into waterways.

In the Mingoa watershed, people commonly used deep-pit latrines, which leached into the water table. Fewer than 40% of city residents had access to safe drinking water. In addition, citizens constantly complained about diarrhoea, but failed to make the link between the disease and their environment.

Between 2000 and 2005, IDRC-supported researchers focused on improving sanitation in the Mingoa watershed. They discovered that while hygienic practices were generally understood, they were not always followed: good quality water from the well became contaminated on the journey from the wellhead to the household. They also identified the common practice of storing water in open containers as a risk factor for intestinal parasites, which affected nearly 72% of children under 5 years of age.



S. Hojeij

Sewage is disposed directly into this irrigation canal in Bebnine, Lebanon.

Researchers encouraged community members to take charge of resolving these problems (see below).

BUILDING CAPACITY

IDRC strives to build capacity of local researchers and organizations to generate meaningful results and promote excellence in research. Ecohealth projects also seek to empower communities to take charge of their own environment and health through the research activities.

Community-led solutions in Cameroon

The research team in Cameroon facilitated the organization of 12 neighbourhood groups along the river basin that are now actively engaged in promoting better hygiene and sanitation for the whole community.

“In the past, the people at the top of the slope would throw their garbage down the hill, literally on top of poorer people at the bottom,” says Dr Emmanuel Ngnikam, the project’s principal investigator. “People trying to climb the slope [between top and bottom settlements] have fallen in the mud, especially during the rainy season. This even led to deaths of children. Through their own efforts, residents have built stone steps up the slope, which reduce the risk of falls. Youth have organized to pick up the garbage for a small fee, which protects the health of people below, as well as the water supply, and also helps improve social harmony.”

Social class, health, and sanitation in Kathmandu

Empowering social groups was central to the success of an ecohealth research team in Kathmandu, Nepal. Led by Dr D.D. Joshi, researchers studied risk factors associated with a tapeworm (*Echinococcus granulosus*) and transmission of disease. They uncovered poor levels of urban sanitation, unhygienic open-air slaughtering of livestock and disposal of carcasses, poor food hygiene in meat shops and restaurants, and high transmission of diseases from animals to humans through meat consumption.

The team also discovered that a social caste system further complicated health and sanitation



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In Yaoundé, youth have organized to pick up the garbage for a small fee, which protects the health of people residing below, as well as the water supply, and also helps improve social harmony.

issues. “At our first meeting of stakeholders, everyone sat at different tables,” recalls Dr Joshi. “There was an empty seat at the ‘garbage sweepers’ table and so I joined them. They were quite disturbed because they saw me as being from a higher social class. Afterwards, I joined a table with a religious group, and they were also disturbed that I had eaten with the ‘untouchables’. From that moment, I became very conscious of how the caste system would affect our work.”

While researchers created or strengthened 18 stakeholder groups, the four groups involving the lowest castes grew at the slowest pace. Yet these groups, which included sweepers, street vendors, squatters, and small teashop owners, had to be a part of any meaningful action. Researchers helped these vulnerable groups organize and earn official recognition by local authorities and provided seed money for start-up costs. They also helped them prepare funding proposals for implementing action plans.

INFLUENCING POLICY

Policy influence is a means of transforming new knowledge into enduring change. This can be achieved through the continued engagement of policymakers throughout the research process. Ecohealth approaches promote this engagement.

New regulations in Kathmandu

It took a long time for new policies to be enshrined in law, but in Kathmandu, ecohealth researchers and community stakeholders worked together to advise on key pieces of legislation, and engage with decision-makers at the ward, municipality, and state level. Ultimately, these strategies led to a new *Animal Slaughtering and Meat Inspection Act*, changes in legislation governing food sale and preparation, garbage disposal, the environment, and housing, as well as drinking water and sewage. The onus is now back on meat shops, street vendors, teashops, and restaurant owners to comply with the new regulations. But they are now better equipped to do so with new knowledge, stronger organization, and the needed capacity.

The Kathmandu project offered free rabies vaccinations for dogs.



D.D. Joshi

FUTURE ECOHEALTH WORK FOR CITY DWELLERS

In a context of rapid worldwide urbanization, there is a need to understand consequences for human health. In addition to health risks from infectious agents, toxic chemicals, and poor environmental management, city dwellers face rising new public health problems such as obesity, cardiovascular disease, and depression. Climate change and increased extreme weather will threaten health and challenge the ability of authorities to provide adequate services to urban populations. Ecohealth approaches offer a useful framework to examine these and other multi-faceted problems and can lead to sustainable solutions for protecting population health.

Ecohealth — short for “Ecosystem Approaches to Human Health” — is a research framework that addresses how human health and environmental quality are determined by complex relationships among different components of an ecosystem. It is used to explore how human health can be protected and improved through more sustainable ecosystem management. Researchers work across academic disciplines to develop sustainable solutions that transcend the health sector. Ecohealth approaches help translate research findings into policy and action. For more information about the Ecohealth Program at IDRC, visit www.idrc.ca/ecohealth.

For nearly 40 years, IDRC has worked in close collaboration with researchers from the developing world in their search for the means to build healthier, more equitable, and more prosperous societies.

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