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Providing Urban Environmental Services
for the Poor:
Lessons Learned from Three Pilot Projects

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Acknowledgments

ACRONYMS

ARI   acute respiratory infection(s)

CADEPA   *Combite pour l'Alimentation, la Distribution d'Eau Potable et l'Assainissement (Cité Soleil, Haiti)*

CAMEP   *La Centrale Autonome Métropolitaine d'Eau Potable* (Urban Water Supply Agency of Port-au-Prince)

CAR   Caribbean (USAID Region)

CDS   *Les Centres pour le Développement et la Santé* (Centers for Development and Health, Haiti)

CIMEP   Community Involvement in Management of Environmental Pollution

CRDC   Construction Resource and Development Center (Jamaica)

EIA   Environmental Initiatives of the Americas

EHP   Environmental Health Project

ESA   External Support Agency

IDB   Inter-American Development Bank

MOE   Ministry of Environment

MOH   Ministry of Health

NGO   nongovernmental organization

PAHO   Pan American Health Organization

PHI   Public Health Inspector (Jamaica)

RHUDO   Regional Housing and Urban Development Office (USAID)

SME   small and micro-enterprise

SDC   Swiss Agency for Development and Cooperation

SSU   Sanitation Support Unit (CRDC branch office), Jamaica

UMP   Urban Management Programme

UNDP   United Nations Development Program

USAID   United States Agency for International Development

VIDP   ventilated improved double-pit latrines

WASH   Water and Sanitation for Health Project

WS&S   water supply and sanitation

WSSCC   Water Supply and Sanitation Collaborative Council

Executive Summary

The pace of urban expansion in the developing world represents a major, and permanent, demographic shift in the world's population from rural to city dwellers. By 2025, almost 70% of the total world population will be urban with 80% of these people living in developing countries. Much of this growth will be, as it is now, in the crowded peri-urban areas or informal settlements, known as squatter settlements, slums, tenements, shantytowns, *barrios*, and *favelas*, where basic amenities are limited if they exist at all. These makeshift communities, many of which are not legally recognized by the government, are often built on poor land that no one else wants: on flood plains, on steep slopes, in dumps, or near noxious industrial activities. According to WHO, a third of all urban dwellers (approximately 565 million persons) live in sub-standard housing or are homeless.

Providing basic urban environmental services such as water supply, excreta collection and disposal, solid waste management, and drainage to families living in these ever-growing peri-urban areas of the developing world should be an increasingly high priority for national and municipal government leaders as well as for external support agencies (ESAs). Unfortunately, that has for the most part remained an elusive goal, with an ever-increasing number of families living in peri-urban areas without basic services. This has resulted in the creation of environmental health conditions that put families, and especially children, at significant risks for environmentally related disease and death. The challenge to address this gap and looming health crisis is clear; the dilemma is how.

In 1995, with funding from the Environmental Initiative for the Americas (EIA), EHP worked with USAID missions in Haiti, Jamaica, and Peru to design demonstration projects for providing urban environmental services to families living in informal, peri-urban areas of Port-au-Prince, Montego Bay, and Lima, respectively. EHP subsequently provided technical assistance to these projects and was involved in monitoring and evaluating them. All have been completed recently.

EHP's approach emphasized local demand and community-based approaches using multidisciplinary teams and techniques. In addition, EHP focused on effective and affordable services with the best prospects for achieving a health impact in the community. While these activities were not health projects per se, EHP approached them as steps that would set the stage for improving health by reducing risks that populations face from poor environmental conditions. Recognition of the importance of achieving health results is not new in such projects. What differed in EHP's approach, however, was the attempt to trace causal linkages between environmental conditions and behaviors and ill health and use that information to develop appropriate strategies. The focus was not solely on reaching a given number of persons with services but also on providing the kinds of services that would lead to health improvements.

It is from this vantage point that EHP took up the request from USAID missions and designed these demonstration projects. All three projects—

- reflect EHP's underlying paradigm that comprehensive strategies are needed to strengthen environmental services;
- recognize that improved sanitation is critical for improved environmental health;
- focus on behavioral change;
- emphasize the role of the community, especially women;
- ensure widespread participation in the planning process; and
- contribute to creating a policy and regulatory climate that will foster environmental service improvements.

The findings from this study indicate that basic environmental services for the urban poor can be provided in effective and feasible ways that improve health conditions in peri-urban areas. The success in each of these examples stemmed from a willingness of project designers and planners to consider nontraditional approaches to addressing the lack of services and ameliorating the dire conditions in which many of the urban poor live. Common to these achievements in project design are two overarching points:

- Each program was based on a realistic understanding of economic, social, environmental, and political factors which had a bearing on the lack of services in those particular areas.
- Solutions were implemented in a strategically planned manner, involving a variety of stakeholders who played appropriate roles.

Key lessons learned include the following:

Institutional Framework
Providing services in peri-urban areas is a complicated process, requiring the involvement of the public and private sectors. Often the capacity of one or the other is weak, and an External Support Agency is needed to help build appropriate capacity and create a possible framework for shared responsibility. At the same time, roles may vary and need not always be the same. What is important is that some institution must assume the coordinating role. While these three projects were all facilitated by NGOs, any institution—municipality, government agency, or NGO—could take on this role. The critical factor is that any institution involved in this capacity must be flexible and skilled in community outreach. Furthermore, the private sector has a potentially significant role to play. Engaging the private sector to provide specific services can often introduce greater efficiency and cost savings compared to municipal or national agencies.

Financial Inputs
Providing services to the urban poor can be financially feasible and institutionally sustainable if services are driven by local needs and are appropriate for local income levels. Choices in the level of service are important. However, the selection of such options should be determined not only on the evidence of local demand and willingness to pay, but also on the array of different services necessary for financial sustainability.

Access to capital financing for hardware may be key to influencing decisions to implement proposed solutions.

Technical Interventions

The way in which technologies are chosen, applied, and installed determines whether they will be adequate solutions. Given the far-ranging needs of peri-urban areas, the design of effective interventions depends on prioritizing needs and setting realistic expectations. Choosing technologies in relation to externally defined goals, such as environmental protection or increased coverage, may not be appropriate or achievable if the needs of the community are not being met.

Community Involvement

Project success and sustainability depend on the extent to which the community is involved in the full range of issues and decisions. In peri-urban areas, there is pent-up demand for improved services. The key to sustainability is to create effective demand for appropriate and achievable levels of services, recognizing that community expectations may well be beyond what households or the government can afford. Involving the community, especially in the design of approaches and interventions, improves the chances that users will accept their responsibilities and that the project will be sustainable over the long term.

Health

Providing urban environmental services are critical for resolving environmental health problems that stem from poor living conditions typical of peri-urban areas. However, improved health does not automatically follow the provision of improved services. If health improvement is a goal, a program must be explicitly designed to address health issues from the onset. The difficulty in designing projects that target a health and environmental linkage has been a lack of funding for developing a consolidated programmatic focus. Projects that attempt such a focus are usually perceived as either environmental programs or health programs, seldom both. As a consequence, program development is usually focused on the sector under which the project is funded, limiting the extent to which activities can be extended to encompass the other sector. The challenge lies in building bridges between health programs and environmental programs, bringing about a stronger preventive orientation to health programs, and directing the attention of environmental programs to the health effects of pollution and environmental degradation.

Legal and Regulatory Framework

Peri-urban communities often present special legal and regulatory problems. The challenge to project designers is to resolve the conflicts inherent in trying to apply codes and laws in these situations. Consideration should be given at the beginning of the planning process to all of the legal and regulatory guidelines implied in the provision of improved services, not only those issues affecting implementation. Some tougher issues may affect the medium- and long-term sustainability of newly installed services; those issues should not be skirted. In working with local governments, developing a consultative process with officials at all levels is important in building broad-based political and public support.

The fundamental message of this document is an optimistic one: the challenge of providing environmental health services to the urban poor is well understood, and an increasing number of pilot projects around the world have demonstrated that services can be provided in an effective and sustainable manner. To meet this challenge, systemic changes must be made in the following areas:

- National policy reform regarding urban land tenure issues
- Reform of national financial institutions to make household credit accessible to families living in informal settlements
- Institutional changes within utilities to reflect the engineering and social challenges of providing services to informal settlements
- Training of local government staff to be more community-oriented (i.e., trusting of local participation) and to facilitate intersectoral interventions involving public and private sectors
- Development of large-scale public health campaigns to create consumer demand for urban environmental health services
- Commitment by international donor agencies to ensure that their financing effectively reaches the urban poor and that loan projects are designed with urban improvements in mind.

Clearly, the above steps cannot be taken by one government agency alone or one international finance agency or bilateral donor. Successful experiences—working with the urban poor—from all of such organizations must now be merged, consensus reached, and strategic alliances formed to move forward in making real achievements.

INTRODUCTION | 1

1.1 Overview

The pace of urban expansion in the developing world represents a major, and permanent, demographic shift in the world's population from rural to city dwellers. By 2025, almost 70% of the total world population will be urban with 80% of these people living in developing countries.[1] Much of this growth will be, as it is now, in the crowded peri-urban areas or informal settlements, known as squatter settlements, slums, tenements, shantytowns, *barrios*, and *favelas*, where basic amenities are limited if they exist at all. These makeshift communities, many of which are not legally recognized by the government, are often built on poor land that no one else wants: on flood plains, on steep slopes, in dumps, or near noxious industrial activities.[2]

Providing basic urban environmental services such as water supply, excreta collection and disposal, solid waste management, and drainage to families living in these ever-growing peri-urban areas of the developing world should be an increasingly high priority for national and municipal government leaders as well as for external support agencies (ESAs). Unfortunately, it has for the most part remained an elusive goal, with an ever-increasing number of families living in peri-urban areas without basic services. This has resulted in the creation of environmental health conditions that put families, and especially children, at significant risks for environmentally related disease and death. The challenge to address this gap and looming health crisis is clear; the dilemna is how.

Working with USAID missions in Haiti, Jamaica, and Peru, the Environmental Health Project (EHP) provided technical assistance in the design, implementation, and monitoring of three peri-urban projects covering a wide range of environmental services including water supply, sanitation, solid waste management, and drainage. Local institutions, in these instances nongovernmental organizations (NGOs), coordinated the participation of the public and private sectors. The implementation of these projects successfully demonstrated that urban environmental services can be provided in effective and feasible ways and environmental health conditions can be improved.

These demonstration projects and other relevant EHP activities have served to add to EHP's knowledge base of what works and what doesn't, confirming some previous lessons learned and challenging others. While NGOs assumed a paramount coordinating role in each of the three pilot projects, the report does not mean to suggest that only NGOs assume that function. It is recognized that NGOs don't always exist in areas where they are needed nor necessarily have the capacity. Any institution—municipality, government agency, or NGO—can take on this role. The critical factor is that any institution involved in this capacity must be flexible and skilled in community outreach. The purpose of this document is to capture the lessons

Providing basic urban environmental services to families living in ever-growing peri-urban areas of the developing world needs to be an increasingly high priority for national and municipal government leaders as well as external support agencies.

Any institution having the lead coordinating role must be flexible and skilled in community outreach.

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[1] Working draft, "Confronting the Poverty of Our Cities: Our New Opportunities," The World Bank Urban Forum, Hunt Valley, Md., May 19-21, 1997.

[2] According to WHO (*Environmental Health Newsletter* 27, October 1997), a third of all urban dwellers (approximately 565 million persons) live in substandard housing or are homeless.

learned by EHP in providing technical assistance to these three pilot projects: flagging issues necessary to address in improving environmental services and in scaling up those efforts. The primary audience for this document is environmental sanitation program planners and designers in multilateral and bilateral agencies, along with local-level municipalities, NGOs, and utilities. While the three pilot projects took place in Latin America and the Caribbean, the lessons discussed in this document are applicable to peri-urban areas in many different countries.

1.2   Background

In 1995, with funding from the Environmental Initiative for the Americas (EIA), EHP worked with USAID missions in Haiti, Jamaica, and Peru to design demonstration projects for providing urban environmental services to families living in informal, peri-urban areas of Port-au-Prince, Montego Bay, and Lima, respectively. EHP subsequently provided technical assistance to these projects and was involved in monitoring and evaluating them. All have been completed recently. (Profiles of these projects are found in Chapter 3.)

In designing these activities, EHP built upon the lessons learned from its predecessor project, Water and Sanitation for Health (WASH), a similar, centrally funded USAID project. The WASH influence is reflected in EHP's mode of operation, emphasizing local demand and community-based approaches, and EHP's pattern of technical assistance, using multidisciplinary teams and techniques. In addition, EHP focused on effective and affordable services with the best prospects for achieving a health impact in the community. While these activities were not health projects per se, EHP approached them as steps that would set the stage for improving health by reducing risks that populations face from poor environmental conditions.

Recognition of the importance of achieving health results is not new in such projects. As the water and sanitation sector has evolved, more attention has been paid to factors such as the importance of user involvement and behavioral change to promote sustainability and health impact. What differed in EHP's approach, however, was the attempt to trace causal linkages between environmental conditions and behaviors and ill health and use that information to develop appropriate strategies. The focus was not solely on reaching a given number of persons with services but also on providing the kinds of services that would lead to health improvements.

EHP's approach was further tempered by recognition of the unique challenges of designing and implementing programs in peri-urban areas. EHP (and previously WASH) began to focus on this issue in the early 1990s through participation and leadership in the Water Supply and Sanitation Collaborative Council's Working Group on Services for the Urban Poor and through publication of key technical reports.[3]

Many sector specialists believe the answer to resolving service problems in peri-urban areas lies in identifying better technological solutions or resolving land tenure issues. EHP's sector experiences, however, suggest that peri-urban complexities first require an interdisciplinary approach to clarifying the problem before one can attempt to design a project that addresses the provision of peri-urban environmental services. EHP's experience using the Community Involvement in Management of

What differed in EHP's approach was the systematic focus placed on health improvements, not solely on the number of people reached, as driving the process to improve access to basic services.

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[3]   Key technical reports include "The Unique Challenges of Improving Peri-Urban Sanitation" (Hogrewe et al.), "Constraints in Providing Water and Sanitation Services to the Urban Poor" (Solo et al.), "Public Participation in Urban Environmental Management" (Yacoob et al.), and "Financial Services and Environmental Health: Household Credit for Water and Sanitation" (Varley). See the bibliography for full citation.

Environmental Pollution (CIMEP) approach in urban environmental management has pointed to the importance of broad-based participative approaches in fostering local responsibility.

It is from this vantage point that EHP took up the request from USAID missions and designed these demonstration projects. All three projects—

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1.3   Organization of the Report

Chapter 2 is intended to describe the characteristics that set peri-urban areas apart from rural or formal urban areas and shows how these characteristics present unique challenges for service provision and pose an emerging health crisis. Chapter 3 provides brief profiles of each of the case studies. Chapter 4 identifies lessons learned in the provision of services from the three case studies. Chapter 5 summarizes the key lessons learned and looks at next steps.

THE PERI-URBAN CONTEXT | 2

In terms of actual land area, peri-urban settlements are growing more rapidly than formal urban districts: in many cities, the peri-urban sections are spread over more physical territory than the formal areas. Their rapid growth and informal status have resulted in low levels of environmental services. The lack of these services threatens the public health and environment of the peri-urban settlement, as well as of the urban area as a whole. The following sections consider the characteristics and challenges of peri-urban areas (2.1) and the impact on health and the environment (2.2).

2.1   Characteristics and Challenges

Peri-urban areas present unique challenges for the provision of environmental services. Most challenging are the characteristics that set these areas apart from both urban and rural sectors: poor site conditions, unreliable water availability, high population density, heterogeneous population, lack of traditional community structures, and the lack of legal land tenure. The urban poor generally do not participate in local government and are unconnected to the municipal service network. Furthermore, they tend to be ignored by municipal authorities, who find themselves overwhelmed by the informal sector's sheer numbers and needs, which far outstrip the capacity of the local planners and government. These characteristics are much more complex than those typifying rural and formal urban areas, and they affect project design efforts in a variety of ways.

The characteristics of peri-urban areas are much more complex than those typifying rural and formal urban areas.

2.1.1   Incongruity of Planning Approaches

The current planning paradigm for formal urbanization does not coincide with the actual process in peri-urban areas. The formal process anticipates that installation of basic urban services will be completed before settlement begins. The actual process in which peri-urban areas develop begins with the informal and illegal settlement by poor urban families on land that has not been urbanized. People reside in these areas before any type of water supply, sanitation, and other infrastructure exists. Once they are on the land and have a house, their demand for infrastructure evolves. However, residents of peri-urban areas often do not have legal land tenure and, in most cases, the site itself has not been legally urbanized. Therefore, governments generally do not recognize the legality of these settlements, and services are not provided. All the while, these communities continue to grow with ever-increasing population density.

When, and if, services are provided, planning is complicated by the haphazard development and complex site layouts and by the lack of legal status and property rights. Before urban services can be extended, the land must be reclassified as urban and rezoned for residential use. Herein lies the conundrum: few municipal planning development departments have mechanisms for transforming unapproved, pirate developments into approved subdivisions. Since planners, by definition, approve communities before they are inhabited, the planning codes simply refuse to admit the sale, subdivision, and occupation of land that has not won previous approval.

In some instances, governments have allowed infrastructure to be put in place before land tenure is regularized. Results have been mixed. Too often authorities attempt to apply the controlled, orderly "supply-driven" planning process used in the traditional urban setting, with the government deciding the level and timing of services. In the peri-urban sector, such a supply-driven process is neither possible nor practical, given the government's limited resources to meet existing demands and to balance these with the government's or donor agencies' perceived needs.

In the peri-urban sector, a supply-driven process is neither possible nor practical, given the government's limited resources to meet existing demands.

2.1.2 Application of Conventional Technologies

Peri-urban technologies are typically selected using guidelines developed for rural or formal urban areas. These guidelines often are not applicable or appropriate for peri-urban areas because of the differences in the physical characteristics of these sites as well as social, economic, and institutional variances.

In choosing a technology, local engineers, and often their expatriate advisers, prefer to use service-delivery systems in which they were trained in a university and with which they are familiar. These are usually the most modern systems, and they may be inappropriate and unaffordable for those living under the difficult conditions of informal neighborhoods. Peri-urban settlements are almost always found on the cheapest land, which in turn usually indicates that the land has unattractive physical attributes, such as extremely steep slopes or swampy conditions, sandy and rocky, or that it is subject to frequent flooding. Often space for establishing service right-of-ways or installing infrastructure lines doesn't exist. Road access is limited with some houses located where no road, water main, or sewer line could ever reach. In particular, these conditions can make the installation of conventional infrastructure (such as large-diameter sewer collection pipes) extremely costly—much more expensive than less familiar technologies (such as small-bore sewer pipes) that have been developed as appropriate responses to these conditions.[4]

Low-cost technologies (such as VIP latrines) and approaches that have proven successful in rural situations may be no more, and even less, suitable for the peri-urban setting. To function properly, such technologies usually require a much higher level of user involvement than conventional technology. Yet engineers, who traditionally play a major role in the formulation of infrastructure projects, often have little training or regard for the social mechanics of projects, such as mobilizing communities and involving future users. Moreover, organizing community participation in these areas is often made difficult by the lack of common social composition and by constraints faced by beneficiary families who work long hours in the cash economy and cannot afford to "contribute" their labor.[5]

2.1.3 Limits of Institutional Support

An insufficient number of formal institutions—government and private—possess the motivation, mandate, experience, or capability to implement peri-urban programs. There are many reasons why governments do not want to condone the existence of informal communities. Some municipalities cannot even provide services in more

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[4]   One WASH study estimated that increased costs could be as much as twice what the same technology would cost on land more suitable for urbanization (Hogrewe, Joyce, and Perez 1993, p. 41).

[5]   One study reported that most participation is by women and is limited and declining, due to increased needs to earn income (Moser 1996).

affluent areas; they do not want to recognize new areas and increase their already overwhelming responsibilities.

Constraints are twofold. In most cases, peri-urban areas lie outside the defined city limits and are not included in municipal development plans. Even when they are included, existing institutions are seldom organizationally structured or prepared to work in the peri-urban areas where the latter's topographical conditions, heterogeneous population, and population density demand alternative solutions. Moreover, where institutional influence or oversight exists (even if only on paper), a number of institutions from a variety of different sectors may be involved, often with cross-cutting and overlapping responsibilities. Communication among these service agencies is often limited, which contributes to a lack of intersectoral planning and coordination, both of which are necessary to address the complex problems inherent in peri-urban areas.

Fragmented institutional support compounds the already existing problem of lack of communication and trust between communities and the government.[6] Communities often perceive "government" and its representatives as insensitive to their needs, bureaucratic in response, and untrustworthy. Promises and assistance may be greeted with suspicion rather than welcomed. Government and its officials, on the other hand, often stereotype "the community" as a group of backward, ignorant usurpers. Intermediary organizations such as NGOs may be able to bridge this gap, interacting with the community as its broker and linking external resources to those of the community. However, the selection of the right intermediary can be compromised if the NGO does not have sufficient (and appropriate) capacity or is co-opted by the program or the research agenda of others.

Using an intermediary organization is not always necessary if strengthening communication among all stakeholders is a priority. Other recent EHP work (e.g., CIMEP activities) has shown how a systematic program training local government officials, community members, and NGOs in communication can promote and sustain working relationships between local governments and peri-urban communities.

A very small number of institutions have the motivation, mandate, experience, or capability to implement peri-urban programs.

Intermediary organizations such as NGOs may be able to bridge the gap between communities and external resources.

2.2   Health and the Urban Poor

An estimated 600 million people in urban areas of the Third World now live in life- and health-threatening homes and neighborhoods, primarily in peri-urban neighborhoods. Often there is no water supply, and people are obliged to purchase drinking water from vendors, with no guarantee that the water is safe. Sewers are rare; storm drainage is virtually unknown. Greywater is thrown into the streets, adding to standing pools left after rain. Because there is no method for collection or disposal, garbage and trash are thrown into the street or nearest gully, accumulating in open spaces between houses, in stagnant pools of water, and on wasteland. Sanitation facilities are often lacking entirely. Vehicular and industrial emissions pollute the air. All of these conditions—crowding, lack of water, filth, polluted air—threaten the health of local residents, especially children.

Poor environmental conditions give rise to high rates of diarrheal diseases (including cholera), acute respiratory infections (ARI), and vector-borne diseases. In

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[6]   EHP's CIMEP model provides a conceptual framework for building community roles in managing environmental pollution. (Yacoob, Brantly, and Whiteford 1995).

Urban epidemics have erupted as a number of traditionally rural parasitic diseases emerged in cities, due to a combination of rural migration and the proliferation of breeding sites.

one year alone, more than two million urban children under the age of five died as a consequence of diarrheal dehydration.[7] Urban epidemics have erupted as a number of traditionally rural parasitic diseases emerged in cities, due to rural migration and the proliferation of breeding sites. Malaria and Chagas disease, both typically rural, are increasingly seen in urban settings. Although dengue surveillance in many countries is poor, there is evidence that dengue is at epidemic levels, and studies by USAID in Bolivia suggest that it is spreading in urban centers. Cholera has receded locally, mainly due to better food-handling practices, but scientists fear that the incidence— what they call a "smoldering pandemic"—could easily erupt, given the conditions of dirty water and poor sanitation that are pervasive in most peri-urban areas.

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[7]   Catley-Carlson and Silimperi 1996.

CASE STUDY PROFILES | 3

3.1 Peru: Community Management of Solid Waste Collection and Disposal

USAID funded an activity titled "Innovative Approaches to Solid Waste Management in Peri-Urban Areas Project" in Lima, Peru, from 1995 to 1997. The project's objective was to implement a low-cost peri-urban solid waste management program in the *pueblos jovenes* of the northern section of greater metropolitan Lima, an area called "Cono Norte." The project was carried out by the Peruvian NGO Alternativa with technical assistance from EHP and in collaboration with local municipal government in two districts in the Cono Norte: Ancón and Ventanilla.

The Cono Norte is one of the largest and fastest growing areas surrounding Lima, where 70% of the city's approximately 1.7 million people live in peri-urban settlements. The local government structure consists of six districts, each managed by a locally elected municipal government overseeing the provision of services to the *pueblos jovenes* within its boundaries. Regarding the project area, the Ventanilla district has a population of 70,000 living in 16 *pueblos jovenes;* the Ancón district is much smaller, with a population of 23,000 living in eight such communities. People living in the area experience a high rate of ARI and diarrheal diseases. In 1993, 60% of all cholera cases reported in metropolitan Lima occurred in the Cono Norte.

One of the biggest problems in the Cono Norte has been solid waste. An estimated 590 tons of waste are generated daily in the area; 118 tons are not collected at all, and 70% of what is collected is not disposed of properly. Providing trash collection services has been difficult for municipal governments, leaving local community groups to organize themselves around these issues and, in some instances, to take on the task of setting up cooperatives and microenterprises. In Lima, as throughout Latin America, microenterprises have increasingly assumed a larger role in the management of solid waste collection in unserved or underserved areas.

The purpose of this demonstration project was not only to develop a cost-effective system for organizing solid waste collection within a number of communities, but also to identify alternative methods for reducing the amount of solid waste generated. Key features of this multi-part project included the following:

- Use of a private-sector-market approach to providing solid waste services by creating small community-based enterprises to carry out solid waste management interventions, including household collection, transfer to a landfill, and sanitary disposal of the solid waste
- Provision of credit to these enterprises to purchase vehicles, safety equipment, and uniforms
- Creation of demand for solid waste collection services through awareness and educational programs; promoting change in community and household behaviors to reduce the health hazards of solid waste

The demonstration project was to develop a cost-effective system for organizing solid waste collection and identify ways to reduce the total amount of solid waste generated.

- Use of appropriate technology for collecting and managing waste disposal with house-to-house trash collector tricycles, household recycling, and manually operated sanitary landfills

Once educated, households in Ancón were more willing to pay for solid waste collection, collect and separate household trash, and dispose of it in covered containers.

Under the project's auspices, two small enterprises, "Olas de Ancón" and "Por su Salud," were established in each of the two districts with effective systems for waste collection. These successes showed the benefits in privatizing services and involving the communities in household recycling. Collection costs were much lower because appropriate low-cost technologies (tricycles) were used rather than expensive garbage trucks. Manual sanitary landfills were established, and composting schemes were introduced. Educational campaigns, many organized through community-based sanitation campaigns, had some success in bringing about changes in behaviors related to solid waste at the community and household levels. Once educated, households were more inclined to pay for solid waste collection, collect and separate household trash, and dispose of it in covered containers. Community-wide cleaning drives along with tree-planting projects were implemented in a few communities and have since been replicated outside the project area. Most significantly, nearly 80% of the households in Ancón paid for these services.

However, the level of success was tempered by structural and institutional constraints having as much to do with the municipal governments as with the microenterprises themselves. Coverage was less than expected in the two zones (61%), a shortfall due partly to difficulties in concluding contracting agreements and securing payments for collection services from the municipalities. The higher levels of nonpayment in Ventanilla stemmed from the microenterprise providing more frequent service collection than households were willing to pay for. Whether these enterprises are sustainable over the long term remains to be seen. Changing household and community behaviors, while reasonably successful, turned out to be more difficult, time-consuming, and costly than originally anticipated—and also more important than originally anticipated. Behavioral change proved to be one of the keys in promoting local acceptance of and household payment for waste collection services.

Changing household and community behaviors, while reasonably successful, turned out to be more difficult, time-consuming, and costly than originally anticipated.

Notwithstanding these shortfalls, the project succeeded in providing critical solid waste services to the urban poor in an effective and comprehensive approach. The success of this pilot effort resulted in another bilateral donor investing over $1 million to expand the program to seven other districts with a target population of 1.5 million. In addition, Alternativa has received multiple requests from other Peruvian municipalities for technical assistance in replicating the "Cono Norte" approach.

3.2   Jamaica: Urban Environmental Program for On-site Sanitation

The "Urban Environmental Program for On-site Sanitation" was part of a broader program of squatter upgrading in the Rose Heights and Norwood peri-urban areas in Montego Bay. Funded by USAID's Regional Housing and Urban Development Office for the Caribbean (RHUDO/CAR) in Jamaica, this activity involved the installation and maintenance of appropriate excreta and greywater disposal systems. The sanitation component, for which EHP provided technical assistance, was implemented and facilitated by a Jamaican NGO, Construction Research and Development Center (CRDC). This two-year activity was completed in December 1997.

Implementation of the sanitation component was complicated by long-standing environmental problems surrounding the proliferation of squatter settlements in vulnerable areas without access to acceptable solid waste management and domestic water supplies. Improper sewage disposal, in particular, seriously threatens local water systems, currently affecting 10% of the island's exploitable underground water. Moreover, the corresponding despoliation of beaches and cayes has serious implications for the vitality of the island's tourist industry.

The physical location of Rose Heights and Norwood made upgrading their sanitation systems particularly sensitive. Both settlements are situated on hilly and rocky terrain overlooking Montego Bay, where geological conditions limit the technology options for sewage disposal. As a consequence, many lot dwellers use sinkholes (pits dug into rock formations) as a convenient method of removing excreta from their lots. This excreta waste load applied to sinkholes, along with wastewater runoff from hills, was contributing to the degradation of the Montego Bay marine environment. There was concern that the land might not be able to support new on-site disposal systems or properly managed sanitation systems and would experience increased runoff and waste seepage created by the recent water supply upgrading project.

The EHP-assisted program followed an earlier unsuccessful attempt (also under USAID) to develop a community-supported sanitation policy. The EHP effort was designed using participatory processes ranging from focus group meetings, to a plot-by-plot sanitation inventory, to consultation with concerned Jamaican institutions, to a project start-up workshop. Key features of the program included:

- Provision of a choice of excreta disposal systems to householders to meet their financial means, personal preferences, and the geological conditions of their plot, as well as public health and environmental requirements
- Access to capital financing from the Caribbean Housing Financing Corporation for householders in constructing or improving their sanitation solutions
- Creation of demand for sanitation through public health education programs and social marketing
- Provision of a range of technical sanitation options
- Promotion of good sanitation practices and household level behavioral change
- Household involvement in identifying and supervising contractors of household facilities
- Facilitation of small-scale private sector involvement through training courses for contractors, builders, and tradesmen in new and improved disposal technologies
- Close coordination in implementation with local agencies, in particular the Ministry of Health (MOH).

Following this comprehensive approach, CRDC developed an effective technical strategy, which, in combination with the behavioral change strategy, resulted in significantly increased sanitary coverage and improved urban environmental conditions. A key factor was linking improved sanitation to acquisition of land title, with adequate sanitation being a prerequisite to title transfer. CRDC met or surpassed all of its performance indicators. More than 600 households have constructed and are regularly using "sanitary solutions" for excreta disposal consisting of toilets, wash basins, and bathing areas. Estimating 5.7 people per household, the total number of people now served and using appropriate sanitary solutions through this project is

Implementation of the sanitation component in Montego Bay was complicated by long-standing environmental problems tied to proliferation of squatter settlements on vulnerable land.

In Montego Bay, a key factor to increased sanitary coverage and improved urban environmental conditions was linking these improvements to acquisition of land title.

approximately 3,420. These sanitation solutions were paid for by the households themselves, with construction carried out by private sector contractors.

Through new environmentally acceptable sewage disposal, the project reduced the flow or seepage of untreated wastewater into Montego Bay via sinkholes by an estimated 3,420 gallons per day. New untreated wastewater was also prevented from entering the bay through the proper disposal of approximately 14,820 gallons of water per day. Substantial improvements in hygiene behavior were also documented, in particular, behaviors considered most effective in preventing diarrheal diseases: handwashing, latrine use by all family members, and protection of drinking water.

Questions that remained at the conclusion of this pilot project included: whether the Jamaican private financial sector would continue to provide access to credit to the households and whether sufficient demand for sanitation could be created without the powerful "carrot" of land titles. In addition, the municipality of Montego Bay never became a stakeholder in this process; if this project is replicated, planners should seek ways to address this issue.

3.3   Haiti: Creation of an Independent Water and Environmental Sanitation District

EHP worked in partnership with a Haitian NGO, Les Centres pour le Développement et la Santé (CDS), to establish an autonomous company to manage the water and environmental services of Cité Soleil, an informal settlement outside Port-au-Prince. EHP's efforts were part of a two-year project designed by USAID/Haiti and RHUDO/CAR and funded by the LAC Bureau's Environmental Initiative for the Americas (EIA) program. The USAID activity was focused on developing local institutional capacity to manage a $2.5 million water supply system constructed with UNDP funds. In providing technical assistance, EHP worked with GreenCom, a USAID centrally funded project, which addressed the community participation and behavioral change component.

Cité Soleil is the largest slum area in Port-au-Prince, and its environmental problems are severe. About 200,000 residents live without piped water, sanitary disposal of excreta, or solid waste services. Located on a man-made landfill peninsula extending into the Bay of Gonaives, its open areas are barren of vegetation and combine with tremendous accumulations of solid waste to generate significant dust on a daily basis. The drainage canals are largely fed from outside the city and can be assumed to carry industrial pollutants. Groundwater can be found from 1 to 5 feet below the ground and is fed by the surrounding ocean and infiltration of the community's waste and polluted drains.

When the project began, drainage canals overflowed regularly into streets and homes. Household water was supplied primarily by private vendors transporting water by truck. Other sources included the Salesian Fathers who provided free water, also brought in by truck, and a deteriorated network, operated by the Port-au-Prince water authority, which was then providing contaminated water. There was virtually no collection of solid waste.

The plan developed to operate the water supply system had the following features:

- Establishment of an independent, community-based organization to manage the water system in Cité Soleil with authority to operate the system, set rates, retain its own revenues, and make its own investment decisions
- Organization of community committees to manage the water and sanitation system at the neighborhood level and to assist in mobilizing community support
- Creation of demonstration projects for a community-managed solid waste management system
- Implementation of pilot demonstration projects focusing on key technologies (such as community-managed communal latrines) or new neighborhood management systems (such as hooking up private vendors for water distribution)

As a result of project activities, CDS created a separate institution, Comité pour l'Alimentation, la Distribution d'Eau Potable et l'Assainissement (CADEPA), to manage the water system. CADEPA operates under the overall supervision of CDS, but is a separate institution. In addition to managing the water supply system, CADEPA also provides environmental sanitation services consisting of solid waste collection and disposal and demonstration latrine projects in six of the seven zones in Cité Soleil. Fees for the collection of water were successfully instituted, and by the end of the project, CADEPA was self-supporting, generating enough revenue for all salaries and operating and maintenance costs for the water supply system. The district has strong community representation in its board of directors, ensuring community support for protection of the water system in the long term.

The site-specific successes of this pilot project are threatened by outside factors. CADEPA buys the water from CAMEP, the Port-au-Prince water and sanitation utility, and depends on it to provide adequate quantity and quality of water in the trunk line. At the end of the pilot project, there were already indications that CAMEP was not adequately operating and maintaining the well and pumping station that is the source of water for Cité Soleil. In addition, at the time of this writing, it was too early to know whether the pilot community sanitation latrines would prove to be effective in reducing local contamination.

The newly created district has strong community representation in its board of directors, ensuring community support for protection of the water system in the long term.

LESSONS IN THE PROVISION OF SERVICES | 4

Based on the experiences of the three pilot projects, EHP has drawn lessons on providing urban environmental services to the urban poor.

4.1 Institutional Framework

Providing services in peri-urban areas is a complicated process, requiring the involvement of both the public and private sectors. Often the capacity of one or the other is weak, and an External Support Agency is needed to help build appropriate capacity and nurture shared responsibility. At the same time, institutional roles may vary. For example, in some situations, a municipal department may be responsible for all aspects of community mobilization while in other instances, this role could be contracted to an NGO. Roles regarding finance also may be split with donors providing capital for initial investments, utilities managing collection of monies, and an NGO arranging access to household credit.

Providing services in peri-urban areas is a complicated process, requiring the involvement of both the public and private sectors.

A matrix of project inputs and institutional players is shown in the table below.

Essential Roles

Roles	Institutional Players
Community Roles	
Promotion of participation	NGOs, municipal department
Demand creation for sanitation	NGOs, municipal department
Dialogue among all stakeholders	Municipal department, utility
Finance	
Capital for initial construction and periodic replacement	Donor, financial institution
Recurring costs of O&M	Financial institutions, utility
Household level access to financing	NGOs, utility
Capacity building	
Insitutional strengthening	ESAs
Training	ESAs, NGOs
Health Education and Behavior Change	NGOs, Ministry of Health
Construction	
Community infrastructure	Large-scale private sector contractors, community
Household infrastructure	Small-scale private sector contractors, community
Policy and regulatory dialogue	Public sector - national level ESAs

4.1.1 Context Assessment

Setting the stage for program implementation requires early identification of stakeholders and analysis of the external environment to clarify essential roles and effectively involve those key stakeholders in the project.

Every project context is different: what works in one situation may not be appropriate in another.

Every project context is different: from physical conditions to the macro environment, from institutional capacity to beneficiary priorities, from technical considerations to health priorities. What works in one situation may not be appropriate in another. Moreover, who is involved may vary from one stage of implementation to another. Stakeholders may include users of different types of services; public utilities; private service providers; NGOs; local community associations; special interest groups; and local, regional, or national governments. In Montego Bay, the project worked primarily through the MOH, as municipal officials had neither the mandate nor sector responsibility for sanitation. In Cité Soleil, the project worked with CAMEP, the state-owned water authority charged with responsibility for providing potable water in the Port-au-Prince area. In Cono Norte, the primary link with the public sector was through local municipal governments in the two squatter settlements.

As part of a context assessment, early consultation with key stakeholders can identify project design issues and mitigate potential implementation problems, thus contributing to sustainability. For example, the organization of the water company in Cité Soleil was changed following community suggestions that a more effective structure for fountain management would be neighborhood supervision. Community members argued that neighborhoods could control or at least reduce illegal tapping and vandalism better than a zonal-level committee.

Context assessments can point to stakeholders whose involvement may be critical at later stages of implementation and during scale-up.

Such context assessments may point to other potentially relevant stakeholders whose involvement can be critical at later stages of implementation and, in particular, during scale-up, if that is part of the project design. For instance, in implementing the Montego Bay assessment, EHP designed the project with scale-up in mind. The project design team drafted a critical-path flow chart of actions and decisions to be made, identifying estimated dates and naming implementing organizations, the agreed terms, and unresolved issues with future implications. Consultations over the flow chart of relationships showed stakeholders where their inputs were needed and led to closer working relationships. In the case of the MOH, these discussions brought to light the need for a close working relationship with not only the MOH public health inspectors (PHIs), as had been envisioned, but also with the MOH health education department regarding public education and outreach.

4.1.2 Intermediary Institution

Given the limits of institutional support for peri-urban areas, one institution must be identified as having the lead responsibility for facilitating the involvement of the public and private sectors and for interacting with the residents.

NGOs can often take on a pivotal coordination role, especially in those situations where local government lacks the resources or capacity (or even mandate) to fulfill this function. A major asset in Montego Bay was the role CRDC played, serving as

facilitator rather than implementor. CRDC did not build any sanitary solutions or provide any loans. Instead, it served as an important bridge between formal governmental institutions, such as the local agency financing the sanitation improvements, and the private-sector contractors. It facilitated plotholders' access to important inputs that allowed them to improve their sanitary solutions.

A different situation existed in Cité Soleil. The lack of a functioning local government made it necessary for CADEPA to ensure linkages with the community-based water system and the state-owned water utility. CADEPA instituted a viable system for purchase of water from the utility and negotiated a renewable three-year agreement regarding the future provision of potable water.

While NGOs may fill an institutional vacuum, local governments and public service utilities must be made aware of the process and, to the extent feasible, be involved or co-opted in the process, especially if they are expected to eventually assume oversight of these services. In Cono Norte, officials were unfamiliar with and uncertain about the alternative technologies being proposed by Alternativa. To overcome these worries, Alternativa briefed municipalities by providing practical demonstrations using the new technologies. Such briefings were held early on and were frequently repeated as senior political leaders changed.

4.1.3 Institutional Capacity Building

Providing services to peri-urban areas is often a new process, requiring new institutional learnings and new human resources. External Support Agencies can fill that gap, building up the capacity of local organizations and monitoring results.

EHP technical assistance was a common element in all three projects; it was provided through short-term technical consultants from a variety of disciplines, depending on the project needs. Rather than maintain a field-based (and more costly) manager, EHP worked through local institutions in each instance, strengthening their capacity for sustainable program development. With Alternativa, EHP fostered a multidisciplinary team approach and enhanced technical expertise in the application of appropriate alternative technologies. Social marketing techniques for creating demand were introduced along with monitoring and evaluation tools. A similarly integrated approach was used in Jamaica, assisting CRDC to identify and implement environmentally sustainable and effective sanitation solutions and facilitating behavioral change for improvement in health status. A different focus for technical assistance was used in Haiti, where EHP technical assistance targeted the institutional development of a water district.

The process used in building capacity is as important as the substance. It must be multidisciplinary and phased in over time with consistent personnel and provision for monitoring. In these instances, EHP accomplished capacity building and skills transfer by structuring the technical assistance so that a series of activities depended on one another in systematically increasing capacity. The same short-term consultants were used throughout the projects on short assignments—two to three weeks in duration.

Institution building and skills transfer are difficult and time-consuming activities in any situation, even more so in peri-urban areas where there is typically an

While NGOs may fill an institutional vacuum, local governments and public service utilities must be involved in the process, especially if they are expected to assume oversight.

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Institution building and skills transfer are difficult and time-consuming activities in any situation, and even more so in peri-urban areas.

institutional void. Periodic overall monitoring can be as important as the initial skills transfer. Such constraints were evident in the Haiti project, where EHP consultants were concerned that a lack of periodic overall monitoring might compromise the remarkable progress CADEPA had made in a short time.

4.1.4 Private Sector Participation

Having the private sector provide specific services in peri-urban areas can introduce greater efficiency and cost savings.

Private sector participation is particularly appropriate in on-site water supply (such as the construction and maintenance of water systems); on-site sanitation (such as the construction and emptying of latrines); and solid waste collection, management, and recycling. These activities lend themselves well to management and service contracts and, because of their size, can involve medium-sized, small, or even microenterprises.

Private sector participation is particularly appropriate in on-site water supply, on-site sanitation, and solid waste collection, management, and recycling.

In Cité Soleil, the NGO CADEPA assumed overall responsibility for operation of the water system under a management contract with the water utility. Formation of community-based neighborhood committees appeared to be effective in reducing illegal tapping and vandalism that had existed when the system was maintained by the public sector. Under a somewhat similar service contract, microenterprises in Cono Norte now provide services in solid waste collection, transfer, and recycling. Operating costs have been reduced through the use of appropriate technology (tricycles) as opposed to capital-intensive equipment. In Montego Bay, individual plotholders—not the NGO or a service agency—employed private sector contractors, registered (and sometimes trained) by the project, to build their household sanitation solutions. NGO staff monitored the quality of construction and ensured that plotholders were satisfied before paying contractors.

Government can expand private sector participation by creating a supportive institutional, financial, and legal environment. USAID financing through the Caribbean Housing Finance Corporation, a Jamaican parastatal, made it possible for plotholders to build their preferred sanitary solutions, while the terms of the loans made the construction affordable. In addition, local artisans and unskilled workers were trained in the installation of appropriate excreta disposal systems. The communities were encouraged to employ those certified in the training to complete their sanitation solutions. The reverse is also clear: ambiguous, unpredictable, or hostile government actions can hinder existing enterprises and forestall new ones. The failure of the municipality of Ventanilla in Cono Norte to comply with its negotiated concession in paying for contracted services seriously compromised the "Por su Salud" enterprise and threatened its survival.

4.1.5 Local Government

Municipalities and other local relevant authorities must be engaged through the intervention.

The only viable option for extending services to the urban poor often involves working outside local government.

Local government is usually the weakest link in providing services to the urban poor since it lacks the initiative if not the capacity to work in these underserved and politically weak areas. Consequently, the only viable option for extending such services often involves working outside local government, as was the case in Peru.

The prevailing influence of local government should not be overlooked, however. One of the community microenterprises in the Cono Norte faced serious operational difficulty when the local government neglected to arrange for waste pick-up from the collection point. The situation worsened when the local government delayed transferring payments made by households for waste collection services provided by private enterprises. A follow-up review by the coordinating NGO revealed a need to secure written contracts, detailing responsibilities not only for the community but for the municipality as well.

4.2   Financial Inputs

To ensure that services to the urban poor are financially feasible and institutionally sustainable, services must meet local needs and be appropriate to local income levels. Choices in the level of service are important. However, the selection of such options should be determined not only on the evidence of local demand and willingness to pay but also on the array of different services necessary for financial sustainability.

Service options should be determined not only on the evidence of local demand and willingness to pay but also on the array of services necessary for sustainability.

4.2.1   Demand-driven Approach

In peri-urban areas, choices need to focus on household rather than community preferences.

Sector experience has shown over and over again that demand-driven approaches must consider the value individuals place on new or improved services and their willingness to pay for those benefits. In peri-urban areas, the range of options should allow choice at the household level. In Montego Bay, the CRDC project followed a previous USAID-funded activity where lack of community involvement in the selection of technology led to wasted resources as residents refused the proposed solutions. The EHP technical team took a different approach, conducting house-to-house surveys and focus groups to ascertain community demand. Three types of low-cost options for sanitation solutions were identified. Project targets were set in terms of programmatic rather than numerical terms to reflect actual sanitation improvements.

The range of options should allow choice at the household level.

In Cono Norte, on the other hand, one of the two microenterprises offered a higher level of service (more frequent collection) than the households were willing or able to pay for. Failure to monitor local demand led to financial problems for that organization. The other microenterprise was far more successful, with almost 80% of the households paying for its services.

4.2.2   Access to Credit

Access to capital financing for household level infrastructure is key to implementing proposed solutions.

Household credit provides the means to match local demand with cost recovery.[8] In Jamaica, financing for sanitary solutions was made available as part of a larger,

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[8]   The EHP study "*Financial Services and Environmental Health*" explores in depth the issue of household credit for water and sanitation (R. Varley, EHP Applied Study No. 2, January 1995).

overall property mortgage through the Caribbean Housing Finance Corporation. While it is still too early to state that loans will be fully repaid, initial experience in Montego Bay indicates that the availability of credit was a critical success factor in allowing plotholders to build the sanitary solution of their choice. The prospects for loan payback are good, as plotholders have a strong incentive: receipt of land title for their plots is dependent on full loan repayment. However, it is not clear whether other financial institutions in Jamaica will be willing to provide access to credit to families living in other similar informal areas without the government backing that was available in this project. CRDC now has funds available to cover its operational costs from fees paid by plotholders, but it would not be able to facilitate access to capital funds for construction of the sanitation hardware without the special financing provided by USAID and the government of Jamaica.

4.2.3 Cost Recovery

Cost recovery efforts should attempt to include capital costs in addition to O&M costs of new or improved services. It should also include the costs of community organization and other technical assistance services.

Costs charged to the consumer should attempt to ensure funding for all aspects of planning, designing, and delivering services.

Costs charged to the consumer should attempt to ensure funding for all aspects of planning, designing, and delivering services. In setting water rates in Cité Soleil, a number of determining factors were identified and analyzed: market size; structure for water and sanitation services; potential volume of sales; and various costs of services including administrative overhead, O&M costs for water and solid waste operations, and capital recovery for investments. A different situation existed in Jamaica where a high level of technical assistance services was provided in designing and building each household sanitation solution. A fee-for-service system was established and became operational very early in the Montego Bay project where fees are paid to CRDC's operating entity, Sanitation Support Unit (SSU), for all house inspections. Fees are realistic, consistent with actual costs, and, since they are paid under the loans that households receive, are mandatory and fully collected. The fees have allowed CRDC/ SSU to become financially self-sufficient. The plotholders' relationship to the organization has shifted from "beneficiaries" to "clients."

One element of cost recovery is establishment of a business ethos among financial institutions and private enterprises. In the Cono Norte, professionalizing the image of the microenterprises involved not only promoting consumer confidence and willingness to pay for the services but also, and perhaps as important, creating positive employee attitudes. The staff, most of whom were women, were given attractive uniforms along with the title, "environmental promoters," rather than garbage collectors. These practices instilled pride and discouraged misuse of funds. Moreover, the professional image enhanced the idea that this was a bonafide business within the local community. In Ventanilla, where fees were collected in person, householders easily recognized employees by their uniforms and felt reassured that they were paying a reliable person.

4.2.4 Effective Financial Management

Financial management systems must be appropriate to the local context, based upon a thorough understanding of institutional and client capabilities, with training as necessary to reinforce that capacity.

For institutional sustainability to be achieved, not only must household level cost recovery be emphasized, but institutional capacity to manage the finances must be strong. In Cité Soleil, EHP trained CADEPA staff in using financial information to project anticipated revenues and expenditures under a number of conditions. Following this strategy, CADEPA carefully managed its expenses, controlling unnecessary or untimely growth. The success is reflected in the results; within the first five months, 70% of operating costs were being recovered through user fees, and by the end of USAID support, revenues exceeded costs.

In Cité Soleil, within the first five months, 70% of operating costs were being recovered through user fees. By the end of USAID support, revenues exceeded costs.

A different situation existed at the neighborhood level. To limit the amount of cash on hand, fountain operators were required to turn in cash receipts on a daily basis. Moreover, neighborhood fountain committees were given funds to pay the fountain operator's salary, as well as a set amount for (committee) overhead expenses. By having direct authority over money, these committees identified with the successful operation of the system and tended to take their responsibility seriously. As a first step towards building this capacity, CADEPA staff trained these committees in basic principles of cash management and reporting.

By having direct authority over money, these neighborhood committees identified with the successful operation of the system and took their responsibility seriously.

4.3 Technical Interventions

How technologies are chosen and applied will determine whether they will be adequate solutions. Given the far-ranging needs of peri-urban areas, the design of effective interventions depends on prioritization of needs and setting of realistic expectations.

4.3.1 Appropriate Technologies

Technical interventions and cost need to be appropriate for the service area.

In large measure, conventional approaches and standard technical solutions used for formal areas must be modified to accommodate the complicated layout, haphazard development, and limited service right of ways generally found in peri-urban areas. Narrow, unpaved, and often non-existent streets in the peri-urban settlements of Cono Norte made waste collection by conventional, large trucks impractical if not impossible. As an alternative, trash collector tricycles are used to take wastes to secondary collection and storage points. These tricycles are inexpensive, effective, efficient, and, except in a few steep areas, easy to manage. From collection points, wastes are transported to landfills by a combination of tractors and small trucks. At the landfill, a simple manual system of trash separation and vegetable composting is in place, reducing the volume of trash as well as the incidence of flies, rodents, and other trash-associated vermin.

Building codes typically need to be revised to offer technologies more appropriate to peri-urban areas.

Existing building codes are typically inadequate and need to be revised to offer technologies more appropriate to peri-urban areas. On the one hand, existing

standards help protect communities and programs from well intentioned but poorly designed projects. On the other, it is a mistake to force a given technology into an unsuitable situation where it does not satisfy community preferences or is inconsistent with local conditions. In taking on the design of the Jamaica project, EHP inherited an awkward situation. Previous attempts at project implementation had been delayed due to local community resistance to the idea of using ventilated, improved double-pit (VIDP) latrines to dispose of excreta and wastewater, as proposed in the original USAID environmental assessment. Householders viewed the VIDP as a rudimentary solution, contributing little value to their household investments. They preferred using a pour-flush technology, even if it required buying water. However, in identifying options that met householder preferences, EHP project planners had to look beyond standard solutions, given the limited lot space and householders' ability to pay. The result was the development of a combined system in which excreta and effluent are both introduced into an absorption pit without the addition of a septic system that can be costly and require more space. Meeting local regulatory approval was the next step. Since existing building codes did not address absorption pits, project planners worked with local officials from the Minister of Environment and Housing and the Underground Water Authority to develop new appropriate standards that met government approval.

4.3.2 Intersectoral Approach

The experience of the WASH Project (1981-94) and EHP underscores the importance of a multidisciplinary orientation involving technical expertise as well as cross-cutting skills in health, community involvement, finance, training, and education. Application of such an approach is particularly essential in the design and implementation of projects in peri-urban areas, where development problems manifest themselves in multiple ways. The key to success in the application of different disciplines lies in their integration throughout the provision of technical assistance, not just as side-by-side, ancillary activities.

In Cono Norte, the success of the small-scale, house-to-house trash collection depended in part on sensitizing the community to the need for individual and household waste management which included separating trash and depositing it in household and community receptacles. Here, EHP social scientists and engineers worked alongside the staff of Alternativa in developing educational campaigns and training in appropriate technologies.

A different situation existed in Montego Bay, where the technical solution could not function without proper use. There, small service lines linked in-house toilets to absorption pits. To prevent problems with blockages along the line or in the absorption pit, health education focused on proper garbage disposal (such as not throwing diapers in the toilet) and greywater disposal (such as filtering grease from cooking refuse.) As in Peru, EHP provided periodic external assistance from international experts representing a variety of disciplines, such as social marketing, engineering, hygiene education, and community-based management, in developing and implementing these strategies.

Local agencies and government officials are often unfamiliar with the application of a multidisciplinary approach, and external multidisciplinary consultant teams may need to encourage them in its use. Such integrated coordination may need

to be internal, where institutional multidisciplinary teams involving community workers and technical officers are set in place. Key to this effort in all three projects were the examples set by external consultants, particularly technical specialists, in working closely with other disciplines. In both Jamaica and Peru, integrated teams of technical and community officers were created, each with equal status within the organization. Coordination may also be required at an institutional level. External assistance teams may need to take the lead in building inter- and intra-sectoral linkages and overcoming institutional jealousies or competition that might otherwise prevent or complicate the delivery of technical assistance.

4.3.3 Appropriate Goals

Respect for local priorities leads to increased acceptance and support, which is reflected in the effective use and maintenance of any new systems.

Choosing technologies that meet requirements or goals set by those outside of the community is not workable if the needs of the community are not also being met. In a predecessor project, householders in Jamaica resisted the idea of VIDPs as inconvenient and poor investments, even though the option was inexpensive and environmentally sustainable. When EHP took over the project, it researched a range of alternative solutions and conducted house-to-house surveys to identify options that would be suitable for local terrain, would qualify for financing, and would be acceptable to the residents.

4.3.4 Quality Assurance

The quality of construction is at least as important as the degree of customer satisfaction and the extent to which people effectively use and maintain the technology.

Examples from the developing world abound where new systems do not function or are not used because of poor construction due to use of shoddy materials, inadequate supervision, or a failure to build according to design specifications. Recognizing this potential for abuse in Jamaica, EHP assisted CRDC in implementing an effective monitoring system that relied on quality control by CRDC/SSU staff as well as customer oversight. Because the disposal technologies were new, CRDC/SSU developed and ran training courses for contractors, builders, and tradesmen on siting, construction, and maintenance, providing certification to those who satisfactorily passed the course. Follow-up continued with CRDC/SSU technical officers providing regular ongoing supervision of contractors and retraining as necessary. These technical officers also worked directly with lot residents to make sure that they were satisfied with the contractor's work and understood the overall installation process. In addition, concerted efforts were made to facilitate the involvement of Public Health Inspectors responsible for local approval. Although participation of PHIs was limited by a lack of manpower within that department, an official training workshop for regional PHIs was held and other opportunities for community outreach (such as a training workshop on sinkholes) were organized.

External assistance teams may need to take the lead in building inter- and intra-sectoral linkages and overcoming institutional jealousies or competition.

Choosing technologies that meet requirements or goals set by outsiders is not workable if the needs of the community are not being met.

4.4 Community Involvement

Effective community involvement is essential to ensure that over the long term there will be cost savings, more widespread and equitable distribution of benefits, and more efficient use of resources in general. Lack of buy-in virtually guarantees problems or failure.

4.4.1 Partner Relationships

Project success and sustainability depend on the extent to which members of the community are viewed as partners and clients in the full range of issues and decisions, not just as passive beneficiaries for whom new services are provided or extended.

Involving the community, especially in the design of approaches and interventions, improves the chance that users will accept their responsibility and that the project will be sustainable over the long term. Implicit in this is a mutual understanding and acceptance of roles and responsibilities. Very early in the development of the Cité Soleil project, focus groups were conducted to explore community issues related to the water supply system and to secure their input in the design for the creation of an autonomous water district. Through subsequent discussions, roles and responsibilities of the community were negotiated and affirmed. Different sectors of the community committed themselves to monitoring and enforcing proper use of the fountains by creating neighborhood and zonal committees. These committees were given responsibility for the supervision of the locally hired fountain operators. Residents understood that their neighborhood committee was responsible for rectifying any complaints about the performance of the fountain operator or a breakdown of the water system.

In developing successful partnership relationships in the community, it is important to identify appropriate community leaders to be brought into the activity. Unlike rural settings, in the peri-urban context, a spatial area does not necessarily constitute a community. Even when it does, several types of informal or formal organizations may exist with differing purposes and loyalties. It is essential to acknowledge and understand such groups or subsets in creating partner relationships, particularly in urban areas where community involvement may consist solely of paying for services rendered and using services in a way that does not jeopardize their integrity. Within Cité Soleil, different sectors of the community included individual household users, water vendors, and neighborhood-based organizations representing a wide variety of interests such as social development, sports, and women's groups. In Montego Bay, where many households are headed by females, a major program goal was to facilitate the active involvement of women and ensure that they were given equal access to secure loans to install on-site sanitary facilities.

4.4.2 Effective Demand Creation

Community expectations must be realistic and aligned with a level of technology that is affordable.

In peri-urban areas, the demand for improved services is large and pre-existing. The key for sustainability is to create effective demand for *appropriate* and *achievable* levels of services, recognizing that community hopes and expectations may exceed what is reasonably affordable. In this regard, community officers from CRDC/SSU implemented a successful communication strategy, focusing on issues related to convenience, social status, and children's safety, to promote the acceptance of stand-alone absorption pits. Orientation on the new technology was important given the residents' unfamiliarity with the proposed sanitary solution and concerns they raised about the lack of an attached septic tank. The strategy entailed working through community promoters and key community members who personally contacted residents to discuss sanitation and related issues. Not only did these discussions increase individual knowledge and motivation, but they also changed social norms in the community.

In Cité Soleil, the primary objective of the communication strategy was to create an awareness in each family of its stake in the success of the program and to promote local demand for an effective system. Since many were expecting the new services to be free, the campaign focused on the need for families to pay for water and to protect the water system against misuse or illegal activities. Priority messages, repeated at various points during the educational campaign, highlighted the hours of operation for each fountain, the price of a bucket of water, and the role of the community in maintaining the newly installed fountains.

4.4.3 Strategic Program Planning

Providing mechanisms and flexibility for making program changes at the lowest appropriate level are necessary to keep things moving along and to avoid potentially fatal stumbling blocks.

The dynamic nature of peri-urban areas makes it inevitable that changes in the local context will occur, requiring some degree of replanning. A key to success in Cité Soleil was establishing a local institution that included board members from the community to manage the water supply. In addition, neighborhood committees were formed to manage water points. One example of tactical planning concerned a decision regarding the method of payment for water. After much discussion about the benefits and problems of tokens versus cash, the zonal committee—the highest-level community structure—decided that customers would use cash to purchase water.

Many of the services required or provided in peri-urban areas are a communal or public good, calling for coordination and organization at a community level. (Examples include improvements in public spaces, parks, roads and paths, or better solid waste practices.) On the other hand, individual house connections, household garbage removal, and on-site sanitation are private goods. In those types of interventions, project design should allow for changes and variations in household-level use. A large part of the success seen in the Jamaica project, for example, came from the monitoring and information system which tracked behavioral change and provided feedback on program strategies. As promotional materials were developed, they were given to PHIs, health educators, community promoters, and Peace Corps Health Office staff for review and further feedback. On the technical side, concerns for children's safety led to an adaptation to absorption pit construction. With guidance

The key for sustainability is to create demand for appropriate and achievable levels of services, recognizing that community expectations may still be beyond what is reasonably affordable.

The dynamic nature of peri-urban areas makes it inevitable that changes in the local context will occur, requiring some degree of replanning.

from an EHP engineer, absorption pits were tightly sealed with concrete covers to provide a degree of safety and environmental protection.

4.4.4 Community Capacity Building

Community residents should become educated consumers and managers of improved services.

Community capacity building, as distinct from institutional capacity building, refers to a broad set of public communication, leadership, and organizational and management skills that equip community residents to be educated consumers and, as appropriate, managers of improved services.[9] In Cité Soleil, the strategy for creating an independent community-based structure to manage water supplies included training at two levels: the institutional development of CADEPA as an operational entity, and the skills development of neighborhood and zonal committees. Institutional development guidance was provided to CADEPA in the creation of financial, organizational, and management systems for this new company. For the community committees, formal training included orientation to the technical aspects of the water supply system and enabled committee members to supervise and monitor responsibilities at their respective levels. Informal, experiential training from CDS and EHP staff further broadened the experiences of committee members in interacting with public officials. In Montego Bay, the service provided (on-site sanitation) did not require community management as much as education regarding family use and maintenance of the sanitary facilities. In this instance, community volunteers (a majority of whom were women) were trained in communication and community development skills and health and environmental sanitation issues to act as opinion leaders and promoters of positive health behaviors.

In contrast to rural residents, peri-urban householders are more likely to work with a private contractor to construct new facilities or to negotiate services with a local government or privately-owned utility.

     In contrast to rural families, peri-urban householders are more likely to work with a private contractor to construct new facilities or negotiate services with a local government or privately-owned utility. As seen in Montego Bay, householders selected one of three options and negotiated the construction with local contractors trained by CRDC/SSU. Householders made informed choices, drawing on information provided by CRDC/SSU. As installation progressed, they were assisted by the technical officers in negotiations with contractors and, later, oversight of the installation process.

     In Cono Norte, where services for waste collection and management were privatized, community members required different training. The scale and focus of operations was very different from the community-managed water district in Cité Soleil. Groups received loans from Alternativa and were given assistance in negotiating with municipal authorities and organizing communities as consumer networks.

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[9]   EHP's "CIMEP" model, which focuses on community capacity building via the management of environmental pollution, is described in WASH Technical Report No. 90, *Public Participation in Urban Environmental Management*, May Yacoob, et. al.

4.5 Health

Many diseases affecting the urban poor arise from service deficiencies, such as lack of access to potable water, sanitation services, and solid waste services. Improving services can have a positive impact on health. However, improved health does not automatically follow the provision of improved services. If health improvement is a goal, a program must be explicitly designed to address health from the onset.

4.5.1 Project Design

Targeted health education and behavioral change are required in order for improvements in environmental services to have a health impact.

The linkage between health and the environment in urban poor areas has received increased attention of late. The difficulty in designing projects that target this linkage, including all three projects considered here, has been programmatic funding constraints in developing a consolidated focus. Projects that attempt such a focus are perceived as either environment or health but seldom both. As a consequence, program development is focused primarily on the sector under which the project is funded, limiting the extent to which activities can be realistically (even legitimately) extended. In this instance, all three projects were funded under the environment office of USAID, which emphasized the provision of services and their effect on the environment. Of the three projects, the Montego Bay activity was the only one to include health as a specific goal. Intensive hygiene education brought about demonstrable changes in health behaviors related to disposal of feces, greywater, and garbage as well as personal hygiene practices such as handwashing and water handling.

4.5.2 Behavioral Change

Hygiene education and social marketing are essential components of a successful program.

A key element contributing to CRDC/SSU's effectiveness in Montego Bay was development of a behavioral change strategy with three key components: social mobilization of the community; active involvement of women; and regular monitoring to track behavioral change. The communication strategy evolved through trial and adaptations. Throughout the program, however, it did convey messages on five priority topics: disposal of feces, garbage disposal, water storage and handling, handwashing, and greywater disposal. Easy-to-read materials featured locally popular cartoon characters and culturally valid situations. Social marketing techniques were also used in Cité Soleil, where qualitative research was conducted to determine practices involving the handling of water and disposal of greywater, human waste, and solid waste. Based on the results of this research, an educational program was developed with the prime objective of mobilizing popular support behind the community-managed water and sanitation district. While the primary audience was the residents of Cité Soleil, an important subset of that audience was members of grassroots committees and community leaders.

If health improvement is a goal, a program must be explicitly designed to address health from the onset.

Effecting change in behavior is a difficult process that takes time and requires support from donors and government.

Once an effective communication strategy is designed, the next step required in changing behaviors is to gather sufficient resources and backing to follow through on its implementation. Effecting change in behavior is a difficult process that takes time, requiring institutional support from donors and government. Unless a clear division of authority, responsibility, and resource allocation is made, problems will be deferred or pushed aside, and sustainable solutions will not be implemented. Such a situation arose in Cono Norte where an EHP adviser worked with Alternativa in developing a well-designed and carefully thought-out education strategy targeting different audiences with different messages. The campaign was never fully implemented because Alternativa was unsuccessful in getting the financial and technical resources necessary for carrying out activities. Moreover, changing behaviors proved to be far more difficult, time-consuming, and costly than originally envisioned. In some neighborhoods, the level of participation in the solid waste management campaign was far less than desired, suggesting that expectations in improved health and living conditions were not realized. Although health impacts were not measured, experience has shown that in densely populated peri-urban areas, individual households with improved household sanitation practice will not experience improved health if their neighbors continue to dispose of garbage in ways that contaminate the environment.

4.5.3   Environment and Health

Mechanisms must be put in place to facilitate dialogue between health and environmental   officials.

The challenge lies in building bridges between health and environmental programs.

Providing urban environmental services sets the stage for resolving environmental health problems that stem from the poor living conditions typically found in peri-urban areas. As EHP has found, the challenge lies in building bridges between health and environmental programs, bringing about a stronger preventive orientation to health programs and directing the attention of environmental planners to the health effects of pollution and degradation. EHP attempted in the Cono Norte and Montego Bay projects to draw attention to health issues by making sure that health sector personnel were at least informed, if not actively engaged, in project activities. Although this involvement was somewhat limited, the collaboration created opportunities to leverage additional resources and to lay a foundation for follow-on health activities. The approach was most successful in Montego Bay, where, in addition to the PHIs, other public health officials from the MOH were engaged in project development through information sharing and the review of health education materials produced by CRDC/ SSU. Though informal, the linkages created an atmosphere of partnership to the extent that the project was able to explore follow-on activities with the MOH, including the creation of paid outreach posts within the MOH for a few of the project's most gifted community promoters. In Cono Norte, engagement of local health clinics in the proper disposal of medical waste led some clinics to help disseminate health-related messages related to solid waste.

4.6   Legal and Regulatory Framework

Peri-urban communities often present special legal and regulatory problems, which project designers must resolve.

Peri-urban communities often present special legal and regulatory problems. The challenge to project designers is to resolve the conflicts inherent in trying to apply codes and laws in these situations.

4.6.1 Policy Review

Review of legal and regulatory guidelines should consider not only those issues affecting initial implementation but also those that may affect the medium- and long-term sustainability of newly installed services.

Resolution of *de facto* land holding is often an issue in peri-urban areas, but depending on project objectives, it may not be the paramount issue. In Cité Soleil, the primary issue surrounded the legality of the newly established water and sanitation district. The management contract signed by CDS, government officials, and the water company provided a workable framework for the district to be established and to operate for three years. It did not, however, provide the legal status for CADEPA to become a permanent, autonomous organization to manage water services over the long term. As one of its first technical assistance activities, EHP staff reviewed the contract and identified legal areas that needed to be addressed for CADEPA to become a permanent entity with responsibility for water and sanitation in Cité Soleil. Among these were the right to retain all revenues and to use them to fund other services, the ability to make investment decisions with revenues and to contract debt, and the authority to establish its own internal operating procedures. While these issues were not resolved by the end of the project (the management contract was simply reissued), their identification provided a "road map" for further negotiations and meeting long-term goals.

Clearly defined and agreed upon responsibility and authority create a buffer against misunderstanding that is particularly important when new programs are being introduced. In Cono Norte, privatizing waste collection services through the creation and support of community-based microenterprises opened up unfamiliar relationships among municipalities, residents of local communities, and these new microenterprises. While substantial discussions occurred early in the relationship, mutual roles and responsibilities were never defined, leading to complications in one of the municipalities where turnover in municipal leaders was high. Without legally defined policies (or enforceable contracts), these officials took an arbitrary approach toward the arrangements for solid waste collection as reflected in the setting and collection of tariffs, the transport of wastes to landfills, and the areas of service provided. As a consequence, the viability of the microenterprise working in the area was undermined substantially; it is not clear whether the business will survive.

4.6.2 Consultation and Policy Change

Developing a consultative process with local officials is important in building broad-based political and public support.

Since urban policies and regulations are often inappropriate or unrealistic for peri-urban areas, project planners will need to work in a consultative manner with local officials in facilitating project interventions. The context of support achieved in the municipality of Ancón in the Cono Norte stands in contrast to the situation encountered in Ventanilla where there was frequent turnover in local officials. Because the appropriate technology for manual recycling and composting of solid waste was new to local officials and fell outside regulatory guidelines, Alternativa organized a series of workshops and briefings for public officials, frequently bringing

them to on-site demonstrations. The ongoing orientation proved to be a good educational technique. Staff in Ancón felt that the good working relationship with local government was a direct reflection of this ongoing consultation and resulted in the project being able to consolidate and expand without unnecessary regulatory strictures.

Promoting the participation of field staff can be as important in fostering support for policy changes, especially changes regarding engineering standards. In support of its regulatory functions, CRDC/SSU provided formal and informal training to orient staff to the new disposal technologies and to upgrade their technical skills in sanitation solutions. With guidance from an EHP engineer, various alternatives were explored in adapting sanitary solutions to the difficult site conditions found in Montego Bay, including the management of greywater and use of low-flush toilets. While some on-site technologies were considered to be less than ideal compared to conventional solutions, local officials nonetheless approved the new options based on their newly acquired understanding of the alternatives and suitability of the options for the local soil conditions.

4.6.3 Institutional Legalities

The institutional status of alternate service providers must be legalized if service provision is to be sustained.

Alternative service providers, such as the community-based water and sanitation district in Cité Soleil and the microenterprises in Cono Norte, can offer attractive solutions to peri-urban areas. At some point, however, the institutional status of these providers must be formalized (i.e., legalized) if service provision is to be sustained. Until now, CADEPA, the newly created community-based company, has operated effectively under a management contract with CAMEP, the government water authority. Few problems have been encountered in the management arrangement. However, although the contract has satisfactory terms, it does not offer any guarantee beyond the contract date. Theoretically, at the end of the contract period, CAMEP could decide to take over the management of the water supply contract. This is clearly a long-term issue that could affect the sustainability of CADEPA if CAMEP does not renew the contract. As noted above, clear policies will need to be defined if CADEPA is to function as an autonomous organization providing water services.

A slightly different situation exists in Peru where the effectiveness, and thus the viability, of the small microenterprises is affected by the lack of consistent policies regarding both the operation of these microenterprises as service providers and the regulation of those services by municipalities. In the absence of official policy, Alternativa has embarked on a process to organize a working commission involving representatives from the different communities within each municipality and to begin to draw up standardized regulations on a local level.

SUMMARY OF LESSONS LEARNED AND NEXT STEPS | 5

5.1   Summary of Lessons Learned

The findings from this study indicate that basic environmental services for the urban poor can be provided in effective and cost-efficient ways that improve health conditions in peri-urban areas. The success in each of these examples stemmed from a willingness of project designers and planners to consider nontraditional approaches to addressing the lack of services and ameliorating the dire conditions in which many of the urban poor live. Common to these achievements in project design are two over-arching points:

- Each program was based on a realistic understanding of economic, social, environmental, and political factors which had a bearing on the lack of services in those particular areas.
- Solutions were implemented in a strategically planned manner, involving a variety of stakeholders who played appropriate roles.

Key lessons learned include the following:

Institutional Framework
Providing services in peri-urban areas is a complicated process, requiring the involvement of the public and private sectors. Often the capacity of one or the other is weak, and an External Support Agency is needed to help build appropriate capacity and create a possible framework for shared responsibility. At the same time, roles may vary and need not always be the same. What is important is that some institution assume a coordinating role. While these three projects were all facilitated by NGOs, any institution—municipality, government agency, or NGO—could take on this role. The critical factor is that any institution involved in this capacity must be flexible and skilled in community outreach. Furthermore, the private sector has a potentially significant role to play. Engaging the private sector to provide specific services can often introduce greater efficiency and cost savings compared to municipal or national agencies.

Engaging the private sector to provide specific services can introduce greater efficiency and cost savings.

Financial Inputs
Providing services to the urban poor can be financially feasible and institutionally sustainable if services are driven by local needs and are appropriate for local income levels. Choices in the level of service are important. However, the selection of such options should be determined not only on the evidence of local demand and willingness to pay, but also on the critical mass of services necessary for financial sustainability. Access to capital financing for hardware may be key to influencing decisions to implement proposed solutions.

Given the far-ranging needs of peri-urban areas, the design of effective interventions depends on prioritizing needs and setting realistic expectations.

Technical Interventions

The way in which technologies are chosen, applied, and installed determines whether they will be adequate solutions. Given the far-ranging needs of peri-urban areas, the design of effective interventions depends on prioritizing needs and setting realistic expectations. Choosing technologies in relation to externally defined goals, such as environmental protection or increased coverage, may not be appropriate or achievable if the needs of the community are not being met. In this regard, application of a multidisciplinary approach is particularly important in the design and implementation of projects in peri-urban areas where development problems manifest themselves in multiple ways. However, use of such an approach may be unfamiliar to local counterparts and often requires capacity building.

Community Involvement

Project success and sustainability depend on the extent to which the community is involved in the full range of issues and decisions. In peri-urban areas, there is pent-up demand for improved services. The key to sustainability is to create effective demand for appropriate and achievable levels of services, recognizing that community expectations may well be beyond what households or the government can afford. Involving the community, especially in the design of approaches and interventions, improves the chances that users will accept their responsibilities and that the project will be sustainable over the long term. Implicit in this is a mutual understanding, and acceptance, of roles and responsibilities. Part of the capacity building process may be to help community members become educated consumers and, as appropriate, managers of improved services.

Capacity building may be necessary to help community members become educated consumers and, as appropriate, managers of improved services.

Health

Providing urban environmental services sets the stage for resolving environmental health problems that stem from poor living conditions typical of peri-urban areas. However, improved health does not automatically follow the provision of improved services. If health improvement is a goal, a program must be explicitly designed to address health issues from the onset. The difficulty in designing projects that target this linkage has been a lack of programmatic funding for developing a consolidated focus. Projects that attempt such a focus are usually perceived as either environment programs or health programs, seldom both. As a consequence, program development is usually focused on the sector under which the project is funded, limiting the extent to which activities can be realistically (even legitimately) extended. The challenge lies in building bridges between health programs and environmental programs, bringing about a stronger preventive orientation to health programs, and directing the attention of environmental programs to the health effects of pollution and environmental degradation.

Legal and Regulatory Framework

Peri-urban communities often present special legal and regulatory problems. The challenge to project designers is to resolve the conflicts inherent in trying to apply codes and laws in these situations. Consideration should be given at the beginning of the planning process to all of the legal and regulatory guidelines implied in the provision of improved services, not only those issues affecting implementation. Some tougher issues may affect the medium- and long-term sustainability of newly installed services; those issues should not be skirted. Norms and standards are important, but a

flexible means of ensuring their enforcement must be found, particularly in instances where existing urban policies and regulations are unrealistic or inappropriate for peri-urban areas. In working with local governments, developing a consultative process with officials at all levels is important in building broad-based political and public support.

5.2 Steps to Move Forward: Replication and Scaling-up

The fundamental message of this document is an optimistic one: the challenge of providing environmental health services to the urban poor is well understood, and an increasing number of pilot projects around the world have demonstrated that services can be provided in an effective and sustainable manner. To meet this challenge, systemic changes must be made in the following areas:

• National policy reform regarding urban land tenure issues
• Reform of national financial institutions to make household credit accessible to families living in informal settlements
• Institutional changes within utilities to reflect the technical and social challenges of providing services to informal settlements
• Training of local government staff to be more community-oriented (i.e., trusting of local participation) and to facilitate intersectoral interventions involving public and private sectors
• Development of nationwide public health campaigns to create consumer demand for urban environmental health services
• Commitment by international donor agencies to ensure that their financing effectively reaches the urban poor and that loan projects are designed with urban improvements in mind.

Clearly, the above steps cannot be taken by one government agency alone or one international finance agency or bilateral donor. Successful experiences—working with the urban poor—from all of such organizations must now be merged, consensus reached, and strategic alliances formed to move forward in making real achievements.

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