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U N D P — W O R L D B A N K



# WATER AND SANITATION PROGRAM

01/01/93

UNITED NATIONS DEVELOPMENT PROGRAM  
 WATER AND SANITATION PROGRAM  
 PROJECT REPORT



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The UNDP-World Bank Program is a collaborative initiative emerging from the International Drinking Water Supply and Sanitation Decade of the 1980s. Concentrating work on a dozen focus countries and operational in more than 30 other developing countries, the Program serves to strengthen national and local efforts for improving the access of poor people to safe water and sanitation.

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WATER  
AND SANITATION  
PROGRAM

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## PREFACE



**T**his annual report reviews the activities of the UNDP-World Bank Water and Sanitation Program during fiscal year 1992 (July 1991 through June 1992). It presents portraits of Program work from diverse parts of the developing world. It introduces readers to some of the many dedicated partners we work with in the field. Most important, it allows some of the people who have participated in our activities to speak for themselves about the merits of safe water and adequate sanitation, and about the technologies and organizational approaches that make them realizable and sustainable.

A brief introduction highlights the growing importance of water and sanitation in decisions concerning preservation of the world's fragile

environment and alleviation of poverty in developing countries. Feature articles from Latin America, Asia and Africa illustrate how the Program operates in the field and how our new strategy is being put into action.

A review of Program finances and a description of bilateral contributions make up the third section of this report, followed by accounts of Program activities during 1991-92, grouped according to regions. The Regional Summaries describe the major operations and achievements of the Program's worldwide network coordinated by the Regional Water and Sanitation Groups (RWSGs), and the rapidly emerging Regional Networks in Central and South America. A more detailed presentation of country-level strategies and the work

planned by the RWSGs can be found in "UNDP-World Bank Water and Sanitation Program: Country Work Plans, 1992-93." The report concludes with a listing of published outputs from both headquarters and the field.

Throughout this report, one point rings clear: the Program's collaborative efforts with its UN, bilateral, governmental, nongovernmental, and private partners are helping to expand the access of the poor to vital water and sanitation services and, at the same time, advance the state of the art in development planning and implementation. Executed with perseverance, this strategy will yield great dividends well into the next century.

TIMOTHY ROTHERMEL  
Director, DGIP/UNDP

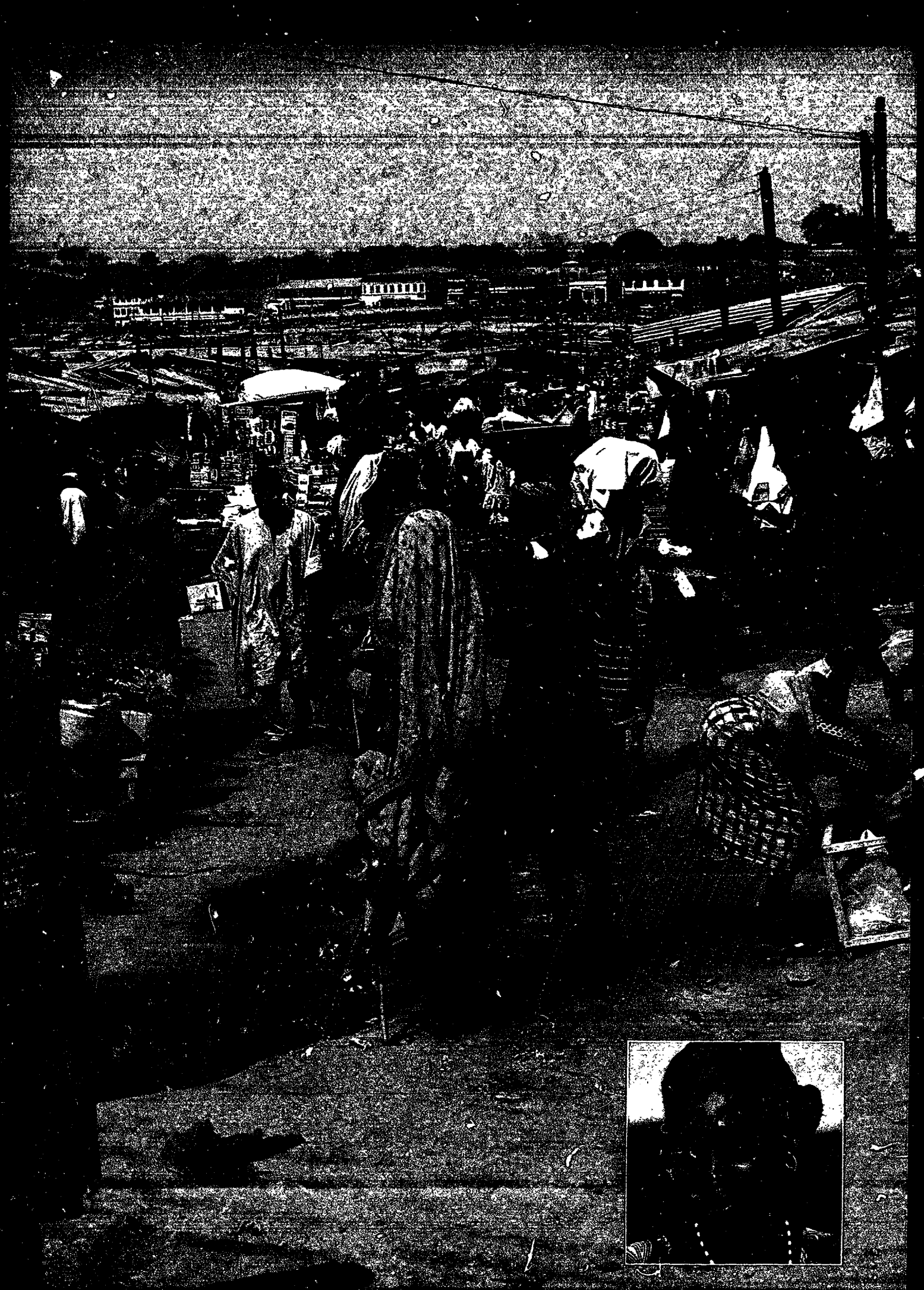
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Program Manager

## TABLE OF CONTENTS

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Preface	iv
Introduction: <i>Applying Lessons; Learning from Implementation</i>	1
Program Profiles	7
<i>Bolivia: Changing Lives in the Altiplano</i>	8
<i>Ghana: Providing Sanitation Services that People Want</i>	12
<i>Bangladesh: Promoting Sustainable Technologies</i>	16
Program Structure and Support	21
Bilateral Sponsors	27
Technical Assistance Projects Implemented by the Program	34
Regional Reports	37
West Africa	38
Eastern and Southern Africa	48
South Asia	52
East Asia and the Pacific	58
Latin America	64
Middle East and North Africa (MENA)	68
Annex: Program Publications 1991-92	72
List of Acronyms	73





INTRODUCTION: APPLYING LESSONS; LEARNING FROM IMPLEMENTATION

Not since the inception of the Water Decade in 1980 have water and sanitation issues been so much at the forefront of the international development debate. UNDP's 1992 *Human Development Report* pinpointed safe water and adequate sanitation as two of the most essential indicators of human progress. The World Bank's 1992 *World Development Report* gave special emphasis to improved water and sanitation services and better water resources management as keys to environmentally sustainable development.

Major meetings held in Delft, Copenhagen, and Dublin served to focus the international community on the most pressing aspects of water resource management and the environment. The world press covering the United Nations

Conference on Environment and Development (UNCED) in Rio de Janeiro, Brazil highlighted the issues again and again.

"Ecology means a home to live in, water to drink, and basic sanitation." Pedro Mendoca told a *Washington Post* reporter covering the conference. Mr. Mendoca is an activist with the Federation of Favela Dwellers of the State of Rio de Janeiro, a group assisting poor residents in some of South America's most squalid slums. Far from Brazil's shantytowns, an unusual array of voices echoed the *Post* report.

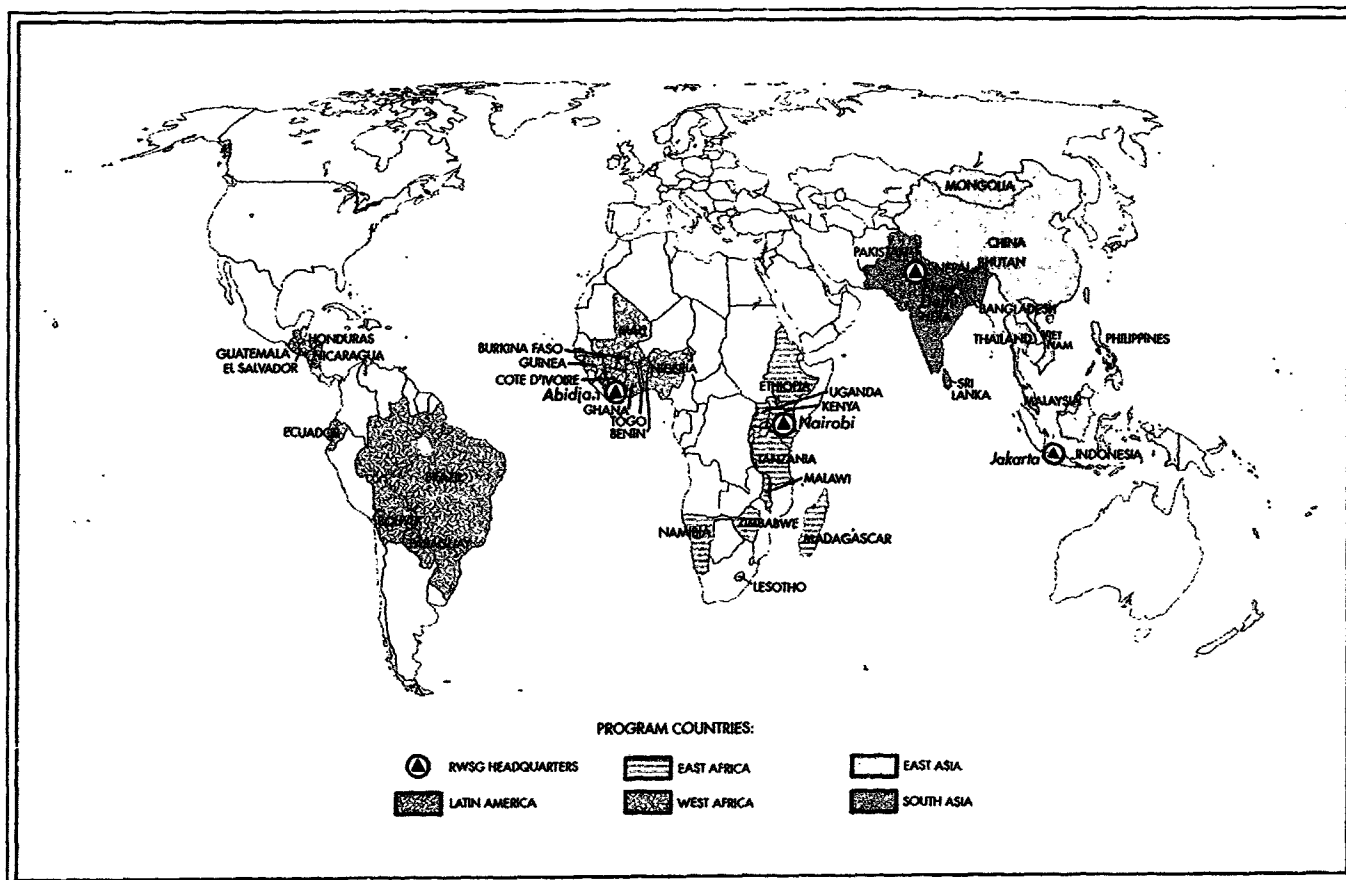
In a cover story during UNCED entitled, "No More Hot Air," *Newsweek* claimed, "Rio will pay scant attention to the real menace: more than three million children died last year from waterborne diseases. Most of these deaths could be

saved by safe water and sanitation — public works that go unfunded."

The *Wall Street Journal* issued its own call for pragmatism. "Imagine if such a summit could be assembled to deal with more immediate — and more immediately manageable — problems. Consider the prosaic problem of dirty water. The solutions to the problem are simple sanitary procedures commonplace in every developed country."

As the dust settled after the conference, the message both in the media and in the slum neighborhoods of the developing world was clear: meaningful progress on improving water and sanitation is fundamental for sustainable human development. The problems in the sector deserve the highest priority from governments, business, and citizens alike. And solutions must be more

UNDP-WORLD BANK WATER AND SANITATION PROGRAM: COUNTRIES OF ACTIVITY BY REGION



of concentration countries. A new multi-agency initiative was launched in the Central American region. And activities continued to expand into South America.

The Program management has increasingly enlisted the advice and support of the World Bank Water and Sanitation Division, which has taken a leading role in tackling institutional and service delivery issues within the sector. Closer working linkages have also been forged with the Operational divisions of the World Bank in all phases of sector activities — from sector analysis and appraisal, to project implementation and evaluation.

New alliances are being built with groups operating at the grassroots levels, such as the United Nations Volunteers, NGOs and other field-oriented organizations. Each of the portraits featured in this report illustrates a different type of local development alliance.

The three primary components of the new program strategy are building capacity, supporting sustainable investments, and disseminating lessons and knowledge. Cutting across these three major thrusts, the Program is working to improve the process through which large-scale water and sanitation development programs are formulated and implemented — helping to build a systematic learning process into their implementation, including not only those supported by the World Bank, but those financed by other multilaterals, the bilaterals, and other agencies active in the sector. The lessons of what works and why will be incorporated into new programs and investment projects, and into capacity building initiatives worldwide. And they will be disseminated widely so that others may share the benefits, making successful large-scale

approaches more replicable both within the sector and across countries and regions. (A detailed presentation of the new strategy is found in "Improving Services for the Poor: A Program Strategy for the 1990s.")

Putting our new strategy into practice has meant ever greater emphasis on building partnerships — at headquarters level and in the field. Field-level partnerships have taken on a multiplicity of forms, thanks to the initiative, flexibility, and creativity of the Program staff in the Regional Water and Sanitation Groups (RWSGs) and country-level offices. The Program continues to build its operational work at the global, regional, and country levels with UNDP. With support from the Division for Global and Interregional Programmes (DGIP), the Program is pioneering new

creative and far reaching than ever before.

The UNDP-World Bank Program is meeting the challenge in several ways. First are core activities to build capacity — strengthening the policies and institutions, and the capabilities of people involved in the sector to carry out water and sanitation improvements. Second is active collaboration with numerous partners to learn about what works in the development process and why: building "structured learning" into large-scale sector initiatives in several regions of the world. Finally, the Program is making a concerted effort to share lessons being learned from the field so they can be applied in sector activities throughout the developing world.

The past year has manifested both expansion and consolidation for the Program. While the number of countries receiving assistance and the range of Program services continued to grow, financial and human resources have become more focused on a selected group



ideas, approaches, and technologies such as low-cost wastewater treatment and reuse, sanitation systems, and hand-pumps. UNDP's Regional Bureaux for Africa and Asia and the Pacific provide vital support for the Program's RWSCs and for capacity building. Program support from country-level UNDP projects and bilateral agencies serves to promote innovative field activities from the high-altitude rural departments of Bolivia to the bustling trading centers of West Africa. The feature stories from Potosi, Mirzapur, and Kumasi contained in this report illustrate how our strategy is working on the ground.

In Kumasi, Ghana's second-largest city, neighborhoods are being cleaned up and made healthier as home latrines are financed through innovative community-based schemes. Private

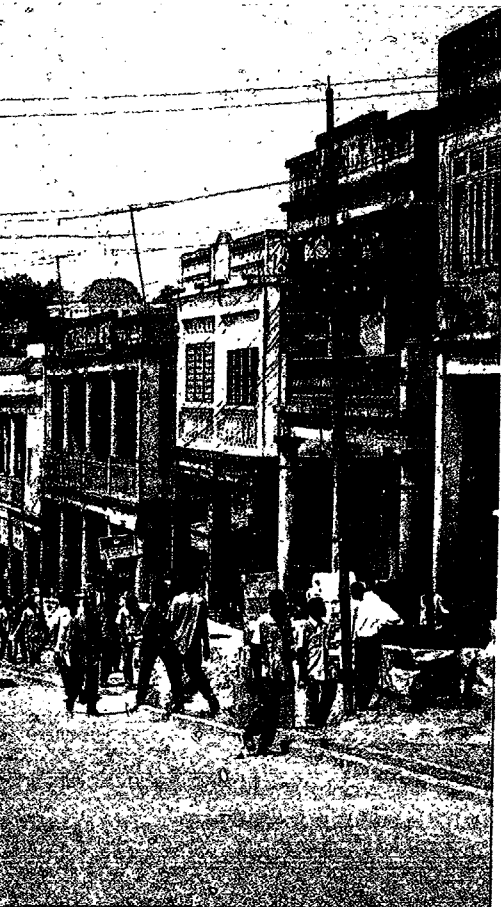
companies have taken over the management of public latrines in crowded areas with the result that they are cleaner and functional, and the city is actually making a profit on the operation instead of losing money.

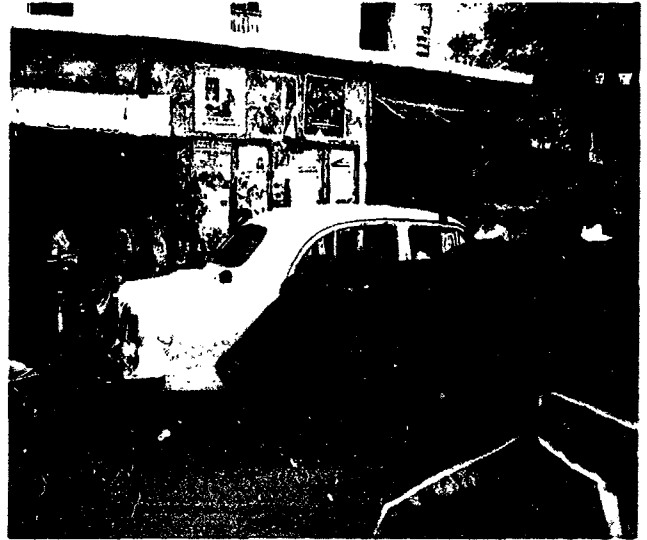
Program work in developing low-cost water supply technologies has been delivering substantial returns in rural Bangladesh, with benefits extending to other countries. In the village of Mirzapur where the Tara lowlift handpump was first field tested, not only are those original pumps still in operation, but the design has also spread across the country. Today, despite the toughest of living conditions, rural water supply coverage surpasses 85 percent. The Tara design, meanwhile, is finding acceptance in country after country.

Program activities in Latin America

have been accelerating during the past year. A report from Bolivia illustrates how the country team is utilizing a flexible approach to promote demand-driven water and sanitation services in the remote villages of the Altiplano and in poor shantytowns of several cities.

The success of these field activities is attributable, in large measure, to ongoing programmatic work: refining and improving low-cost technologies, developing participatory approaches, enhancing training institutions and materials, and building learning into the implementation process. Alongside the features, therefore, are brief updates on the latest accomplishments of the Program's Technology Promotion Unit (TPU), PROWESS, and the International Training Network for Water and Waste Management (ITN).





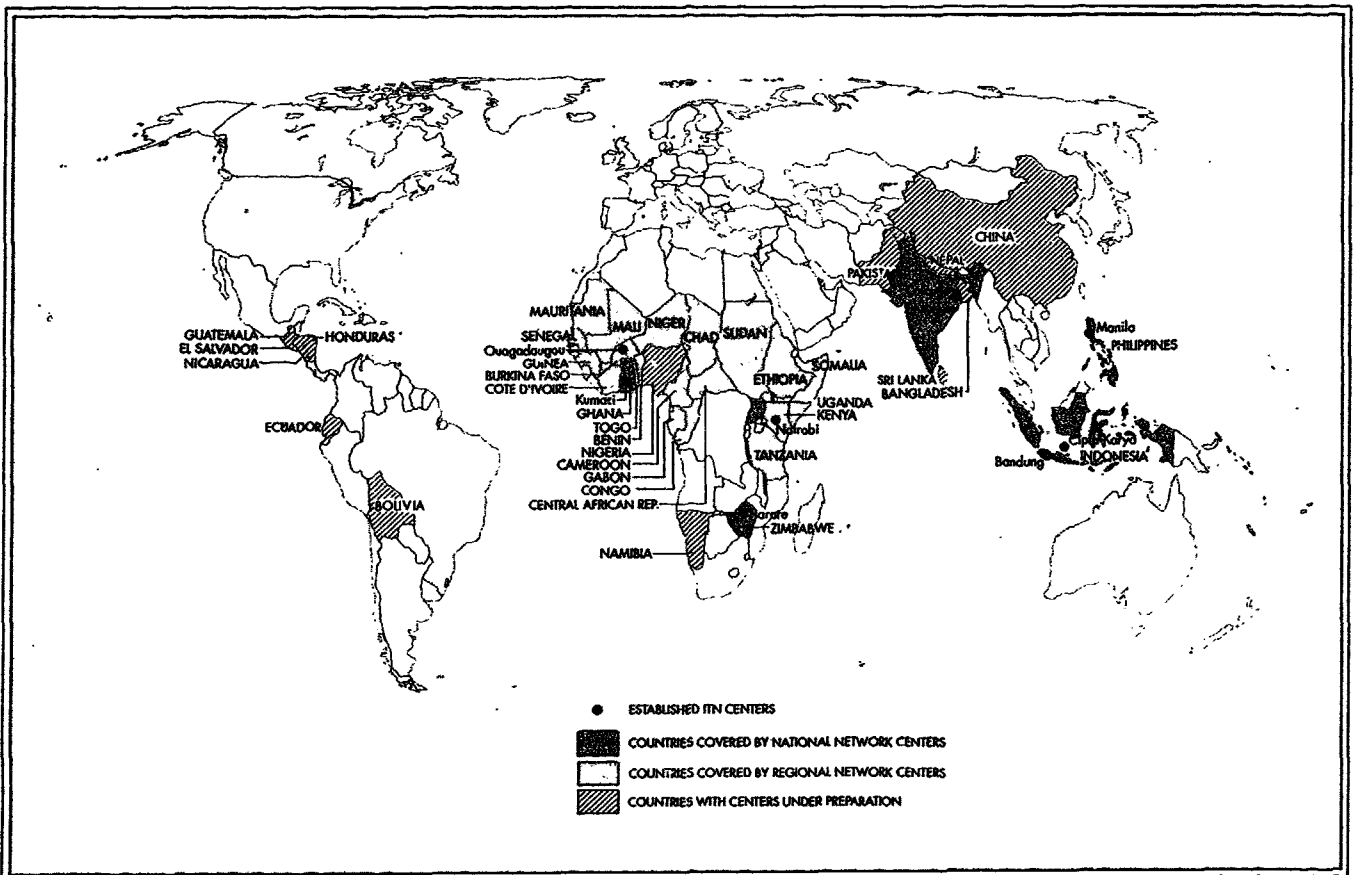
Through its multifaceted and integrated approach, the Program is assisting developing countries in concrete ways to improve the access of poor people to better water and sanitation services. This report takes readers directly into the neighborhoods where progress is being achieved and presents

the faces and the voices of those benefiting from a healthier environment.

Sparked, in part, by the global environment conference in Rio de Janeiro, the past year has witnessed a rapidly growing awareness of the deteriorating environment in developing

countries. For those seeking concrete steps to action, water and sanitation improvements have increasingly emerged as the logical nexus between poverty alleviation and environmental protection.

**INTERNATIONAL TRAINING NETWORK CENTERS**



## THE INTERNATIONAL TRAINING NETWORK: DEVELOPING HUMAN RESOURCES

The International Training Network for Water and Waste Management (ITN) assists local institutions to support and guide the development of water and sanitation services in-country. The training centers, linked through the ITN, are all staffed by local sector leaders. They draw on the lessons of prior approaches and mount new endeavors in the search for more efficient and effective approaches. The ITN promotes the twin objectives of self-sufficiency – supporting local staff to manage their own national development – and the adoption of best practices, through training, learning, and international and regional information exchange.

In countries where the ITN is best established, a national coordination center is housed in a sector or educational agency and structured so that it is at once responsive to the national policy debate and yet sufficiently independent to be financially self-sufficient and to attract leading sector personnel as its staff members. The "Network Center" has partnerships with a variety of participating agencies drawn from the sector agencies,

training schools, educational institutions, and the NGO community in undertaking different initiatives.

Partner ITN institutions are involved in training (of trainers and sector professionals), promotion of informed sector policy debate, information dissemination and sector advice, particularly in the field of training and human resource development. Properly developed, a national ITN Network is a tool for capacity building in-country, promotion of sector policy debate, and skill enhancement, and a source of support for major sector investments.

Today, the ITN has partners and activities ongoing or initiated in over 30 countries. Countries in which there are established ITN country centers are Ghana, India, Indonesia, Philippines, Uganda, and Zimbabwe. In addition, regional centers in Kenya and Burkina Faso support initiatives in East and West Africa, respectively.

During the past year, the ITN headquarters function has been firmly re-established, creating a managerial

framework for sound development of the Network. A strategy for ITN development<sup>1</sup> and for capacity building<sup>2</sup> within the Program was mapped out. Moreover, a lively debate among ITN members was initiated during two regional meetings with the goals of reorienting the Network to better address present challenges and refocusing the mandate of the ITN. English, French and Spanish productions of the ITN modules were completed, mass produced, and widely distributed.<sup>3</sup> Finally, ITN worked to establish a partnership with the PROWWESS program whereby centers incorporate participatory approaches and gender issues within their training activities. (See map at left for details of ITN country-level activities).

<sup>1</sup>"Consolidation and Development of the Network, Strategy for the ITN – FY92-94," September 1991.

<sup>2</sup>"Building In-Country Capacity: INUWS Strategy for Institutional and Human Resource Development, FY1993-3," May 1992.

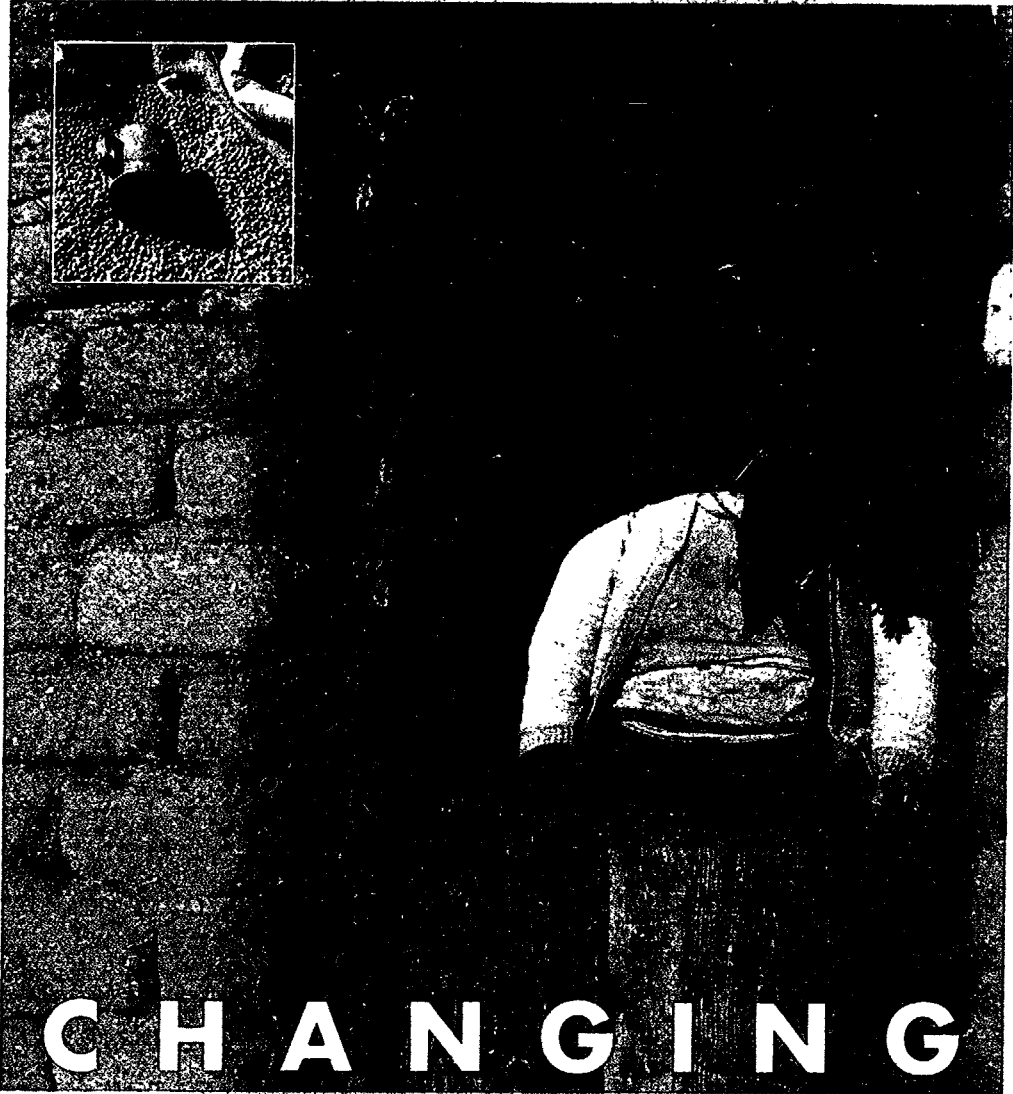
<sup>3</sup>Arabic adaptation and translation of core modules near completion. Portuguese, Chinese and Bahasa translations are completed. Production will proceed on these versions only when demand is identified.





# PROGRAM PROFILES





**C H A N G I N G**

LIVES  
IN THE  
ALTIPLANO

**L**a Palca, Bolivia — Water is precious on the arid Bolivian Altiplano, and settlements are always located where there is a steady source of supply. But for many years, the people of the tiny village of La Palca have been unable to drink from the nearby Mala River. Instead, they have watched it flow downstream, an orange ribbon contaminated by lead, arsenic, and mercury wastes from mining.

Hundreds of remote villages high in the Bolivian Andes share the problem of unsafe water. The little available surface water is often polluted from unregulated mining or harmful microbes and bacteria. Inadequate sanitation reinforces the cycle of contamination that contributes to high child mortality. Nearly half of all children born in this perilous environment die before they are five years old, many from waterborne diseases, especially diarrhea. The average life span is only 34 years.

Fortunately for the 15 families in La Palca, life is changing. Among the old stone buildings and adobe houses are newly constructed latrines. A new well-head and handpump stand near the school grounds. For the past several months, the community has been working to construct these facilities with the help of a project known in the local Quechua dialect as "Yacupaj," meaning water.

The Yacupaj project is assisting remote rural communities of 50 to 250 people in Bolivia's Potosi Department that are willing to contribute to and maintain improved water and sanitation systems. When the \$4 million project is completed in 1994, more than 75,000 people in small villages scattered across three rugged provinces in the southwest of Bolivia will have benefited. However, Bolivian project director

Rafael Vera does not like to concentrate on the numbers.

"We want to reach as many people as we can," he says, "but this project emphasizes sustainability first. The community must see its own needs being met by the facilities members build with our help." Mr. Vera explains that changing community behavior is most important. This means educating individuals and families about good hygiene practices with water and sanitation.

Extension workers attached to provincial Yacupaj teams help to create demand for improved water and sanitation in small rural communities, assisted by local volunteers. Teachers, rural health workers, traditional leaders, government representatives, and auxiliary nurses assist too, visiting settlements to discuss health and hygiene objectives.



Funded by the Dutch government and implemented by the UNDP-World Bank Water and Sanitation Program, the Yacupaj project is also cooperating with the various government institutions and nongovernmental organizations that

deliver services at the provincial level. For example, the Tomas Katari Polytechnic Institute, which operates a large vocational school in the Chayanta province, has become a partner in the technical and social aspects of project implementation. Provincial teams assist by documenting results and collecting unit cost information needed to review the replicability of different approaches. Participating institutions gain valuable experience, learning which factors are crucial to successful service delivery and developing approaches that they can implement widely.

Making initial contact with local inhabitants takes time. During the rainy season, rural roads become impassable and main arteries are often cut by swollen rivers for days at a time. Extension work comes to a halt for many seasonal activities such as harvests, long-distance trade, and fiestas. When

extension workers first came to La Palca to promote handpumps and latrines, community members were skeptical.

"Villagers are often reluctant to work with us," says Mrs. Chumasero, who supervises extension efforts in villages



throughout Chayanta. "They are very busy with their daily activities, and it takes us two to four weeks just to establish a relationship with the community." Promoters begin by familiarizing villagers with overall goals and improvements. Then social and technical workers educate and assist community members in the tasks of selecting, building, and maintaining the water and sanitation systems.

Once convinced of the benefits of improved services, La Palca residents decided to request assistance, elected a leader to represent them, and formed a water committee. The first step was to diagnose needs and determine the community's ability to pay. Then a construction supervisor and water resources assistant worked with the water committee to design feasible technical solutions. Under the project, a community normally decides which water system it prefers, and each family chooses between a ventilated improved pit (VIP) and a pour-flush latrine. La Palca villagers made their selection: a Yaku handpump for the well, a VIP latrine for each family.

The community provided the labor and materials to build the facilities and also paid for transportation. The project paid for 70 percent of materials not available locally, as well as for the contractor, who was selected by the village water committee. Members chose an artisan from the community who received additional training to do the skilled work.

When construction was completed, the residents of La Palca had secured safe drinking water for less than \$12 per family. Ongoing hygiene education, provided at the village center in the shade of the old Spanish-style adobe church, ensures that community



members will receive the greatest benefit from the new facilities.

Yacupaj social workers have discovered that their success in securing community involvement is partially due to the underlying cooperative social structure in Andean cultures. The *ayllu*, a network of relationships and mutual obligations within a group, orients these cultures toward community self-help. A single *ayllu* can comprise thousands of people and encompass thousands of square kilometers, governing everything from farming and taxes to rituals and festivals.

Efforts to educate highland women and children, the primary users of water, have also been quite successful. One reason for this, according to Alan Carroll, who coordinates work in Bolivia for the Program, is that women hold many positions, both at the project's headquarters and in the field. For example, women have devised most of the materials for community education, writing them not only to inform but also to entertain. The lively stories and identifiable characters help villagers learn about health and hygiene practices and different types of water and sanitation systems.

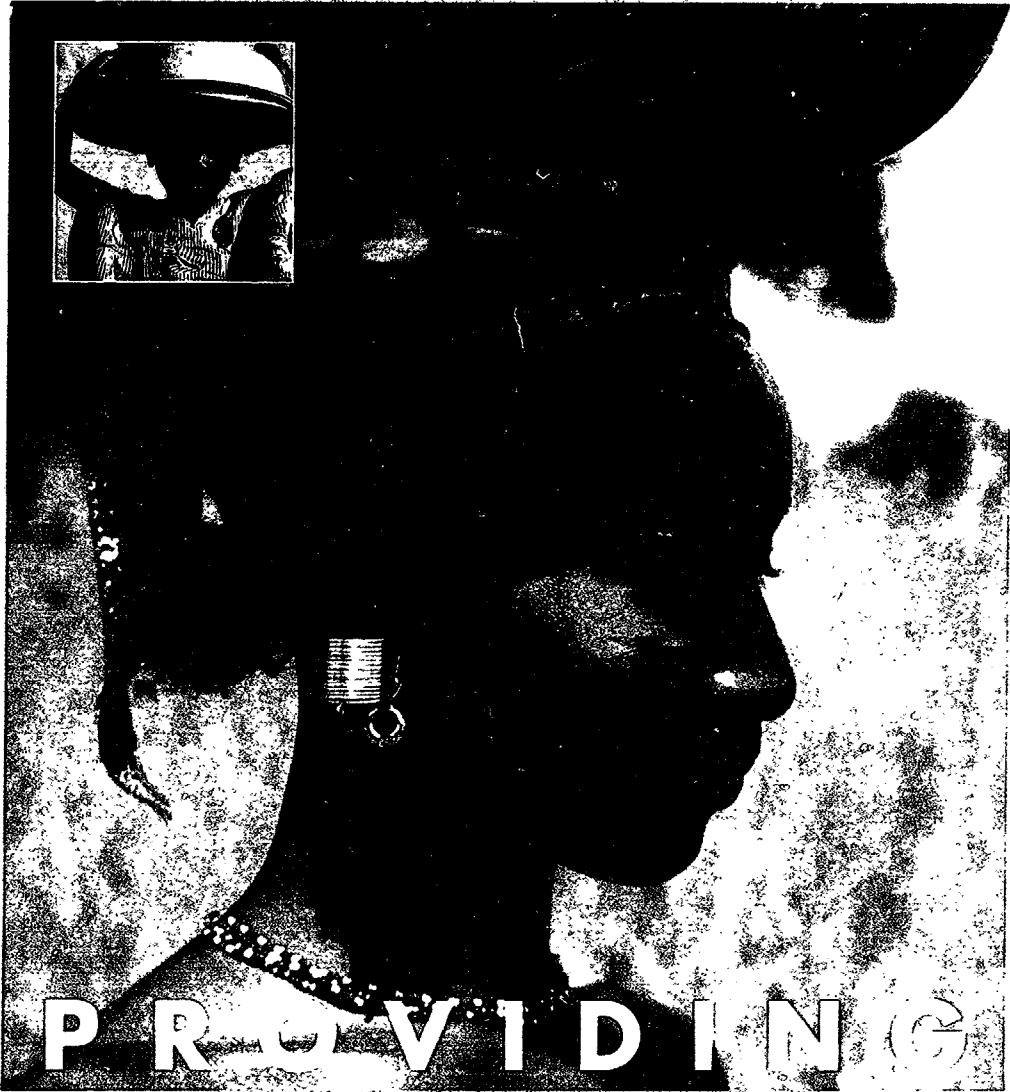
In the villages, women play a key role in the difficult job of persuading communities to improve hygiene. Extension officer Marta Diaz promotes the project to isolated communities in

the small railroad stop of Chita, in Quijarro province, riding her motorcycle through the bitter-cold wind to visit enclaves of as few as seven families. "Women are very interested in making improvements, but involving them is hard because they spend long hours working," she says.

Taquiza Macha is another of the original communities that benefited from Yacupaj activities. Like La Palca, it is a tiny village of farm families, 20 homes and a small school along a rutted mountain road. For years the community got its water from a small spring that was also a source of cholera and other waterborne diseases. With the help of project Yacupaj, the families in Taquiza Macha capped the spring, channeled uncontaminated water to four public standposts and built three latrines on the school grounds.

It is early dawn. The village is nearly empty. Almost everyone is away, trading or herding. An old couple cooks breakfast over a tiny fire, peering curiously at a group from project headquarters that has come to inspect the latrines. Wrinkled yet resilient, their faces bear witness to a difficult life. Nearby, two children trundle over the windswept barren land to draw water from one of the new standposts. With safe water and sanitation close at hand, their lives promise to be a little less perilous.





PROVIDING

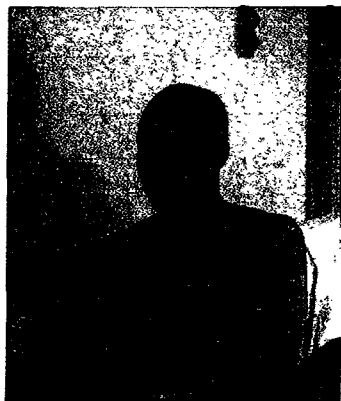
SANITATION  
SERVICES  
THAT  
PEOPLE  
WANT

**K**umasi, Ghana. Francis Okyere Darko is an unemployed factory worker living in a low-income residential community on the outskirts of this sprawling, dusty city of 700,000, Ghana's second largest. But temporary economic hardship hasn't discouraged him from dealing with a pressing problem on the homefront.

The Darko family occupies one room of a large, single-story rectangular compound that houses eleven other tenants. And until last year, all fifty-odd residents depended on one simple "pan" latrine in the corner of the courtyard, a design that required frequent emptying by conservancy workers paid by the city.

"When the attendants were laid off, the latrine became useless," explains Mr. Darko. "We were all forced to use the public latrines near the market, or simply relieve ourselves in the bush. The public facilities were filthy and unhealthy, and we had to stand in line and pay each time." An estimated 8,000 people living in Ayigya Zongo area of Kumasi relied on the same overused and badly maintained public toilets.

For Mr. Darko and his co-tenants, a solution was needed much closer to home. Luckily, Ahmed Iddrisuh, a local member of the Committee for the Defense of the Revolution, had an option to offer — the Kumasi ventilated improved pit (KVIP) latrine. For a down payment of about \$55 and a \$10 monthly installment, Mr. Darko and his neighboring tenants are now enjoying a clean, odor-free, low-maintenance sanitary disposal facility in their compound. A two-year loan to



finance the system came from a revolving fund managed by a community sanitation committee. Latrine construction was carried out by a local private contractor.

With support from locally formed sanitation committees, 23 households in Ayigya Zongo have built new KVIPs during the past year. Moreover, in three economically diverse communities around Kumasi, hundreds of new and improved home latrines are now under construction or in regular use. The effort is part of a citywide initiative to meet the growing demand for better sanitation

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**"KUMASI'S CITY GOVERNMENT  
SIMPLY DOESN'T HAVE THE  
CAPACITY TO PROVIDE  
SANITATION SERVICES DIRECTLY  
TO THE POPULATION."**

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services through a variety of low-cost, market-oriented solutions.

"Kumasi's city government simply doesn't have the capacity to provide sanitation services directly to the population," says Ato Brown, director of the Kumasi Sanitation Project, a \$1.1 million initiative funded by UNDP and executed by the World Bank. "We're

trying to help re-organize municipal institutions so they can better facilitate service provision through the private sector."

Roughly three quarters of Kumasi's population do not have adequate sanitation

facilities: 40 percent rely on overused public latrines, another 25 percent use unhygienic pan latrines, 5 percent use traditional pit latrines, and about 5 percent defecate in the open. Moreover, as much as 90 percent of the waste removed from public and domestic pan latrines was being improperly disposed of in nearby streams, drains, and vacant lots within the city.



Nowhere is the human waste problem more acute than Moshi Zongo subdistrict, where

six to eight thousand people — most of them immigrants from Mali and Burkina Faso — crowd a denuded and eroded area on the outer fringes of Kumasi. Some of the rented multifamily dwellings have water connections, but most people buy water from neighbors with yard taps. Few have adequate sanitation facilities. The poorest children use the local waste dump for their latrine. Gullies filled with grey wastewater and household garbage run down the alleyways between the tightly clustered homes. Waterborne diseases are rampant.

Yet Chamago Toure, a poor shopowner and trader from Mali, has invested a substantial amount of his own savings and monthly earnings in an improved household KVIP latrine. "Our old latrine was illegal, unsafe and unhealthy," says Mr. Toure. "I excavated the pit for the KVIP myself. Then with a loan from our sanitation committee, I paid a contractor to complete the construction. Now I'm collecting the monthly fees from each of the families in

my compound." It will take about two years for Mr. Toure's 10-family compound to pay off their investment completely. Yet despite the additional financial burden, dozens of households like his throughout Moshi Zongo are emulating the sanitation improvements.

Rapid population growth and a virtual collapse of city-run waste management services caused a crisis in the 1980s, according to Project Director Ato Brown. "Septic tanks were overflowing, drainage systems were blocked, public latrines were left to deteriorate, city waste removal equipment was disfunctional, and mountains of garbage and human waste had accumulated all around the city," he explains.

Initial efforts to deal with Kumasi's mounting sanitation crisis began in 1986 when Head of State Jerry Rawlings visited the city to initiate a mass voluntary garbage evacuation campaign. Concerted efforts to confront the larger institutional problems began with the Kumasi Sanitation Project in 1989.

"Four sanitation master plans had been produced for Kumasi since 1951, but none had gotten through even the first stage of implementation," says Albert Wright of the World Bank's Water and Sanitation Division in Washington, D.C. "After 40 years of traditional master planning based largely on a single high-cost technology, the city still had no comprehensive sewerage system and most of the city remained unserved. A major rethinking was in order."

Rethinking began by eliciting the needs and preferences of people in various communities in Kumasi. A "willingness-to-pay" survey conducted among more than 2,000 representative residents determined their preferences for various sanitation technologies and their

financial resources to support new systems. Two findings were most revealing: families on average were willing to pay about the same amount for sanitation (\$1.60 per month) as they were for rent, electricity, or water; and the poorest people, who used public latrines, were spending more than those with household systems and would pay more for improvements in their homes.

A multidisciplinary team of specialists from the Ministry of Health, Department of Community Development, Kumasi Metropolitan Authority, and the Program then began work on a home latrine program to test whether people in three varying neighborhoods would be willing to cooperate and invest their own money in new or improved facilities.

"The response to our outreach campaign has been extremely encouraging," says Anthony Mensah, facilitator of the home latrine building program. "In the three pilot areas a total of 155 new or improved units have been constructed through the revolving loan schemes serving almost 4,000 users with better, safer household facilities."

Major rethinking was also called for in the management of Kumasi's public latrines, which were suffering from years of maintenance neglect. An experiment was launched in 1990 to determine if private companies could do a better job than the city administration. Twelve latrine sites serving more than 20,000 people daily were selected for franchised management, and five private contractors took charge, paying the city 15 percent of their total revenues.

"The conditions of these public latrines were deplorable when we took them over," says Albert Joseph, a local entrepreneur whose small company now manages a sanitary complex used by



almost 5,000 people a day next to Kumasi's downtown zoo. "Now the tanks are emptied twice a week and insecticides are applied regularly to control disease. Our customers are much happier and the city is making money where it used to lose it."

Joseph's company won the bidding against four other firms to manage three latrine complexes and already has 28 full-time employees, including several former city workers. He has recouped most of his investment in a suction truck and is planning to invest in equipment for collecting refuse house to house.

The success of the home and public latrine pilot projects has led to development of a larger "Strategic Sanitation



Plan" for Kumasi for the 1990s. Under the leadership of the Kumasi Metropolitan Authority and with support from UNDP and the World Bank, the scheme aims to provide the entire population of the city with improved sanitation services by the end of the decade.

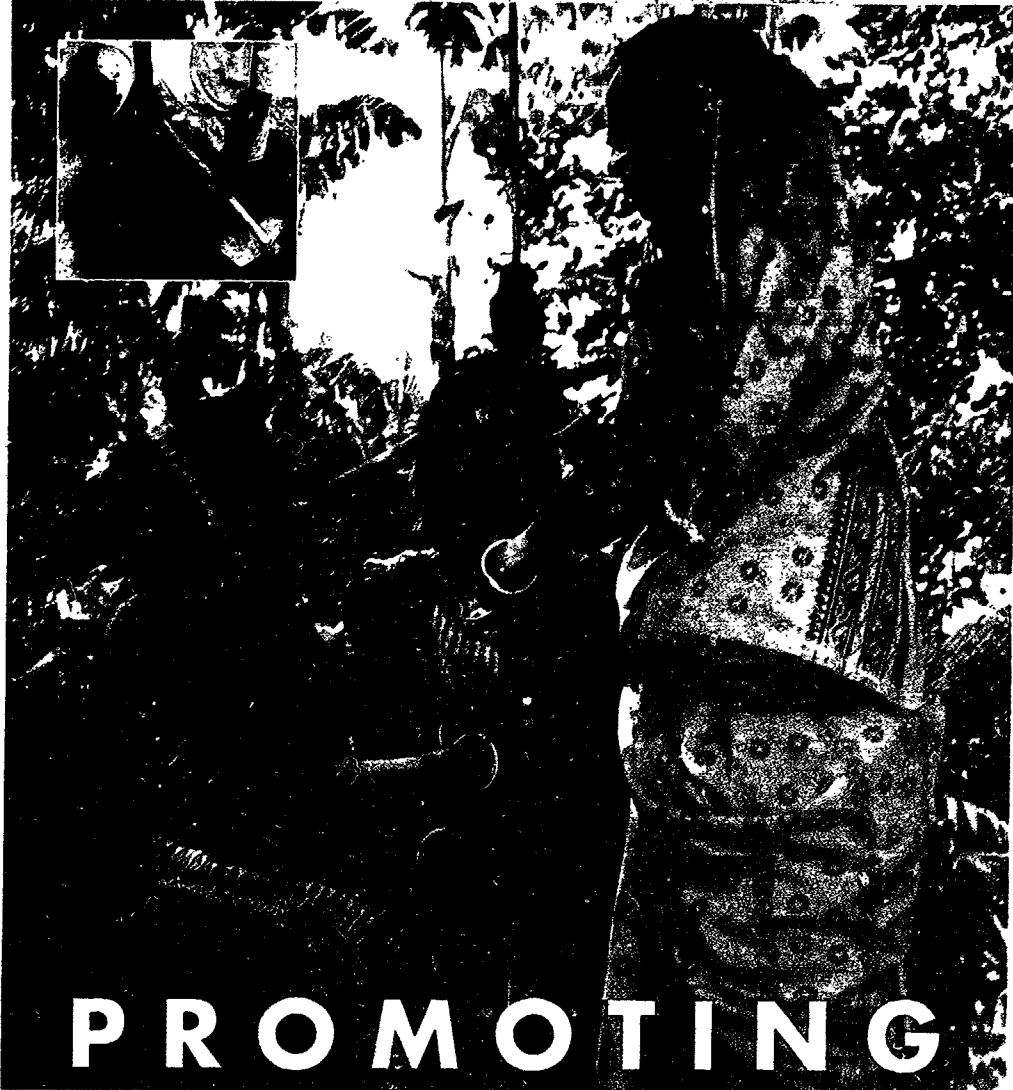
Unlike previous plans, the new approach will employ a range of technological solutions — from conventional and simplified sewerage to KVIP latrines — to address various economic and demographic conditions.

"By the end of the century, at least one quarter of the city will have to be sewered to deal with the heavy population density," says Ato Brown. "Household solutions are what most people

want, so we're planning to reduce use of public latrines down to just 10 per cent of the population. In the next eight years we hope to have 350,000 people using KVIP latrines that they have paid for largely themselves."

Successful adoption of the new technologies will take strong political leadership. "Many metropolitan assemblymen want to see flush toilets installed in their communities," says Kumasi Metropolitan Secretary Captain A.Y. Mensah. "But water supply problems are already serious in some parts of Kumasi, and the KVIP must be considered as the most appropriate and affordable technology for much of the city."

Ghana has been taking bold steps reform its economy and change the role of government in basic services from being a provider to a promoter. Despite the difficulties of change, communities throughout Kumasi are demonstrating that better sanitation is a priority for which they will pay. With its new, demand-oriented approach, together with guidance and support from UNDP and the World Bank, the city is now better prepared to help meet those needs.



**P R O M O T I N G**

**SUSTAINABLE  
TECHNOLOGIES**

**M**irzapur, Bangladesh. For nearly a decade, foreign development specialists descended upon this tranquil, palm-shaded farming village of 5,000 people, clustered on one side of the highway 60 kilometers north of Dhaka. Mirzapur's dire poverty, poor health, and proximity to the capital made it a logical choice for testing experimental water and sanitation technologies, and for studying their impacts on disease.

Throughout the 1980s, villagers in Mirzapur cooperated with engineers and social scientists. Over time, the village gained a reputation as a development showcase for visitors from far and wide.

Today, the roadside project office is closed, and only a few concrete latrine slabs disintegrating near the roadway attest to the former concentration of activity. Village life has returned to normal, and the inevitable question lurks: What was left behind when the experts went away?

Fortunately, there have been substantial improvements in water supply and sanitation services in Mirzapur — progress that appears to be sustainable.

"Our handpump was installed more than six years ago and still serves 50 people with safe drinking water," says Minu Rani Das, a poor mother of four and leader of a local handpump maintenance group. "Whenever the pump fails, we know how to repair it, or where to go for help. We never drink contaminated water anymore."

Neither is Ms. Das exceptional. Neighboring villagers confirm that regular use of handpump water for cooking and washing is the norm. More than eight years after a group of international aid agencies and a local research institute began testing low-cost handpumps and latrines here, health and

environmental conditions have improved markedly. Household compounds are swept clean of litter, improved family latrines are in good working order, diarrheal and skin diseases have been substantially reduced, and cholera virtually eliminated. At any given time, 96 percent of the heavily used Tara handpumps are operational and well maintained, in large part by village women with basic repair skills like Ms. Das.

Mirzapur exemplifies the water and sanitation challenges that the Bangladesh government and external and local support agencies are trying to address nationwide. With over 110 million people spread across 143,998 square kilometers, Bangladesh has one of the highest population densities in the world — 700 people per square kilometer. Four months each year the country is inundated with flood waters, and pathogens spread widely and quickly, causing enormous health risks. More than 250,000 children die annually from diarrheal diseases alone, according to the Health Ministry. The vast majority of the rural population is illiterate, surviving on an annual per capita income of less than \$200. Malnutrition affects up to 80 percent of the infants and children in the country. Introducing better water and sanitation facilities, and maintaining those improvements under such conditions, is no easy task.

"We carried out an intensive educational campaign to help build community-managed services in

Mirzapur," says Zia us-Sabur of the NGO Forum, a consortium of private development agencies working to improve rural water and sanitation. "Gaining community acceptance and support for the new technologies required a series of motivational efforts in the villages over several years."

Finding technologies that match peoples needs and means was equally important to success. "For new technologies to be adopted and effectively used in Bangladesh, they must be readily accessible, very cheap, and very easy to maintain," says Haroon ur-Rashid, manager of the UNDP-World Bank Program in Dhaka, which played a major role in low-cost technology development. "Fresh groundwater has been available at relatively shallow depths throughout most of the country, making low-cost handpumps a viable solution. But making sanitation accessible,



affordable, and acceptable to the rural poor remains a major problem."

Handpumps have been in use for more than 100 years in Bangladesh. Beginning at the time of independence in 1971, concerted efforts were made to increase the number of tubewells using



handpumps. Between 1971 and 1990, the number of public tubewells nearly quadrupled to almost 800,000 due to the efforts of the government, UNICEF, and other international and local development agencies. The first handpumps used a cast-iron design. Subsequently the Tara, made largely from PVC plastic, has become popular. Rural water supply coverage reached an impressive 59 percent by 1990, far better than the 38 percent coverage in urban areas. Recent surveys show that somewhere between 80 and 90 percent of the public wells are functioning at any given time.

Despite ongoing efforts by the government and the aid community,

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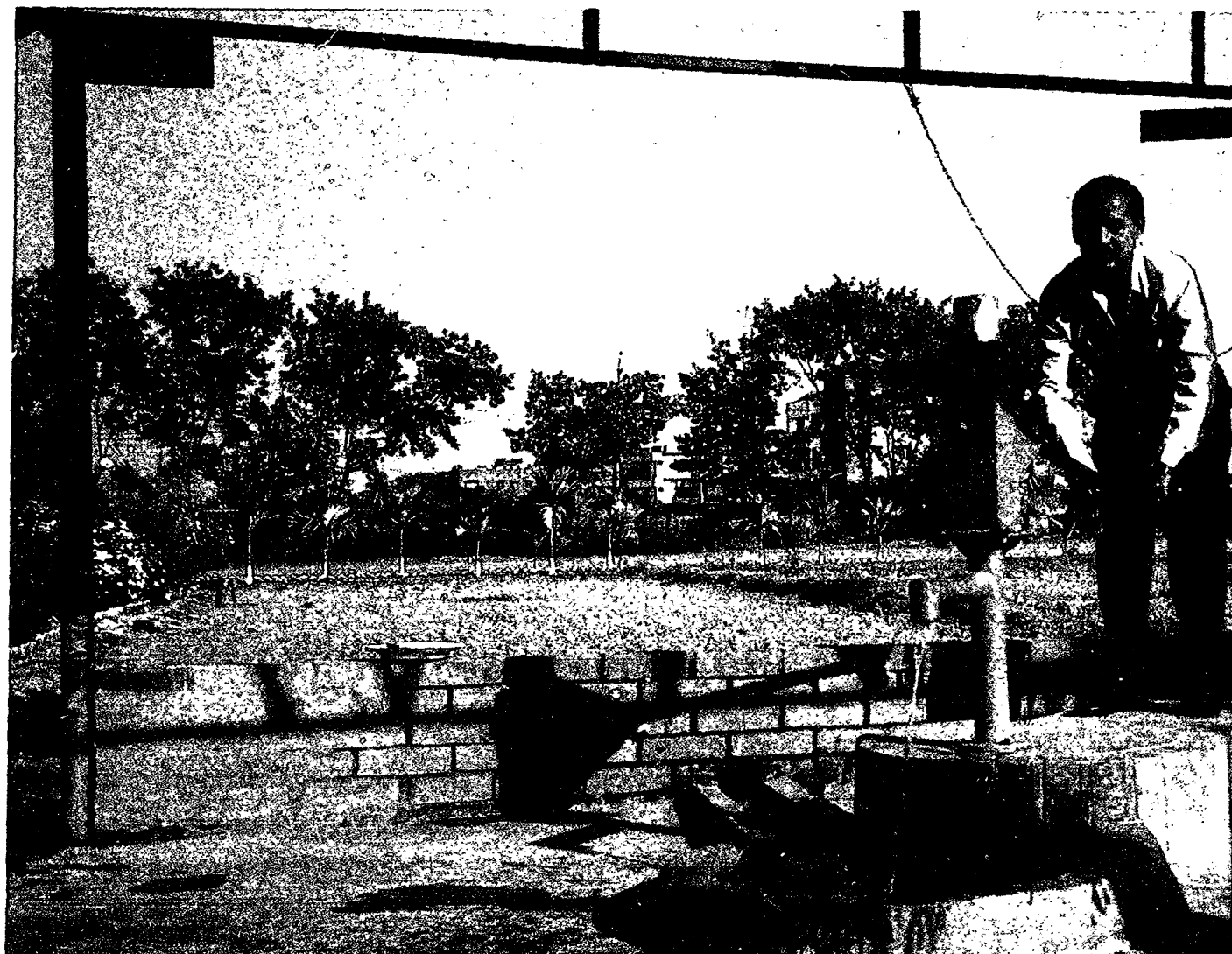
WITH ITS EXTREME POVERTY,  
 POOR SANITATION CONDITIONS,  
 AND RAPID POPULATION GROWTH,  
 BANGLADESH IS UP AGAINST  
 TOUGH ODDS IN IMPROVING  
 RURAL LIVING CONDITIONS.

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sanitation facilities in rural Bangladesh remain severely deficient, perhaps explaining the widespread persistence of water-borne diseases and alarming rates of infant mortality (122 per 1,000 live births). As recently as 1988, only four people in a hundred living in rural areas

used a sanitary form of waste disposal. Most defecated in the open or used crude pit latrines.

Pilot projects to demonstrate and promote simple pour-flush latrines have been beset with problems. Beginning in the 1970s, the government tried distributing concrete latrine slabs free, but most of the newly built facilities fell into disuse. Next, UNICEF began selling slabs at a subsidized price. This campaign had limited success. Acceptance was gained mainly among the more literate, better-off sections of the rural community. Since then the government and UNICEF have set up centers throughout the country to produce the



components of a pour-flush, water sealed, single-pit latrine: five concrete rings and a latrine slab. These components are sold at a subsidized price of about \$7. Projects to demonstrate twin-pit design latrines have met with very limited success in poorer villages. With construction alone costing more than \$60, this design has simply proven too expensive for the majority of the poor.

Building on what has been learned at Mirzapur, and through other successful pilot projects, the government, together with UNICEF, the Swiss Development Corporation, and the Danish International Development Agency, recently launched a nationwide campaign to help

build demand for low-cost sanitation through mass education. This effort will complement new rural water and sanitation projects backed by financial and technical assistance from the World Bank, the Program, the World Health Organization, and bilateral agencies. These projects are promoting greater involvement of the private sector in both manufacturing and marketing low-cost sanitation materials.

Alongside the rural sanitation challenge, Bangladesh is faced with growing problems of water-table depletion and saltwater intrusion, especially during the dry season when large volumes of groundwater are pumped out for irrigation.

"In 1985, less than eight percent of the public handpumps in rural areas became nonfunctional during the May-June dry season," says Abu Jafar Shamshuddin, a water specialist working with the Program in Dhaka. "In 1990, the portion of non-working pumps had risen to 15 percent, and by the year 2000 it could reach as high as 50 percent."

Foreseeing this danger, the government together with the donor community has embarked upon a large-scale effort to replace the shallow suction pumps with the Tara, which reaches deeper into the water table. This has meant rapidly boosting production and installation of Tara pumps.

"Almost 20,000 new Taras are being installed across the country each year," says M. Hanisur Rahman, of the Mirpur Agricultural Workshop and Training School (MAWTS), the nonprofit institute where the Tara design was developed and tested. Now there are several private firms competing for procurement bids, and production should approach 50,000 annually by 1995.

New research is also under way at MAWTS to test further variations on the basic Tara design that would allow it to tap water at even greater depths. Components of the lever-action Afridev design, developed in East Africa, are also being matched with the Tara to come up with a new hybrid that is cost-effective, easy to maintain, and able to deliver water throughout the dry season.

With its extreme poverty, poor sanitation conditions, and rapid population growth, Bangladesh is up against tough odds in improving rural living conditions. Moreover, rapid urbanization is accelerating the deterioration of conditions in the major cities and towns. But through close donor-agency collaboration, concerted educational efforts at the grass roots, and greater reliance on private-sector initiatives, the country has made progress in adopting sustainable rural water services. Now the lessons learned in Mirzapur and other successful experiments must be adapted to providing rural sanitation, and to improving services in Bangladesh's increasingly congested towns and cities.





# PROGRAM STRUCTURE AND SUPPORT



**T**he Program is managed by the Transportation, Water, and Urban Development Department of the World Bank. Activities at Program headquarters in Washington, D.C. include monitoring of projects, coordination of field activities, conducting applied research, dissemination of information, donor relations, and administration.

Four regional water and sanitation groups (RWSGs) directly manage all field activities and serve as a source of technical assistance for governments, NGOs, and other external support agencies. Located in Abidjan, Nairobi, New Delhi, and Jakarta, the RWSGs are headed by regional managers and staffed

by interdisciplinary teams of experts drawn from the World Bank, UNDP, and other donor agencies. In countries of Program concentration, national teams have been recruited and country coordinators posted. During this past fiscal year, the Program joined with several other agencies to establish a new regional network for Central America in Guatemala, which started operations in mid-1992. Special efforts are currently under way to strengthen the mix of skills within the present RWSGs, especially in human resource development (HRD).

The relationship between the International Training Network and the Program was further strengthened by the creation of a new HRD focal point in

Washington effective July 1991. Through better coordination at headquarters, the objective is to make the ITN a more effective tool of the Program. And as each RWSG builds its human resource capacities, the relationship between them and the ITN can be further solidified. Finally, PROWESS moved from UNDP's headquarters to be integrated fully with the Program and based in Washington.

## PROGRAM FINANCING &amp; ALLOCATIONS

**Sources of Program Funds**

The Program has developed a base of financial support that is well suited to its global structure and its diverse range of field activities. UNDP is one of the Program's two managing partners and is the largest single source of funds. During 1991-92 UNDP provided almost 69 percent of the \$15.5 million utilized by the Program. These funds came principally from UNDP's Division for Global and Interregional Programmes

(DGIP), the Regional Bureau for Africa (RAF), and from UNDP country program funds in 14 countries in Africa and Asia. Smaller amounts were provided by three other UNDP regional bureaux. Contributions of almost \$5 million from nine bilateral and organizations made up 27 percent of the Program's budget. About 5 percent of the total was provided by the World Bank for management support.

Most of the countries where the

Program is active make substantial contributions, usually as in-kind inputs of national staff, office space, and other support. Some host governments make direct cash contributions, as is the case in Nigeria, where both the federal government and five state governments are supplementing UNDP and Dutch project funds from their own resources. Increasingly, funds for water supply and sanitation projects are being generated locally from project beneficiaries.

## SOURCES OF PROGRAM FUNDS (\$'000)

	Through December 1991		Estimated 1992
	Contributions	Disbursements	
<b>UNDP</b>			
Global	5,323	5,286	173
Interregional	27,498	26,545	3,430
Regional Africa	11,919	9,573	944
Regional Asia	2,778	2,658	550
Regional Europe	139	96	0
Regional Latin America and the Caribbean	625	186	100
Regional Arab States	677	247	224
Country Projects	18,823	12,727	3,638
UNDP Subtotal	67,782	57,318	9,058
<b>Bilateral Agencies</b>			
Canada	3,314	3,120	167
Denmark	1,437	1,058	268
Finland	931	847	12
France	862	809	90
Germany	2,516	2,181	40
Italy	300	300	0
The Netherlands	8,420	2,933	2,589
Norway	8,072	5,138	1,148
Switzerland	5,326	3,453	1,253
United Kingdom	1,006	752	190
Bilateral Agencies Subtotal	32,184	20,591	5,757
<b>Others*</b>	1,891	1,569	50
<b>IBRD</b>	3,787	3,787	825
<b>GRAND TOTAL</b>	<b>105,644</b>	<b>83,265</b>	<b>15,690</b>

\*Includes government contributions from India, Brazil, Tanzania, Malawi and Nigeria

Note: Totals shown for bilateral and other donors differ from legal agreements because of exchange rates.

## ALLOCATION OF PROGRAM FUNDS

Funds support activities in some 40 countries, in the four Regional Water and Sanitation Groups, and at the Washington, D.C. headquarters. There are three main types: In-Country funds for specific projects; Regional Core funds; and Interregional funds, for activities at both the regional and global levels.

*In-Country Operations*

These operations are normally supported by national project funds, except for initial and short-term activities. In mid-1992, the Program was executing UNDP-financed projects in 12 countries and components of UNDP projects in China (executed by the government) and Madagascar (executed by UNDP) (see table: Technical Assistance Projects Implemented by the Program). The Dutch government provided cost-sharing contributions to projects in Bolivia, Indonesia, and Nigeria. The Norwegian government added cost-sharing to a

project in Zimbabwe and financed in-country activities in India, Nigeria, and Ethiopia as components of interregional project INT/87/014.

*Regional Core Operations*

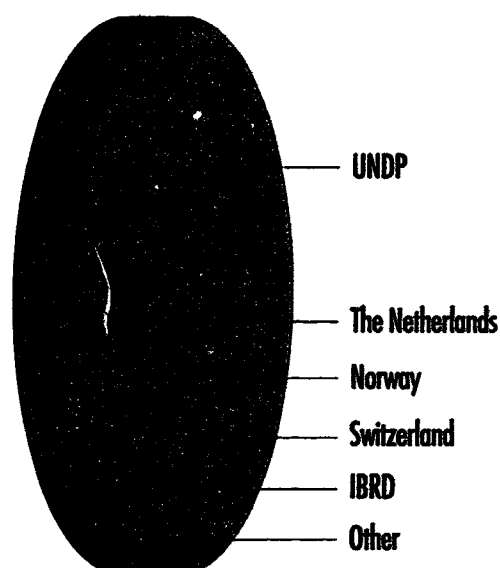
These support the pivotal level of Program operations. From the country perspective, they allow the Program to develop and support a series of in-country operations, many of which are financed solely from in-country sources. From a regional perspective, the core serves as an organizational umbrella, broadening the focus of country operations and projects into an integrated program with wider focus, outlook, and strategy designed to address issues on a regional basis. The regional core funds also support the intercountry exchange of knowledge and experience and, through the RWSGs, permit the Program to operate more efficiently from a regional base, close to participating

countries.

In Africa, the Program has enjoyed strong core funding from UNDP's RAF supporting the Abidjan and Nairobi RWSGs over the past three years. This core financing, currently about \$800,000 per year, has been instrumental in building both regional and country operations. It has also leveraged substantial amounts of bilateral financing, both for regional core operations (more than \$1.0 million per year) and for in-country operations (described in the Bilateral Sponsors section).

In Asia, DGIP has provided UNDP regional core financing, and four bilaterals (Denmark, Norway, Switzerland, and the United Kingdom) have funded experts working in the RWSGs. Through 1991, UNDP's Regional Bureau for Asia and the Pacific (RBAP) had supported the Water and Sanitation Sector Development Team (SDT), managed by the World Bank's Asia

SOURCE OF PROGRAM FUNDS CY1991 (\$ IN MILLIONS)



	\$ m	Share
UNDP	10.62	69%
Canada	0.07	0%
Denmark	0.43	3%
Finland	0.17	1%
Germany	0.05	0%
The Netherlands	1.78	12%
Norway	0.98	6%
Switzerland	0.54	4%
United Kingdom	0.18	1%
IBRD	0.64	4%
<b>Total</b>	<b>15.46</b>	<b>100%</b>

Technical Department and focused on improving the operations of urban utilities. Beginning in 1992, RBAP has approved a new five-year project (RAS/92/001 — Water and Sanitation for the Poor in Asia and the Pacific) to provide core support to the Program's regional operations in Asia.

In Latin America and the Caribbean, core funding to develop in-country and regional activities has come primarily from DGIP. UNDP's Regional Bureau for Latin America and the Caribbean is helping to finance a regional collaborative program in Central America and providing funds to prepare a regional effort in South America. Likewise, in the Middle East and North Africa, UNDP's Regional Bureau for the Arab States and Europe has financed several activities in selected countries (see the MENA regional report).

**The Interregional Core**

The Interregional Core supports the umbrella organization that unifies the global program and coordinates the operations of the four regional and 12 country operations. It comprises staff and activities located primarily at World Bank headquarters and is responsible for overall Program planning, management and administration. The Interregional Core funds the staff involved in global coordination and backstopping of the field operations, the ITN, and PROWWESS. It also supports applied research, global synthesis of experience, and dissemination and exchange of information of knowledge and experience.

DGIP continues to provide most of the funds for the interregional core. The World Bank contributes \$600,000 per year in management support costs. Several bilaterals, notably Norway and Switzerland, have contributed to the support of core interregional functions.

**Range of Program Activities**

Country-level activities include sector advisory support, human resource development and training (including the ITN and PROWWESS), promotion of affordable technologies, and investment project support. Interregional activities include applied research and global synthesis, and dissemination and information exchange.

Globally, sector advisory support — helping countries to build an enabling environment for development — and demonstration activities utilize most Program resources. Over the next few years, some of the staff resources directed to these two areas will shift toward new areas as the Program increases its emphasis on capacity building (human resource development, training, PROWWESS activities) and on applied research and global synthesis through structured learning.

**PROGRAM ACTIVITIES BY REGION\***

CY91 (US \$000)

Africa	4,409
Asia	1,707
Latin America and Caribbean (LAC)	20
Arab States	102
<b>Total Regions</b>	<b>6,238</b>

\*Includes UNDP regional and country projects



## FINANCING FOR THE FUTURE

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**T**he diversity of Program funding sources and mechanisms adds complexity to financial planning, monitoring, and reporting to donors. The 1991 Program assessment recommended two key measures to simplify the financial support and management of the Program. First, consolidation of UNDP support into a rolling five-year "indicative planning subvention" could assure minimum levels of funding for planning and staffing purposes. It could also simplify financial management by reducing the number of separate projects. Second, the establishment of an advisory body would provide a regular forum for analysis of financing needs and review of Program expenditures. Donors would have the opportunity to consider their contributions in the context of an overall Program financing strategy, and the Program would need to make fewer contacts with individual donors.

The Program has implemented both these recommendations; the Advisory Panel has been activated, and new funding proposals to cover the 1992-96 period have been submitted and tentatively approved. The Program will pursue several other routes to a simpler and more stable funding process. A Program trust fund will be established (with UNDP or the World Bank) to receive financial contributions. To the extent possible, these contributions will not be tied to specific activities but directed instead to overall Program support, with oversight coming from the Program advisory panel.

Within the Program's overall objectives, support can be tailored to contributing agencies' development philosophies and comparative advantages. The Program's objective of finding new approaches to reaching the poor are complementary to UNDP's preinvestment mandate and its position as a major

source of technical assistance. UNDP support will continue to concentrate on core support at the regional and headquarters levels, and project-level financing for country programs. The World Bank, as the Program's other managing partner, will provide considerable resources in the form of operational staff-time for the design and preparation of programs targeting the poor, and substantial investment financing for these projects. Bilateral agencies have proven to be remarkably flexible in financing a broad range of Program activities and appear committed to continuing to do so. Bilateral contributions are especially important in supplementing regional core operations and to funding country activities, capacity building initiatives, and selected applied research tasks.

## PROMOTING AFFORDABLE TECHNOLOGIES

For more than a decade, the Program has been at the forefront of research and development of affordable water and sanitation technologies. The Tara and Afridev handpumps, improved VIP latrine designs and simplified sewerage are among the innovations resulting from this work.

Today, the Program's Technology Promotion Unit, based in New Delhi, and other Program staff at headquarters and in the field, are carrying out research, development, and promotional activities on several important technological fronts:

- Low-cost wastewater treatment and reuse, and the use of a floating plant (Duckweed) to convert nutrients into protein.
- Natural-fiber-reinforced laminate construction using inflatable vinyl molds to make water tanks, latrines, and other products.
- VLOM handpump designs, manufacturing, quality control, and maintenance systems.
- Encouraging governments to promote efficient private-sector manufacturing and standardization of handpumps.
- Sanitation systems for both urban and rural areas.

- Support for training of technicians and operators.

In late 1990, the Program joined with UNICEF and WHO to initiate the Technology Promotion Facility, which provides small grants to assist demonstration of new technologies through their field applications in Program, UNICEF, and WHO programs. Among the innovations already being supported are fiberglass pump rods, improved pour-flush latrine pans and traps, a household solar pasteurization and filtration unit, and demonstration of VLOM handpumps in Asia and Central America.







# BILATERAL SPONSORS



**C**ontributions from bilateral donors complement the support provided to the Program by UNDP bureaux. At the regional level, bilateral sponsors support field operations through the placement of staff and funding of operational costs. Bilateral funds also support demonstration and pilot activities at the country level, as well as the activities of the International Training Network centers.

Ten bilateral donors have given direct cash grant contributions: Canada, Denmark, Finland, France, Germany, Italy, the Netherlands, Norway, Switzerland, and the United Kingdom; Sweden has provided support through other means. Nine of these countries had active projects with the Program during FY92.

## *Canada*

Through the Canadian International Development Agency (CIDA), Canada has contributed more than \$3.3 million to the Program through 1991. CIDA has financed long-term projects in Bangladesh and Ghana, both of which have had significant influence on water and sanitation strategies and programs well beyond the borders of those countries. CIDA-financed work in Mirzapur, Bangladesh focused on promoting effective use of sustainable, low-cost water and sanitation services. (See Program Profile: Bangladesh). The lessons of that project were published in a Program Report in late 1990 and disseminated worldwide.

CIDA has helped to develop the rural water and sanitation strategies in Ghana through its support for handpump

field trials and demonstration activities in Bolgatanga. Elsewhere in West Africa, CIDA, together with SDC, has been financing the activities of CREPA, the regional training network based in Ougadougou serving francophone Africa. In East Africa, CIDA is providing support for a project officer working with the RWSG in Nairobi.

## *Denmark*

Collaboration between the Program and DANIDA has grown from its beginnings in East Africa to South Asia. Denmark's direct contributions through 1991 totaled more than \$1.4 million, and contributions during the current year surpassed \$425,000.

Since 1987, DANIDA has been financing the work of a sector planning engineer based in the RWSG-East

Africa, and in early 1991 it placed a sector planning engineer in the RWSG-South Asia. The office has been assisting DANIDA-funded rural water and sanitation projects in two Indian states.

DANIDA has agreed in principle to finance the establishment of an ITN center at the Bangladesh University of Engineering and Technology. The center is expected to be in full operation in 1993.

#### *Finland*

The Finnish International Development Agency (FINNIDA) has contributed nearly \$1 million to support Program activities, primarily in East Africa. During the current year, contributions surpassed \$166,000.

Since 1988, FINNIDA has been supporting a sector planning engineer working in several countries of East



Africa and based in the RWSG in Nairobi.

FINNIDA financed a study carried out by Tampere University on the development of rural water supply organizations in Finland and the lessons for developing countries. The analysis

was published in early 1992 as a Program Discussion Paper, and it has been distributed worldwide.

#### *Germany*

The German Ministry for Economic Cooperation (BMZ) has supported a



variety of Program activities through the Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ). Through 1991, BMZ's direct financial contributions totaled about \$2.5 million. These have included support for promotion and implementation of low-cost sanitation in Tanzania, and improvements in resource recovery methods in Peru. Contributions totaled almost \$50,000 during this year.

### **The Netherlands**

Program collaboration with the Netherlands has expanded rapidly in recent years. Total contributions from the Dutch surpassed \$8.4 million by the close of 1991, making the Netherlands the single largest bilateral donor to the Program. Dutch funds dispensed in 1991 reached \$1.79 million, making Holland the largest bilateral contributor this year.

Dutch efforts have focused on large-scale programs in four countries: Bolivia, Indonesia, Nigeria, and the Philippines.

The Dutch contributed almost \$800,000 to the \$4.2-million RUSAFIYA project in Nigeria aimed at developing sustainable rural water supplies and sanitation in five states. Many important lessons have been learned through this demonstration project. (Details are provided in the West Africa regional report.)

Indonesia's Community Water Supply and Sanitation Project (INS/88/005) is jointly financed by the Dutch (\$2.6 million) and UNDP (\$1.5 million). Demonstration sites in East Java and Bali are testing institution-building and social-marketing strategies alongside the introduction of new physical facilities. Experience and funds from this project are being used to prepare the Water

Supply and Sanitation Project for Low-Income Communities that will be active in six of the country's 27 provinces and is proposed for funding by the World Bank. (See box in East Asia and the Pacific regional report.)

The Dutch financed the first phase of a training network center at the Institute of Technology in Bandung. A second phase incorporating the training network center in Cypta Karya is pending approval.

In Bolivia, the Netherlands is supporting a \$2.8-million project executed by the Program. The largest component is an initiative to improve access of some 75,000 rural inhabitants in Potosi Department to safe water and sanitation. (Highlights of this innovative project may be found in the Program Profile on Bolivia.)

In the Philippines, the Dutch are



providing \$1 million to support a thriving training network center hosted by the Local Water Utilities Administration. In operation since 1990, the training network has grown to include 17 participating institutions including five government line agencies, eight academic institutions, and four NGOs, all active in the water and sanitation sector. The International Institute for Infrastructure, Hydraulic and Environmental Engineering (IIE) in Delft is providing managerial and technical advice to the Network.

#### Norway

Norway has been one of the most important long-term partners of the Program. Cumulative contributions currently exceed \$8.1 million, and expenditures this year reached nearly \$1 million. These funds, from the Department of Multilateral Cooperation, support a variety of regional and global activities, particularly in countries in East and West Africa and in South Asia.

Part of Norway's support has gone to four major demonstration projects that will lead to larger investments and produce lessons of wide utility. In West Bengal, India the Program is helping to carry out an integrated water-supply and environmental sanitation program covering 24 villages. After the first three years, the project is expected to expand work into 270 villages.

In Nigeria's Benue State, Norway is contributing to a community piped water supply and sanitation project in conjunction with the RUSAFIYA rural water project. The project will serve communities of 1,500 to 5,000 people with improved water and sanitation services in a region of the country where good aquifers are difficult to locate and Guinea worm is prevalent.

In Ethiopia, Norway is supporting development of a community sanitation plan for the town of Mekele and demonstration work in two neighborhoods. The project places special emphasis on the needs of women and making the environment safer, and it will incorporate community outreach and mobilization activities into construction of new facilities.

In Goa, India, Norwegian aid is supporting the RWSG-SA's work in planning and implementing a demonstration solid waste management program for Panaji Town, in cooperation with local authorities. Preparatory studies to identify innovative, economical, community-based methods for solid waste disposal are under way and funding for the implementation phase is being sought from the government and external donors.

Norway is also providing funds for two core staff members in the RWSGs. In South Asia, support goes for a rural water supply and sanitation specialist who serves as the Acting Manager of RWSG-SA. In the RWSG-West Africa a Norwegian-funded hydrogeologist with broad experience in water supply and sanitation is responsible for activities in a number of francophone countries and for strengthening Program relationships with the African Development Bank.

The country coordinator in Pakistan is also supported through Norwegian funds. He is a water and environmental sanitation specialist and is responsible for developing, carrying out, and directing country program activities jointly with the national team.

Finally, HRD in Southern Africa is benefiting from Norway's support to the Training Center for Water and Sanitation (TCWS), established at the University of Zimbabwe in 1989 under



the umbrella of the International Training Network for Water and Waste Management (ITN). Though TCWS is a national institution, it also plays a regional role by assisting with and advising on training activities in neighboring countries. Sector personnel from neighboring countries are encouraged to attend courses at TCWS, and their participation contributes to sharing of experience within the region.

#### Sweden

The Swedish International Development Agency (SIDA) has financed an assistant expert position in the East Africa RWSG during the past year. It has also provided local-currency funding for a



PROWESS Associate working in the regional group.

#### **Switzerland**

Switzerland has been actively participating in the Program since 1984, providing funds totaling more than \$5.3 million through the Swiss Development Cooperation (SDC). This year, SDC contributed over \$540,000 for a variety of activities. Key areas of Swiss interest over the years have been technology development, human resources development, and low-cost sanitation. Switzerland's long-standing commitment to development in Africa has recently been complemented by a growing partnership with the Program in East Asia.

SDC has supported the work of a mechanical engineer in Accra, Ghana who is active throughout West Africa in promoting local handpump production. Through a contract with the Swiss Center for Appropriate Technology (SKAT), SDC provides consulting services to the RWSGs in support of local manufacturers.

Promoting human resource development through the ITN has been another Swiss priority. SDC directly supports the NETWAS regional center based in AMREF in Nairobi. In West Africa, SDC and CIDA have been financing CREPA, the regional center for 15 francophone countries. At Program headquarters, SDC is funding

the ITN coordinator position, responsible for strategic planning for the Network.

SDC is financing a second position in Washington, an economist in the Program Coordination Unit. His duties include helping to launch work in South and Central America, ongoing programs in the Arab States, and serving as liaison for the Africa RWSGs.

In East Asia, the Swiss are funding an environmental specialist and several short-term consultancies operating out of the RWSG-EAP.

#### **United Kingdom**

Through the Overseas Development Administration (ODA), the United

Kingdom is working with the Program in developing human resources for the sector in South Asia. Total contributions approved to date surpass \$1 million, with \$180,000 provided this year.

Since June 1990, ODA has been financing a human resource development specialist in the New Delhi RWSG. The specialist has been involved in a wide range of HRD and training activities in India through the newly established Indian National Training Network (INTN). The Ministry of Rural Development has set up a training cell to integrate the INTN with national plans for providing training in low-cost approaches and community development. Through an arrangement with the All-India Institute of Hygiene and Public Health, ODA is also financing the activities of the ITN center, with support totalling \$1.5 million through 1994.

In Bangladesh, the HRD specialist has been helping to shape the proposal for creating a new ITN that will include 23 higher-level institutes, involve key government departments and UNICEF, and build links with NGOs active in the sector.

ODA is also providing support for an engineer consultant working on handpump development in collaboration with the Program's PAT Unit.





TECHNICAL  
ASSISTANCE  
PROJECTS  
IMPLEMENTED  
BY THE  
PROGRAM  

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JUNE 1992



GLOBAL AND INTERREGIONAL PROJECTS

GLO/84/007

*Research and Development in Integrated Resource Recovery -- Waste Recycling*

GLO/91/017

*Capacity Building for Urban Water Demand and Projects Management*

INT/87/035

*Integrated Resource Recovery*

INT/87/013

*Water Supply for Low-Income Communities*

INT/87/014

*Sanitation for Low-Income Communities*

INT/87/024

*Efficiency of Investments in Water Supply*

INT/86/027

*International Training Network for Water and Waste Management*

INT/89/008

*Support to the Collaborative Framework (executed by UNDP)*REGIONAL PROJECTS

RAF/86/038

*Water Supply and Sanitation Sector Development Teams (SDT) for Sub-Saharan Africa (Phase II)*

RAF/87/043

*Promotion of the Role of Women in Water and Environmental Sanitation*

RAF/87/049

*Water Supply for Low-Income Communities*

RAF/92/007

*Water and Sanitation for the Poor in Africa*

RAS/92/001

*Water and Sanitation for the Poor in Asia and the Pacific*

RER/87/023

*Integrated Resource Recovery and Waste Recycling in the European Region*

RLA/86/025

*International Training Network for Water and Waste Management in Latin America*

RAB/88/009

*Improvement of Water Supply, Sanitation, and Waste Management in the Arab States*

CAM/91/013

*Regional Water and Sanitation in Central America*COUNTRY PROJECTS

BGD/85/004

*Low-Cost Sanitation Program for 51 Pourashavas (Bangladesh)*

BKF/91/010

*Sanitation Project in Ouagadougou (Burkina Faso)*

BOL/90/004

*Rural Water Supply and Sanitation: Potosi (Bolivia)*

BKF/89/016

*Strategic Sanitation Plan for Ouagadougou (Burkina Faso)*

CPR/88/011

*Low-Cost Rural Water Supply and Sanitation (China – executed by government)*

CPR/91/141

*Capacity Building and Investment Preparation for Rural Water Supply and Sanitation for the poor in Remote Areas (China).*

ETH/90/010

*Management and Decentralization for Water Supply and Sewerage Authority (Ethiopia)*



GHA/87/016

*Low-Cost Human Wastes Management – Pilot Project for Kumasi (Ghana)*

INS/88/005

*Community Water and Sanitation Project (Indonesia)*

MAG/89/001

*Strengthening of Planning Capacity and Economic Management (Madagascar)*

NIR/87/011

*Rural Water Supply and Sanitation (Nigeria)*

PAK/90/013

*Establishment of Federal Water Supply and Sanitation Sector Support Unit (Pakistan)*

PRC/88/018

*Preparation of a Sector Development Brief for a Donors Conference on Water Supply and Sanitation (Congo)*

RWA/89/001

*Strengthening of Sanitation Subsector (Rwanda)*

RLA/92/023

*Regional Water and Sanitation in Latin America*

SUD/88/040

*Preparatory Assistance for Water Supply and Sanitation Sector Strategy and Planning (Sudan)*

UGA/92/001

*Urban Low Cost Water, Sanitation and Waste Disposal Pilot Project (Uganda)*

ZIM/88/006

*International Training Network for Water and Waste Management: Network Center at the University of Zimbabwe*



# REGIONAL REPORTS





# WEST AFRICA



**M**any countries in the region are adopting water and sanitation policies that can support sustainable, large-scale programs. But several factors currently undermine government efforts in the sector. National economies in the region are weak, and many are undergoing structural adjustment. Though the long-term effect of these economic changes will allow for modest sector expansion based on beneficiaries' needs and their willingness to pay, the short-term outlook is for fewer public funds and slower development. The pace of implementation is also dropping in response to political changes that create uncertainties and delay decision making in some countries.

Based in Abidjan, the Program's Regional Water Supply and Sanitation Group for West Africa (RWSG-WA)

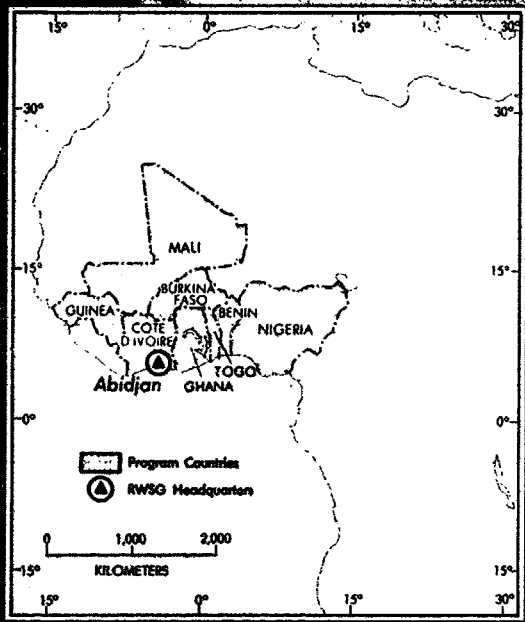
provides technical assistance and advice on critical policy issues, and supports the preparation and supervision of investment projects in collaboration with governments, UNDP, the World Bank, and other donors.

Open dialogue among the actors in the sector is important for improved policies and project design. National seminars and workshops organized by the RWSG in Benin, Ghana, and Nigeria provided opportunities to exchange views with government authorities, donors, representatives of NGOs, the community, and the private sector.

Sector studies on urban sanitation were under way in Ouagadougou, Burkina Faso and Conakry, Guinea. In Mali, Benin, and Togo, the RWSG assisted studies of rural and urban water supplies, and in Benin it helped with a study on national sanitation. Based on

earlier lessons, these studies establish a sound basis for sector development and propose detailed investment programs for financing by the World Bank and other donors. External support agencies from France and Luxemburg, the Japanese Trust Fund managed by the World Bank, and UNDP have made available major financing for sanitation programs in Guinea and Burkina Faso based on proposals prepared by the RWSG; and World Bank operational divisions have agreed to proceed with full support for RWSG proposals for rural water supply in Benin and Mali.

The RWSG-WA prepares and executes demonstration projects to test innovations before launching large-scale operations. The RUSAFIYA project in Nigeria and the Mali-Sud III project in Mali have tested approaches for institutional decentralization and greater



community and private sector participation. Likewise, urban sanitation pilot projects in Kumasi, Ghana and in Ouagadougou have refined technological options and developed efficient promotional and institutional methods for cost recovery. The results point the way to replicable approaches for use elsewhere, as for example in Conakry, where the RWSG is launching a new project in urban sanitation.

Providing the poor with access to services depends heavily on an adequate human resource base. The RWSG-WA works closely with the ITN centers in Ouagadougou and Kumasi in designing training materials, training trainers, and encouraging local and regional consulting firms and businesses to expand their roles in the design and delivery of services. RWSG-WA also works to build technical and institutional capacity. Industrial development specialists have assisted private handpump manufacturers to improve productivity. To disseminate the lessons of experience, the RWSG supports the work of model utilities such as the Union of African Water Suppliers (UAWS), which is widely known for its efficient management of urban sanitation.

The staff of the RWSG-WA in Abidjan consists of six engineers and a sociologist, and in addition there are separate project teams in Ghana, Nigeria, Burkina Faso, and Guinea. The RWSG is financed by UNDP through its Regional Bureau for Africa, through UNDP country programs, and by the governments of Switzerland and Norway.

A description of activities in each country during 1991-92 follows:

### **Benin**

The Program has been active in both urban and rural areas of Benin for many



years and recently completed two studies at the government's request, one on the development of rural water supply and another on the formulation of a national sanitation policy.

The RWSG-WA assisted the Ministry of Energy, Mines, and Water in preparing the rural water study that recommends decentralized decision making, financing through community participation, a variety of technological options, and support to the private sector. The strategy was presented to sector partners at a national seminar conducted by the RWSG-WA with over 100 participants from central and local governments, communities, donors,

NGOs, and the private sector. IDA has already accepted the resulting action plan, which specifies investments over the next five years, and is preparing a rural water project with RWSG assistance.

The RWSG is also working with the government to define national sanitation policy. As in many West African countries, inconsistent and inadequate sector financing has produced weak institutions in Benin. The principal guidelines, technological options, and institutional organization of the new policy have been designed to address these issues, giving priority to institutional development, cost recovery, and private-sector development. It also proposes that rural sanitation be systematically incorporated into rural water projects.

A new sanitation sector strategy encouraging private-sector participation in solid waste management and on-site sanitation projects sewerage systems only for central cities and heavy polluters. In rural areas, appropriate technologies such as low-cost latrines, soakaways, and garbage pits will be constructed following training programs for local artisans.

In Cotonou, stormwater drainage is a major problem, and the strategy proposes an integrated program that will construct wastewater facilities at highly threatened locations. The program will also be tested in an important secondary city. Given topography and land use in Cotonou, the city institutions dealing with planning, management, and maintenance must receive capacity-building support. At IDA's request, the RWSG-WA prepared the first urban sanitation project in Cotonou, and will improve environmental sanitation in Ménomtion, a periurban neighborhood with about 18,000 inhabitants.

### **Burkina Faso**

Low volumes of wastewater in Ouagadougou make conventional sewerage systems unfeasible. The RWSG has prepared the city's strategic sanitation plan to feature on-site sanitation (latrines, soakaways) for excreta disposal. Prepared for the National Agency for Water and Sanitation (ONEA), the plan calls for the construction of simplified sewerage systems connected to stabilization lagoons for buildings such as administrative and commercial centers, industrial zones, hotels, and hospitals that discharge large amounts of wastewater. Sanitation for schools is also a high priority.

These improvements will be financed by a modest surtax on water. Through the Directorate of Health Education and Sanitation, ONEA will subcontract the promotion of on-site sanitation, training of artisans, and construction. The strategic plan envisions five-year investment amounting to \$14 million. Household participation in the construction of individual installations will represent about 55 percent of the total, with the balance financed by donors.

IDA's second urban project to improve living conditions in Ouagadougou follows the recommendations of the new sanitation plan and specifies approaches for dealing with storm water, solid waste, and industrial and toxic wastes.

The RWSG has been providing engineering assistance to a demonstration project in two neighborhoods in Ouagadougou, where a team from ONEA is testing the plan recommendations for on-site sanitation (septic tanks, latrines, and soakaways). With support from UNDP, the project got under way

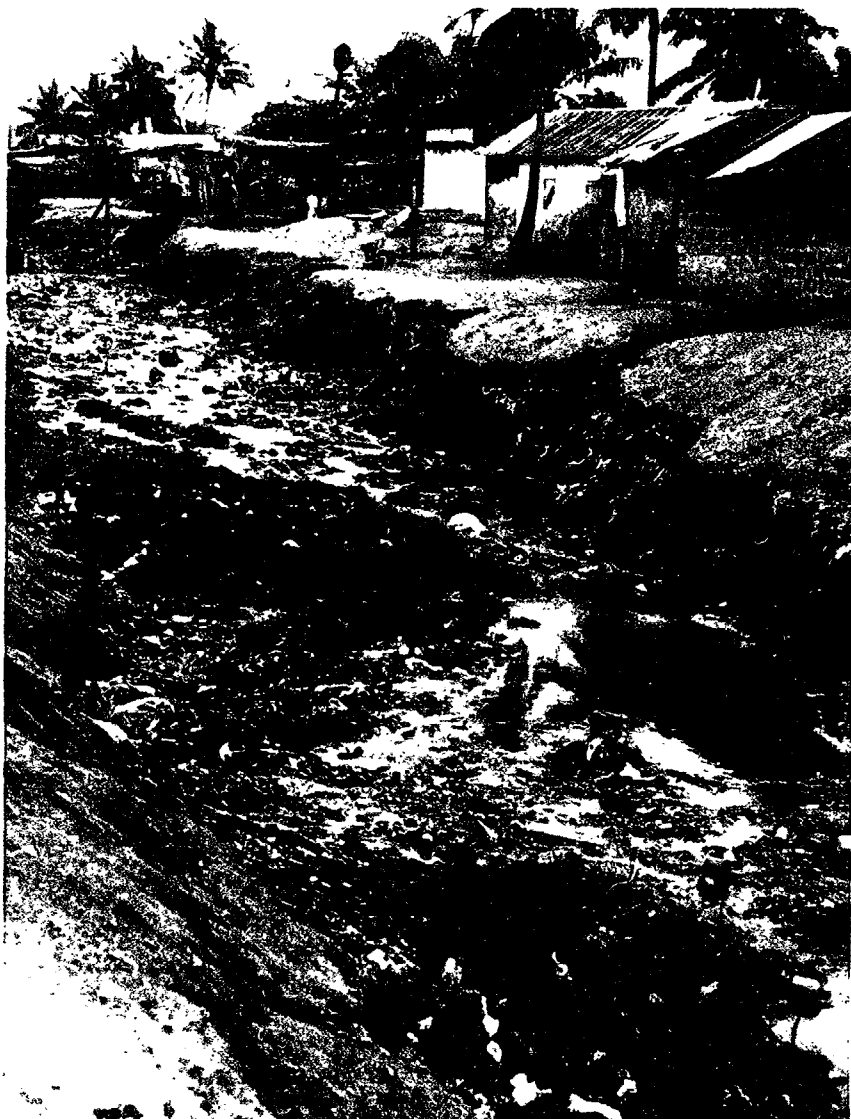
in early 1992 and has benefited from the collaboration between the ITN center at CREPA, which trains the artisans and designs training materials, and an NGO which trains and supervises the promoters.

The demonstration project uses radio and television to encourage sanitation improvement within community blocks. Promoters visit interested households and show them model sanitation systems. When convinced, homeowners are put in contact with the trained artisans, and once pits are dug, the promoters supply the materials

subsidized by the project for construction of latrine slabs and vent pipes.

### **Ghana**

The Program is following a staged implementation approach in Ghana, beginning with pilot activities and expanding into comprehensive sector appraisal work. As in many other countries, the RWSG-WA starts with demonstration projects before developing strategies for large-scale project work. The RWSG has focused on assisting programs in rural water and sanitation, implementing the innovative Kumasi





Sanitation Project, strengthening capacity building through the ITN center in Kumasi, and facilitating development of the private sector.

In 1991, the government approved a set of far-reaching strategies aimed at expanding service in rural areas. The National Rural Water and Sanitation Sector Strategy and Action Plan, prepared with the assistance of the RWSG-WA, aims to strengthen community management, decentralize system maintenance, and redistribute the share of investment cost between government, communities, and ESAs. It will also accelerate human resource development, institutional restructuring, and capacity building, and expand the role of the private sector and NGOs. This plan has since served as a basis for numerous sector projects including the National Rural Water and Sanitation Project, slated to begin in 1994. With the strategy as a springboard, the government has secured financing for project preparation and has also received commitments of support from the World Bank, DANIDA, CCCE, JICA, and others.

The RWSG has been implementing the Water Utilization Project in northern Ghana, which uses lessons from the Program's earlier demonstration efforts in Bolgatanga, in northern Ghana, to develop approaches to community management, training, construction, and health education. CIDA is providing support to the project, which will be carried out over the next five years. UNDP-supported pilot projects in Volta and Eastern regions and the piped water systems or simplified water distribution schemes project for Volta region financed by DANIDA have all been designed or redesigned to reflect the new sector

strategy, as have projects supported by CIDA, CCCE, and others.

The Kumasi Sanitation Project continues to pioneer alternative approaches in urban sanitation planning and management. Following the preparation of an investment plan for citywide coverage, various pilot activities have been completed. Through a community-based approach, over 200 VIP latrines have been constructed in low-income homes, extending coverage to over 5,000 city residents. More than a quarter of the public latrines have already been rehabilitated and placed under franchised private management. A replicable approach for simplified, least-cost sewerage has been designed for a densely populated neighborhood of 20,000 people, and construction is now under way. Institutional reorganization and staff development have led to the establishment of a citywide waste management department responsible for dealing with solid and human waste. Kumasi Sanitation Project staff have been integrated into this new department to strengthen implementation of the strategic sanitation plan. As a result of the reorganization, city authorities have redeployed 250 conservancy workers, who now work privately and with community groups, competing for contracts in market cleaning, public latrine management, and home latrine construction.

With support from the British Overseas Development Administration, the project in Kumasi has initiated efforts to handle the city's solid waste (450 tons are generated every day, of which only 135 to 180 tons were collected for disposal at the city's landfill site). ODA funding also supports health education and staff development, and the project is becoming a resource for training sector

personnel from secondary cities throughout Ghana. Project staff are also assisting the Ministry of Local Government to develop an integrated urban waste management strategy and action plan. UNDP has promised support to develop a cost-recovery strategy for urban waste management and consolidate lessons from the pilot project.

To take advantage of the multifaceted work of the Kumasi Sanitation Project, the International Training Network center in Kumasi is shifting from classroom to project-site training. This approach has appealed to staff and enriched the skills and field experience



of ITN center professionals. Demand is growing for field training in technical assessment, reconnaissance surveying, applied research on low-cost technologies, and participatory techniques for project implementation.

Located within the Kumasi University of Science and Technology and supported by the Program, the ITN center aims to meet the human resource requirements in Ghana through a variety of activities. As part of the comprehensive training efforts for the UNDP-financed District Water and Sanitation Management Project in the Volta region, the ITN center trained the project management team, extension workers, artisans, and WATSAN committees from over 40 communities. The training program was crucial in the successful introduction and marketing of the modified, Mozambique-slab-type VIP latrine. Similar training is now integrated into a UNDP project in the Eastern region and into the Danida project in the Volta region. These experiences will further refine ITN training approaches for use in the upcoming National Rural Water and Sanitation Project.

On the technical side, demand assessments carried out by the RWSG-WA are helping to build a stable base for local handpump manufacturing. One private joint venture, Ghanira Ltd., has begun producing Nira low-lift handpumps for drilled and hand-dug wells and will expand the line in the coming year to produce medium- and deep-well Afridev handpumps. To aid the fledgling industry, the Program has been working with the government, ESAs, and NGOs to standardize technical specifications for a range of proven handpump models. The staff has also prepared tender documents for



contracts with the private sector to construct hand-dug wells, and also provided technical assistance in establishing spare parts procurement systems and outlets and in training area mechanics.

### Guinea

In Conakry, the Program is working with the Guinean government to prepare a comprehensive project to improve the collection, treatment, and disposal of excreta, wastewater, solid waste, industrial and toxic wastes, and storm water. Assisted by a local consulting firm, the RWSG-WA is carrying out a study for the sanitation plan, jointly financed by Luxembourg and Japan. Households in all socioeconomic classes have been surveyed to determine service preferences and willingness and capacity to pay for improved sanitation. Financing for the program, which will test a range of technological and institutional options, is envisioned for 1993 as IDA's third urban development project. The project team in Conakry is financed by Luxembourg through a bilateral agreement with the government.

Most schools in Conakry lack adequate sanitation facilities, and the RWSG-WA and UNICEF have joined efforts to address the problem. Funded by the African Development Bank, the schools rehabilitation project features health education and construction of sanitation facilities and water points. CREPA is responsible for technology choice, design of appropriate facilities, and preparation of tender documents.

Fewer than two in five urban residents in Guinea have access to safe drinking water, one of the lowest urban water-supply coverage rates in Africa. Yet one quarter of the nation's population lives in rapidly growing urban areas,



and new water supply systems are an increasingly necessary investment. Significant improvements are now planned for 13 secondary centers. At the request of the National Water Company of Guinea and with the support of the French International Cooperation Agency, the RWSG-WA is preparing sanitation and environmental components to be incorporated into water supply projects.

### Mali

Improved water points in rural Mali are often underused and poorly maintained, caused by the lack of beneficiaries' participation during implementation, the absence of a spare-parts distribution system, and inappropriate technology. The new Mali Sud III rural development program financed by IDA aims to rehabilitate 500 source points and ensure sustainability by encouraging demand, training water committees, and establishing private, decentralized maintenance systems for handpumps. The project also aims to construct 450 new source points and generate the high level of social support essential for sustainability. The RWSG-WA is monitoring implementa-

tion, working with the Mali Textile Company and the National Water and Energy Administration.

Preliminary results show significant progress after one year of health education conducted by an international NGO, the Research and Support Group for Peasant Self-Help. Community upkeep and cleanliness of water points are significantly better. Soakaways for wastewater have been built and villagers are increasingly getting their drinking water from the handpump. Water committees are being trained and maintenance information, including a spare-parts price list, has been translated into Bambara. Well-organized blacksmith associations now manage the supply and distribution of spare parts, and



pump-repair artisans handle the intermediate stocks. Forty-nine new artisans have been trained, 46 have been retrained, and all can carry out their work more effectively following a practical redrawing of their respective zones.

In the south of Mali, this successful approach has influenced other projects that focus on improving the management of water points. Collaboration with the Water Administration from Côte d'Ivoire has led to the development of a technique for using ropes to lift a heavy rising main out of the borehole. This simple method is a great advance over earlier ones because it allows artisans to replace pump parts without heavy equipment, making village operation and maintenance more easily

attainable.

At the request of the government and IDA, the RWSG-WA used its recently completed rural water sector study to prepare recommendations for developing rural water supplies in Mali. The new approach centers on promotional activities to help in generating and assessing community demand, implementing community financing of the installations and operating costs, and raising local private-sector participation. This program also aims to reduce the cost of installations by using low-cost technologies.

In Bamako, nearly one third of the population lives in precarious environmental conditions. Working with the municipal authorities, the RWSG-WA

has identified a pilot project to provide safe drinking water to 25,000 people in overcrowded periurban neighborhoods. Technically innovative, the plans call for the construction of self-contained supply systems with solar pumps, and in one case an extension of the city's distribution network. Private companies are involved in the promotion, financing, construction, and management of the installations, and a national seminar is being organized with the government and representatives of the private sector, donors, communities, and NGOs to discuss organizational options for management of the facilities.



### Nigeria

The \$4 million demonstration project, RUSAFIYA, came to a conclusion, capping a four-year effort to provide safe water to more than 125,000 people in five states. In the process RUSAFIYA generated valuable experience in the implementation of community-managed systems that are supported by local government water and sanitation units and are constructed and maintained by the private sector. Many lessons have been learned about the technical, financial, institutional, and human resources required for implementing large sustainable water supply projects in Nigeria (see box on page 47). Further work is now under way to combine the UNICEF practice of using a multi-disciplinary group of community development, technical and health specialists to provide technical assistance and training at the state level, and health specialists with the RUSAFIYA approach including more involvement of local NGOs at the local government level.

For the most part, RUSAFIYA sponsored the use of handpump systems, which are well suited to the demands of small communities and appropriate to hydrological conditions. In Benue state, RUSAFIYA adapted its approach in response to the geophysical conditions to develop a piped water system — an approach that holds great promise for smaller towns in Nigeria, where as much as half the rural population lives. Financed in part by NORAD, this effort points to an effective technical solution; however, new management systems remain to be developed. It is envisioned that (i) Water User Groups, formed around standpipes, will be responsible for managing individual water points and collecting user fees based on the metered



amount of water delivered at the standpipe; (ii) representatives of each Water User Group in a community will form a community Water and Sanitation Committee (WASCOM); (iii) representatives of each WASCOM will be represented on a Water Use Association that will manage the system; and (iv) the Water Use Association will contract individuals or a firm to operate the system and collect revenues from individual Water User Groups.

Having completed the RUSAFIYA Project, the Program is in a transition phase in Nigeria. The RWSG-WA has assisted the government in developing a rural water and sanitation sector strategy and action plan that was reviewed during the year,

discussed in a national workshop, and finalized. To prepare for the Program's next phase of assistance in Nigeria, RWSG-WA is seeking funding to initiate a rural water and sanitation program in the northeastern part of the country, and to establish two ITN centers.

### Togo

The RWSG-WA's rural water study in Benin prompted the government in Togo to request assistance in defining a similar national strategy for rural water and sanitation. The new strategy, developed by the RWSG-WA, has earned the financial support of the French CCEE. It reorients program planning criteria in two key ways: to be contingent on demand for services; and to involve beneficiaries in the choice, financing, and management of installations. The strategy also outlines a large role for private enterprises, addresses the need to develop local skills, and establishes low-cost technical design specifications.

## RUSAFIYA: LESSONS FOR DEVELOPING RURAL WATER IN NIGERIA

The RUSAFIYA demonstration project was carried out to supply water to rural communities in five states, and to determine the processes and resources needed for sustainable rural water supply in Nigeria. Supported by UNDP and the governments of Nigeria, the Netherlands, and Norway, RUSAFIYA worked to strengthen local capacity for project management. In the process, many lessons were learned that can be applied to other sector projects throughout Nigeria to make them sustainable and sound. Below are some of the conclusions drawn:

- A rural water and sanitation program must respond to demand in communities and local governments, and work to promote long-term commitment and sustainability. Top-down selection of participating states and local governments is contrary to establishing a demand-oriented program. Cost sharing through the financial and material contributions of communities and government is an important indicator of demand and is essential in any project.
- The benefits of a community-based approach are not always obvious initially to decision makers at the local and state government levels; changing the perceptions and attitudes of policy makers about development strategies requires far more time and resources than is generally anticipated. Moreover, it takes time, patience, and skill to win the trust of even highly motivated communities. Great care must be taken to balance project schedules between the time-consuming process of gaining community and government support

and the demands of meeting short-term construction targets. Start small, allow sufficient time, resources, and flexibility to train people and to adjust approaches as implementation progresses.

- A national policy framework secures the commitment of policy makers necessary for successful operation of a rural water and sanitation program. It also ensures a career path for government personnel and provides a consistent approach to key issues, such as cost sharing and spare-parts supply, that affect sustainability.
- In many cases, different phases of implementation should be left to the private sector, which is positioned more favorably than the government to carry out work in an efficient and sustainable way. NGOs and the private sector should be involved in providing technical and training support to communities, and the private sector should be strengthened to play a leading role in construction.

- Concerted effort is required to develop effective processes for training extension agents to use participatory techniques and materials. These approaches help communities with the tasks of assessing needs, planning water systems, and learning to manage them.
- Separate units within the local government should take responsibility for primary health care and rural water and sanitation programs. The skills needed to implement each are different, and primary health care is an ongoing process, whereas the establishment of community management requires one or two years of in-depth involvement with individual localities. While working, rural water and sanitation personnel can assist in training latrine artisans and should provide training in hygiene and water use.





# EASTERN AND SOUTHERN AFRICA



In addition to the general economic difficulties affecting all Sub-Saharan Africa, in the past year drought imposed particularly severe hardships on Eastern and Southern Africa. Following years of poor harvests, crops have been devastated in several countries, and livestock losses are enormous. The poorest farmers and pastoralists have been the hardest hit as usual, but this year even the better-off farmers have suffered badly. And in several countries large-scale migrations caused by civil wars have exacerbated the impact of the drought and overwhelmed emergency relief efforts. The toll in human misery is beyond description. Government officials and external support agencies dealing with the water sector have naturally turned their attention to drought and civil emergencies; the effect has been a further slowing of work on

policy reform and implementation.

With its decentralized structure, the Program can respond quickly and flexibly to changing circumstances. In the past year, the Regional Water and Sanitation Group for Eastern and Southern Africa (RWSG-EA) provided technical support in response to the drought emergency, while retaining its focus on the medium- and long-term sector development priorities in the region.

For the long term, the RWSG-EA is focusing on participatory training approaches based on the pioneering methods of PROWWESS. Participatory methods have not been extensively applied in the region, and there is little practical information available. Training in PROWWESS methods fills this gap, and demand among national sector professionals is growing steadily. In Kenya, a group of donors and NGOs that

met originally to plan a PROWWESS workshop has evolved into an informal network that teaches participatory methods. An interministerial PROWWESS steering committee meets similar needs in Tanzania. As a way of strengthening the region's training capacity in participatory methods, the RWSG-EA has posted a staff member at NETWAS, the regional training network center, to plan and conduct training of trainers workshops in countries of NETWAS operation.

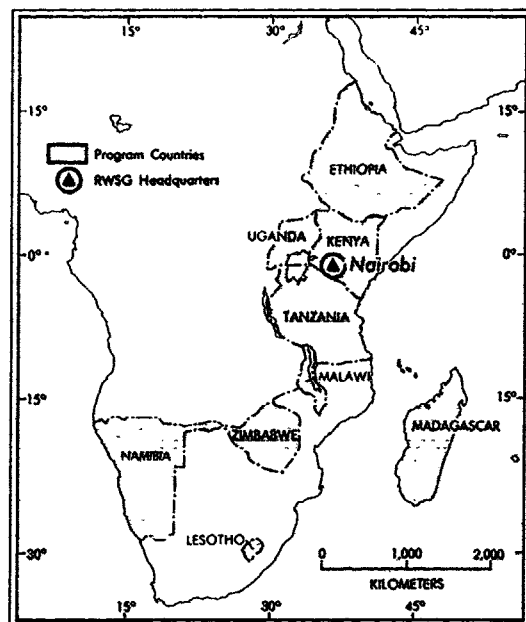
Although the Program was not established to provide emergency relief, RWSG-EA staff are familiar with sector conditions and institutional arrangements in countries of the region, making them a valuable resource in emergencies. The RWSG-EA has provided expertise to support World Bank teams preparing emergency lending operation in

Ethiopia, Uganda, and Zimbabwe. In Lesotho and Zimbabwe, RWSG-EA staff also supported the national drought task forces. Even though the drought emergency is a temporary crisis, drought preparedness and water resource management required focused attention.

The Program concentrates its efforts in Ethiopia, Uganda, and Zimbabwe where it supports a range of mutually reinforcing activities to strengthen national sector development. In the past year, the RWSG-EA has also provided small-scale assistance to Kenya, Lesotho, Madagascar, Malawi, Namibia, and Tanzania in response to local needs and changing circumstances.

Eight social scientists and technical

specialists make up the RWSG-EA team based in Nairobi, Kenya: two are financed by the UNDP's Regional Bureau for Africa; four by programs of bilateral donors (CIDA, DANIDA, SIDA, and Norway); one by the Program's PROWESS group; and one through a SIDA-financed position for a UNDP junior professional officer. Each team member takes primary responsibility for the Program's work in two or three countries and acts as a resource for the team in his or her area of professional expertise. The PROWESS



specialist also serves part-time in West Africa.

In addition to the team in Nairobi, RWSG-EA supervises expatriate advisers in Ethiopia and Lesotho (financed through UNDP and SDC, respectively), and national professionals directing the Training Center for Water and Sanitation (TCWS) in Harare, Zimbabwe, an International Training Network center financed by Norway and UNDP. RWSG-EA also gives technical support to UNDP and GTZ-financed advisers in Tanzania.

The following reports highlight RWSG-EA activities during the past year in individual countries.

### *Ethiopia*

To provide basic sector information to the transitional government, the RWSG-EA prepared a draft Water Sector Framework Paper and a revised draft Sanitation Strategy. Both have been widely reviewed and formed the basis for further proposals and for a round of discussions between senior government officials, external support agencies, and NGOs. The discussions also contributed to the ongoing UNDP programming exercise.

RWSG-EA is executing a UNDP-financed project to strengthen management and decentralization of the Water Supply and Sewerage Authority (WSSA), the agency responsible for sector development and maintenance nationwide, except for the capital. The project, which includes a full-time engineering adviser and support from a financial consultant, complements the technical assistance component of the World Bank's Market Towns Project. Despite the change in government and consequent interruptions, the project is



making significant progress. It introduced efficient financial management for urban water supplies in two regions and assisted the preparation of new tariff proposals that have been submitted to the Council of Ministers by the Water Resources Commission. While carrying out these efforts, the engineering adviser has played a key role in assisting the government and visiting World Bank missions and other external support agencies to assess urgent sector needs. Supported by colleagues from Delhi and Nairobi, the Program engineer has also worked closely with UNICEF to help the government establish national standards for handpumps.

RWSG-EA contributed to a seminar on issues of women in develop-

ment hosted by the Water Resources Commission. With help from CIDA, SIDA, and UNICEF, the RWSG organized the very successful first national participatory training workshop using PROWESS approaches. Two demonstration activities are getting under way: an integrated rural water and sanitation project in the south financed by CIDA, and an urban sanitation project in Mekele financed from the Norwegian Trust Fund.

### *Kenya*

Environmental sanitation in informal settlements is a growing problem in Nairobi and larger towns in Kenya. In cooperation with WHO and SIDA, RWSG-EA assisted the Nairobi City Commission to conduct a four-day workshop on the issues. To stimulate discussion, external agency staff described examples of successful approaches. Fully acquainted with the problems of informal settlements, staff from the commission and key ministries then formulated recommendations that were drawn into an action plan and presented to city commissioners and external support agency representatives. NCC has appointed a Task Force to follow up on the action plan.

In an informal settlement near Nyahururu in Rift Valley Province, RWSG-EA monitored progress on a DANIDA-supported project to improve sanitation, and a Kenyan NGO, KWAHO, mobilized community efforts. Lessons from the experience are being documented in a case study.

### *Madagascar*

The first phase toward the preparation of a sector strategy and action plan (SSAP) has been completed by local consultants. Due to the political situation in the

country, activities have been delayed, but contacts indicate that activities will soon resume.

#### *Lesotho*

With support from SDC, RWSG-EA recruited an advisor to the National Sector Coordinator in the Ministry of Planning, Economics, and Manpower Development. The advisor helped the National Steering Committee update the previous sector review and start drawing up detailed action plans for government agencies in the sector. The ministry also called on the advisor to support coordination of the national drought emergency response.

#### *Tanzania*

Following a workshop hosted by DANIDA in 1991, RWSG-EA staff helped to conduct a second national workshop on PROWWESS participatory methods. It also supported Tanzania's newly established PROWWESS Core Team, which coordinates the many agencies using participatory approaches. Staff also provided continuing technical and advisory services in support of two projects managed by others. The first is the Sector Advisory Team in the Ministry of Water, Energy, and Minerals financed by UNDP and FINNIDA, and the second is a GTZ-funded and executed project for urban low-cost sanitation in the town of Tanga.

#### *Uganda*

In Kampala, the RWSG has assisted the development of a project funded by UNDP to demonstrate community management approaches to water, sanitation, and solid waste in an informal urban settlement. The project is now ready to start, and the results will influence at least two large World Bank

projects that deal with urban development in Kampala and water and sanitation in small towns. RWSG-EA staff regularly join World Bank operational missions to ensure full coordination.

Some years ago the government developed a sound sector strategy with Program assistance, and RWSG-EA is now helping the Water Development Department with follow-up studies to assess (1) human resource development needs of the sector, and (2) requirements for standardization and spare parts distribution for handpumps. These efforts require close collaboration with DANIDA and UNICEF, currently the major external support agencies in the sector.

#### *Zimbabwe*

During the past year, the two RWSG-EA staff posted within the Ministry of Health completed their assignments. The advisors helped develop and implement the national sector program and worked closely with the National Action Committee in sector policy and planning. The Program has since focused on the Training Center for Water and Sanitation (TCWS) and on support for a national rural water sector review.

In its second year, TCWS has become an effective training center while also increasingly influencing the broad policy issues affecting the sector. Expert staff offer invigorating courses to sector professionals and also participate in key subcommittees of the National Action Committee for water and sanitation. As before, TCWS recovers all expenses except staff salaries through its fees, and demand for courses outstrips the center's capacity. New courses have been prepared to introduce training in

participatory methods and in health education.

Together with staff from TCWS, RWSG-EA staff contributed to a joint review of the rural water sector by the government, several external support agencies, and the World Bank. Zimbabwean specialists prepared background papers for the workshop, which led to a World Bank sector review. Further follow-up was interrupted by the drought emergency, but partly because of this work, RWSG-EA and TCWS staff made important contributions to the formulation and appraisal of the World Bank's drought emergency project. And while the drought situation continues to be a major preoccupation, follow-up work on the review will take on increasing priority in the year ahead.







# SOUTH ASIA



**E**xtrême poverty, rapid urbanization and continuing population growth across the region have combined to challenge ongoing governmental efforts aimed at expanding water supply and sanitation service coverage.

Through the Regional Water and Sanitation Group for South Asia (RWSG-SA) based in New Delhi, the Program has been active for the past three years in assisting Bangladesh, India, and Pakistan. During the past year, the RWSG-SA expanded activities in Nepal and Sri Lanka while preparing to work in Bhutan. The growth of the RWSG-SA results from the support of UNDP, DANIDA, the Government of Norway, and ODA, whose combined assistance provides for funding most of the professional staff and a variety of ongoing programs.

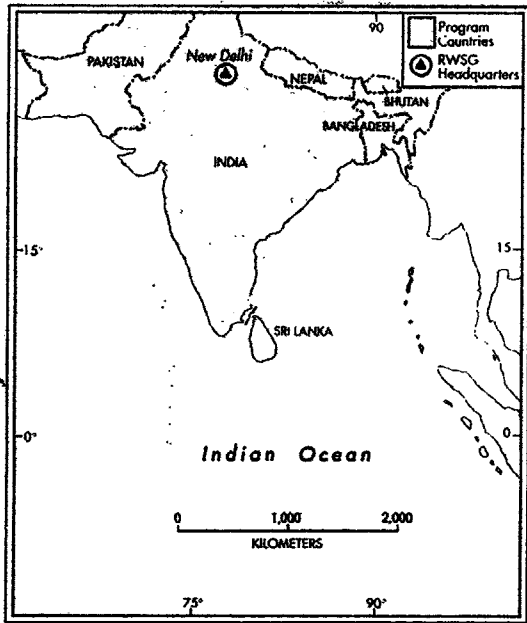
Collaboration with the bilateral

donor community has been consolidated by the Program's project support activities. Initiatives are also under way in partnership with UNICEF, especially through the the Program's Technology Promotion Unit (TPU) based in Delhi and with interregional responsibilities to support the promotion of affordable technologies. RWSG-SA has worked with WHO on a sector plan in Nepal and the introduction of a global sector information system in South Asia. Through its ongoing sector planning work, the RWSG-SA also provides growing support to World Bank project preparation.

In most countries in the region, Program involvement began with sector planning, a logical entry point for creating a consistent policy framework to address key sector issues. For example, the RWSG assisted with the formulation

of a sector strategy plan for Pakistan in 1988, which was followed by preparation of strategic investment plans for selected provinces. At the same time, UNDP and UNICEF agreed to fund a Federal Support Unit, working within the Federal Ministry of Local Government and Rural Development, for three years to improve the preparation and implementation of new projects. The RWSG is also supporting sector planning in Bangladesh, Nepal, and Sri Lanka.

Increasing experience and familiarity with the sector in South Asia permits the RWSG-SA to focus on critical development needs including the pivotal role of community participation in sector development. Experiences in India, Pakistan, and Bangladesh are being analyzed to guide the preparation of new projects. In Pakistan, studies have been expanded to include environmental



sanitation problems in urban, low-income settlements. Methodically designed into new projects, community participation is helping significantly to enhance project implementation and hasten the shift from target-oriented planning to a process-oriented approach.

Staffing of the RWSG-SA grew during the past year to 6 international and 18 national professionals. Specialists in social development and community participation were recruited to join country teams in India, Bangladesh, and Pakistan. Nearly half of the staff is based in New Delhi, comprising the regional team, the Technology Promotion Unit, and the India country team. Country teams are also operating in Bangladesh and Pakistan, and there are national country offices in Nepal and Sri Lanka.

Reports follow on activities in individual countries during the past fiscal year.

### **Bangladesh**

The Program assisted with the formulation of plans presented to the National Seminar on Future Strategies for Water Supply and Sanitation. The seminar provided an opportunity to forge a broad consensus on strategies and priority actions that have since been incorporated in the GOB-UNDP Country Program V, in particular the preparation of a comprehensive development plan to be formulated zone by zone. Under the guidance of a government task force, RWSG-SA has completed the first stage, the preparation of a concept paper. Each stage of the production of the Plan will be subject to review by the national steering committee for the sector.

Lack of systematic reporting is being addressed through the creation of a management information system (MIS) to reinforce national planning capacity



in the sector. The RWSG-SA has assisted the government in formulating a proposal using experience gained by the Program from the installation of computerized billing and well monitoring systems.

Preparations have been completed to establish an ITN center in the Bangladesh University of Engineering and Technology (BUET) to be funded by Danida. The ITN will include a network of 23 higher-level institutes and key organizations such as the Department of Public Health Engineering (DPHE) and UNICEF. Once operating, the center will develop and coordinate training activities throughout the network and build links with NGOs active in the sector. A rural water supply

training and monitoring program, which is to be funded by Danida and implemented by the DPHE, has been designed to develop sustainable community operation and maintenance. The program will provide training for handpump caretakers, facilitate extended monitoring of the Tara pumps, and establish private-sector distribution of spare parts.

A successful project in Mirzapur achieved sustained improvements in water supply and sanitation. The Program has now initiated a dialogue with a number of national NGOs to refine modalities for working with community-based organizations and develop viable intermediaries between the government and rural communities. In Chittagong, the Program is working with local residents and sector authorities to design and implement a pilot scheme for community-managed standposts in poor neighborhoods.

In the urban sanitation sector, the RWSG prepared a strategy to turn around the existing supply-based approach to a demand-driven one, and to mobilize community resources. The government voiced its approval of the plan after a two-day workshop and is now expected to select an appropriate municipal implementing agency.

The Program continues to provide assistance to IDA and other donor-funded urban water supply and sanitation projects. The RWSG participated in the appraisal of the third IDA-assisted project in Chittagong, the French feasibility study for preparation of investment programs in Dhaka, the IDA-financed Unaccounted-for Water Management Study in Chittagong, the preparation of the water and sanitation component of the IDA-financed Secondary School Assistance Project,

and IDA- and ADB-assisted small-bore sewerage schemes. These projects represent investments totaling more than \$210 million.

### **Bhutan**

In its first efforts in Bhutan, the Program worked during the past year with UNDP to formulate terms of reference for developing a comprehensive sector strategy. On the basis of talks with the government and other external support agencies, the RWSG produced a sector status report as a first step to a strategy and action plan. An official task force aided by the RWSG will conduct the study for the strategy, which will be carried out in the next fiscal year with funding from UNDP and UNICEF.

### **India**

Program activities in India are carried out with many partners, including the Ministry of Urban Development (MOUD), the Ministry of Rural Development (MRD), and the external support agencies.

As support to the MOUD's plans for capacity building in the sector, the RWSG-SA assisted the Ministry in reviewing training and HRD needs. It is expected that this will become a guiding document for future HRD interventions. The MOUD and RWSG have planned a solid waste management demonstration project in Goa that features community participation and training, NGO support, and potential privatization of key operations such as waste disposal. Effective services also rely on well-managed institutions, and the Program has assisted MOUD in applying for UNDP funding to improve the management of service delivery in urban areas.

The West Bengal Integrated Rural Water Supply and Sanitation Demon-

stration Project combines approaches in community management with a choice of appropriate technology options. Funded from Norwegian trust funds, the first phase of the project is designed to provide integrated services and health education in 24 villages in Birbhum district.

Building sectoral capacity also continues through the expansion of the ITN, which with the cooperation of MRD has developed into a national network. The network sector institutions are promoting low-cost approaches and community development models through training and materials development. Training activities of the network have covered 18 states of the country, and over 820 persons have been trained. Funding for network activities has been provided by the ODA and DGIS, and a training cell is being set up within MRD. This cell will integrate the network's program of training into the national HRD plans.

The Program is also providing support to the government's national Integrated Low-Cost Sanitation Program through assistance in developing a monitoring and evaluation system, and

communication materials which are being field-tested in Tamil Nadu. The Technology Promotion Unit has worked closely with this sanitation program, providing technical assistance for design and construction of low-cost sanitation units.

The TPU concentrates on meeting sector needs through the development of innovative technical solutions. In Pondicherry, the unit is helping the government to implement a process that uses wastewater to produce large amounts of high-protein fish and poultry feed. The treatment process is based on duckweed, which absorbs nutrients from the water and helps settle suspended solids. The duckweed is harvested from wastewater ponds and fed to the fish, or dried for use as poultry feed.

Efforts to develop more reliable and better-quality handpumps remain a priority in technology promotion. The TPU has been working closely with UNICEF and national agencies to develop standard specifications for direct-action handpumps, and reports on the India Mark III deepwell handpump have been prepared with UNICEF. Demonstration projects were carried out



in four states — Bihar, Madhya Pradesh, Andhra Pradesh, and Maharashtra — and the beneficial effect of VLOM handpump design on handpump maintenance systems was successfully demonstrated. The Mark III handpumps have now been accepted on a national scale.

RWSG-SA is also providing substantial support to the operations of the World Bank in the preparation of the Second Madras Water Supply and Environmental Sanitation Project, and in the Rural Water Supply and Environmental Sanitation projects in Karnataka and Uttar Pradesh. The India team provides ongoing technical assistance in low-cost sanitation, human resource development, and training to World Bank projects in Hyderabad and Kerala, and it helps supervise a World Bank rural water supply project in Maharashtra. RWSG-SA is also assisting the British Overseas Development Administration to plan community management and participatory training strategies and a sanitation program for its Maharashtra rural water, sanitation, and health education project.

The RWSG works closely with other external support agencies throughout the country. The Program is helping with human resource development in a DGIS project in Andhra Pradesh, and in DANIDA projects in Andhra Pradesh and Tamil Nadu. It is evaluating handpump maintenance systems in the DANIDA rural water project in Orissa. And it is working with DANIDA to provide guidance for policy and sector operational strategies by evaluating the impact of community participation.

### **Nepal**

Following the production of a sector strategy and action plan with the



government and WHO in FY91, the RWSG-SA is working with the World Bank on the preparation of a sector issues paper that will form the basis of a dialogue with the government. It is also assisting the government with donor coordination.

At the project level, the Program has participated in project preparation, appraisal, and review missions with IDA, ADB, and FINNIDA and provided assistance on institutional and technical aspects. The proposed IDA rural water and sanitation project emphasizes implementation through a partnership of the community, NGO, the private sector, and the government. The Program has been instrumental in proposing pilot work through Japanese government funding for this innovative project. At the request of UNICEF and FINNIDA, the Technology Promotion Unit has worked to improve the capabilities of local handpump manufacturers.

### **Pakistan**

The RWSG is assisting the provincial and the federal governments to implement strategic investment plans through policy dialogue, review and refinement of

the plans, and preparation and appraisal of investment projects. The vehicle for much of this support is a Federal Support Unit located in the Federal Ministry of Local Government and Rural Development. The Unit, which is funded by UNDP and UNICEF, has helped the Ministry to establish a policy implementation and review committee, with both federal and provincial government representation. Through the federal unit, the RWSG is studying the impact of community participation in rural projects. This contribution to the Program's structured learning process will clarify the ingredients for subsequent sector projects in Pakistan; and the \$137 million IDA rural water and sanitation project under way will be one of the first projects to benefit from the refined approaches.

Parallel to these efforts, capacity building in key provincial sector agencies focuses on improved implementation, including better monitoring and evaluation and management information systems, improvements in cost recovery policy and practice, and better asset management for urban utilities. The RWSG also helps to disseminate information through a quarterly newsletter called "Aab" (water).

In the past year, the RWSG has provided support to the World Bank, particularly in the preparation of the IDA rural water and sanitation project, to DGIS and GTZ in the preparation of projects in the Northwest Frontier Province and Baluchistan, and assisted the Asian Development Bank in preparing projects in Punjab.

In response to the rapid deterioration of the environment in poor urban areas, the RWSG completed a study on Women's Role in the Management of Environmental Conditions. Based on

the recommendations of this study, as well as another parallel study of rural women, the Program is assisting the GOP in preparing a demonstration project that features NGO participation and aims for sustainable management of services.

The Ministry of Local Government and Rural Development, NGOs involved in community training, and key sectoral agencies attended a major workshop sponsored by the RWSG to prepare a national strategy for human resource development that builds on existing facilities. The workshop provided direction for planning the development of training materials and established a team for training in PROWWESS participatory approaches. This effort to create a national and provincial network, with the active involvement of NGOs, is expected to support ongoing investment programs including the IDA rural water supply and sanitation project.

The Program continued to collaborate with UNICEF in the implementa-

tion of the UNDP- and UNICEF-assisted demonstration project on Pak-Afridev handpumps. A proposal on monitoring of VLOM handpumps has been forwarded to UNICEF for funding and execution. The Program has also initiated a study of improvements of indigenous household handpump installations in Punjab.

#### *Sri Lanka*

In Sri Lanka, the RWSG-SA has been closely involved with providing support to the preparation of a World Bank-funded project. This Community-Based Water Supply and Sanitation Project will be implemented in three districts. The Program supervised the preparation of the district development plans, and participated in the appraisal of the project. The Asian Development Bank has been relying on RWSG expertise in these areas for a similar project in three other districts.

To develop a national sector program, the RWSG-SA has been

providing comprehensive support to the government. The goal is to produce an action plan that makes the best use of increasing investment. In consultation with sector professionals from key organizations, the RWSG is preparing a working document entitled "Situation Analysis, Development Strategy and Framework for Investment," which recommends decentralization and increased cost recovery. In June, the RWSG presented the recommendations at the Donor Consultation on Sector Coordination Issues held in Colombo.

The RWSG is assisting in the establishment of a community water supply and sanitation unit within the Ministry of Housing and Construction. The unit will be responsible for implementation of all rural water supply and sanitation projects. In cooperation with the National Housing Development Authority, the formulation of a low-cost sanitation project for new housing in Colombo is under way.

## TECHNOLOGY PROMOTION UNIT

Since its inception, the Program has played a leading role in the development of a number of appropriate water and sanitation technologies, including VLOM handpumps and low-cost pour-flush and VIP latrines. Designing and field testing a technology yields valuable experience that can remain confined to a limited audience unless the lessons are shared. The Technology Promotion Unit (TPU), therefore, works interregionally to provide assistance to the RWSGs, donor agencies, NGOs, and the private sector on request, and coordinates research on water and sanitation technologies with national and international institutions including the

Swiss Center for Appropriate Technology, SKAT, and the U.K. Consumer Research Laboratory. The TPU also provides technical assistance to manufacturers and integrates appropriate technologies into projects around the world. Currently, projects supported by UNCDF, UNICEF, FINNIDA, DANIDA, and the World Bank are being extended assistance.

In South Asia, the TPU has initiated environmental sanitation pilot projects, including a duckweed-based wastewater treatment facility combined with fish culture, and the development of easily installed and maintained pour-flush latrine kits. In collaboration with the Government

of India, the TPU has also published technical guidelines for design, construction, and maintenance on pour-flush latrines. In June 1991, the TPU, together with SKAT and UNICEF, organized a handpump meeting in Islamabad that provided an opportunity for informal consultations on current handpump issues such as establishing consistent manufacturing specifications and supporting private-sector manufacturers. Currently, the TPU is conducting work on low-cost wastewater conveyance, treatment, and disposal systems; unconventional water supply; and water treatment technologies for small communities and households.



# EAST ASIA AND THE PACIFIC



**M**ore than half of the world's population lives in East Asia and the Pacific, where hundreds of millions of the poor lack even the most rudimentary water and sanitation facilities. Rapid population growth and uneven economic development are severely straining the social and environmental infrastructure in many countries.

The Program's Regional Water and Sanitation Group for East Asia and the Pacific (RWSG-EAP) has been active in China and Indonesia for nearly a decade. More recently, it has undertaken initiatives in the Philippines, Mongolia, Vietnam, and South Pacific Island nations including Papua New Guinea.

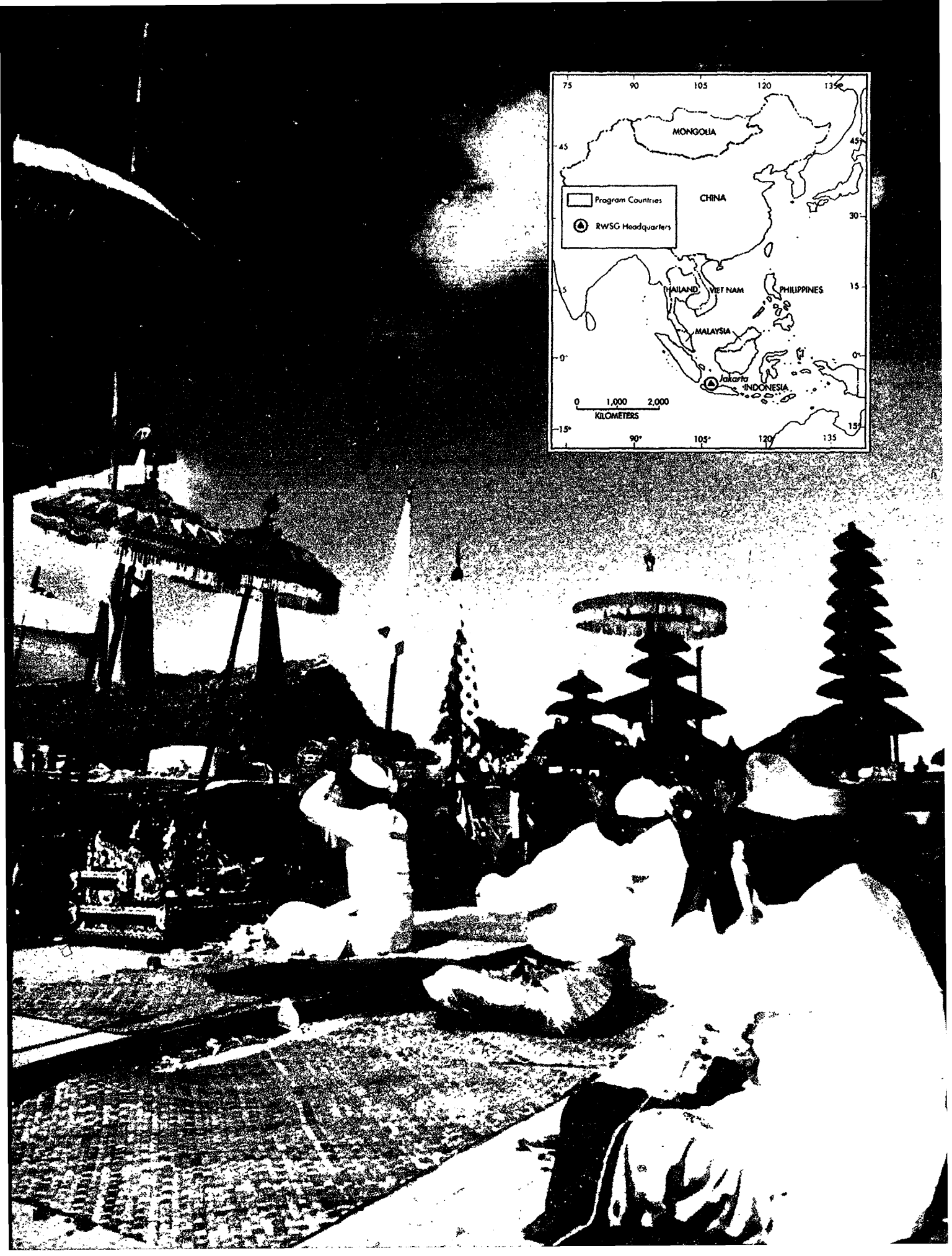
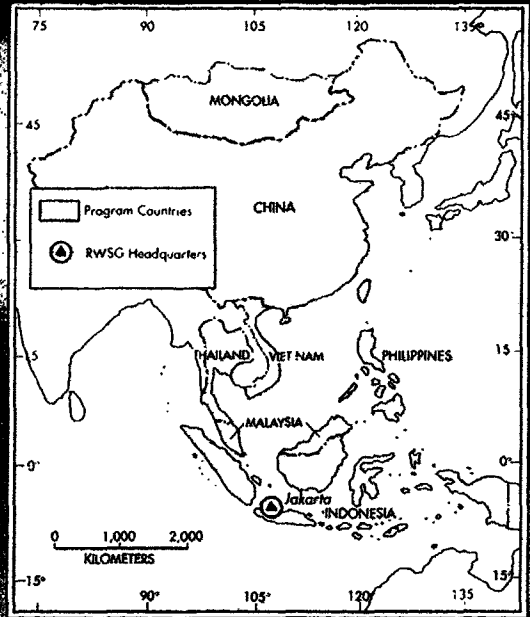
The regional office opened in Singapore in 1989 and was transferred to Jakarta in mid-1991. Country project offices were established in China and

Indonesia and staffed by local experts with expatriate support. At the end of 1991, the UNDP Regional project, RAS/86/160, "Sector Development Teams for Asia," was concluded, and many of its activities and staff were integrated into the RWSG-EAP and the RWSG in South Asia.

To strengthen development partnerships in the region, the RWSG-EAP has been cooperating actively with other external and local agencies. For example, WHO/EHC (Environmental Health Center) based in Malaysia recently joined with RWSG-EAP to sponsor a forum for policy makers on integrated waste management, the second in a series of seminars for policy makers. The RWSG-EAP is also working with WHO/EHC and the International Reference Center for Waste Disposal to develop a regional,

collaborative strategy for solid waste management and resource recovery. RWSG-EAP has pioneered the Program's relationship with the United Nations Volunteers and has helped establish UNV posts in Indonesia and China, as well as within the RWSG-EAP itself.

The staff of the RWSG-EAP is made up of the regional manager and experts in human resources development, community development, and environmental sanitation. Country offices are operational in Indonesia, China and Vietnam.





Reports on activities in individual countries during 1991-92 follow.

### China

Beginning with technology research and development nearly a decade ago, Program efforts have expanded into larger demonstration projects and, with support from UNDP, into ongoing programs in handpumps testing, community management of rural water supply, capacity building, and investment support for the second Rural Water Supply Project. These activities have led to national policy advisory work and support of large-scale investments targeting services for an estimated 100-150 million low-income people.

In poor rural communities, the Program promotes community-managed handpumps, which have proven to be effective and sustainable, as an alternative to piped water systems. Laboratory and field tests have been conducted on various local and imported handpumps in Beijing, Hunan, and Shanxi, and demonstration activities were carried out in Inner Mongolia and Xinjiang. Technical support provided to local manufacturers has spurred successful handpump development, along with the development of low-cost sanitation technologies. These activities formed the basis for the design of new, large-scale sector investments.

These technological advances have been complemented by careful efforts to build institutional capacity. The Low-Cost Rural Water Supply and Sanitation Project (CPR/88/011) supported by GTZ addressed these needs in two regions and demonstrated the feasibility of extending water supply to millions of poor rural inhabitants across China. Through the training and handpump production assistance, and by working with local



staff on the demonstration projects, institutional capacity has been enhanced. Based on the same methods, the Program has aided in the preparation and appraisal of an IDA-financed \$120 million rural water supply and sanitation project that will help to provide better services for more than four million people in Inner Mongolia, Xinjiang, Yunnan, Hunan, Guangzhou, and Gansu. More than half of this population will be served through new, low-cost water and sanitation systems.

Linked to this project, another capacity-building effort was funded by UNDP. "Capacity Building and Investment Preparation for Rural Water Supply and Sanitation in Poor and Remote Areas" supports sound implementation strategies, technology transfer, institution building and training, and demonstration of proven approaches and technologies. Initial activities have focused on sector planning and the production of implementation manuals for use by central and provincial authorities in training courses in health education and procurement. To plant the seeds of sustainable sector growth, ITN/China initiatives have been

launched hosted at the China Rural Water Supply Training Centre to train sector professionals, technicians, and trainers in water supply and sanitation. Training capacity will be enhanced primarily through networking with provincial and country training centers, development of trainers, training materials, and other support systems.

Waste management has long been a priority for the Chinese government and also a focus of Program efforts since 1982, when work began to develop policies and programs to maximize resource recovery. Initially, the Program provided advisory support to the Ministry of Construction and an evaluation of the Shanghai resource recovery operations. Subsequent Program involvement has included work with the Guangzhou landfill project, carried out with the support of GTZ. The Program plans to continue collaboration with the Ministry of Construction through new demonstration and training activities in waste management in the poorer sections of urban centers. A parallel ITN network center focusing on waste management has been proposed at the Wuhan Urban Training Center.

### Indonesia

Program promotion of improved sanitation in urban areas in Indonesia began through technology research, demonstration projects, and a public information campaign in the early 1980s. Together with the Department of Public Works and the Department of Health, Program staff developed environmental sanitation in poor communities by developing guidelines, improving management, strengthening institutional capacity, and assisting the government to improve sector policies. The Program also established human resource development activities and training through the ITN centers in the Institute of Technology in Bandung and the Department of Human Settlements (Cipta Karya). Most recently, the Program has begun to concentrate on developing rural sector services through promoting women's participation, addressing the needs of environmental management, and supporting the preparation of World Bank-financed projects, which will help expand service coverage on a large scale.

The RWSG-EAP is lending support to all phases of the Community Water Supply and Sanitation Project (INS/88/005), which is financed by UNDP and the Netherlands government and executed by the World Bank through the Program. During the past year, the RWSG worked with the government to develop policies and guidelines for planning, financing, and implementation of the project. At the two demonstration sites in Sidoarjo (East Java) and Badung (Bali), new approaches to institution building, financing, and social marketing are being applied to increase demand for services. To contribute to institution building, the Project holds workshops in different localities to train sector officials

and acquaint them with the requirements of large, community-based sanitation projects. Capacity building at the community level centers around the preparation and execution of Sanitation Action Plans, which are "owned" by the communities and which drive project and government inputs. Local government staff are also trained in strategic planning, implementation approaches, and applied research methods to allow them to respond to community needs and monitor progress more effectively. As the project has evolved, it has become clear that its unique approaches can serve as a model for sanitation

planning, and can contribute as well to the implementation of the World Bank-funded East Java-Bali Urban Development Project.

Building on this experience, the Program has been increasing its involvement in the sector by planning and preparing the Water Supply and Sanitation Project for Low-Income Communities (WSSPLIC) with funding from UNDP and the Netherlands government. This is the first World Bank-financed sector project to focus on rural areas of the country, and it incorporates community participation and a demand-driven approach in the planning and management of water and sanitation services. Preparation teams established in six provinces are working to develop replicable approaches for financing, training, planning, and other aspects of project implementation, based in many cases on the successful but small-scale experiences of NGOs. These can provide a model for successful execution of a series of new projects to be supported by GOI and external donors. In the coming year, these approaches may also form the basis for collaboration with the World Bank-supported Groundwater Development Project in Central Sulawesi, which will provide water for irrigation and domestic use.

The Program is providing technical and capacity-building assistance to the water supply and sanitation component of the World Bank's Third Health Project, a \$5 million effort that is using traditional social organizations assisted by a national NGO to reach thousands of families in East Kalimantan with a low-cost water, sanitation, and health education program that rural communities can manage on a sustained basis.

The RWSG-EAP has recently helped to develop a national solid-waste



management strategy for Indonesia. In the coming year, it will carry out case studies of private sector and community-based solid-waste management systems in accordance with the Fifth National Development Plan, which emphasizes low-cost environmental sanitation in urban and rural areas. The Program is also assisting GOI with the formulation of water supply and sanitation sector strategies for possible inclusion in the Sixth Development Plan.

#### **Malaysia**

The Program supported the country's Economic Planning Unit in developing a water resources management information system and data base through UNDP Project MAL/89/010: MIS for Water Resources and Sanitation. The project aims to establish a water resources information system and data base, and to train staff in its maintenance and application. While the system was being established, the Program sponsored a group of Malaysian officials on a study tour to Korea and Taiwan to see similar information systems in operation.

#### **Mongolia**

The Program identified necessary technical support for a water and sanitation project and formulated a UNDP project proposal for which it is seeking cofinancing. Activities recommended in the proposal include a demonstration of low-cost water and environmental sanitation technologies such as handpumps, ventilated improved pit latrines, and water treatment; and hydrological studies and training programs on sector planning, project management, hydrogeology, well drilling, water quality management, operation and maintenance, and other topics.



#### **Philippines**

The Program has been assisting the government to strengthen institutional capacity for decentralized planning and implementation of community-based services for low-income groups, and by helping to prepare an urban sanitation strategy.

Through the International Training Network center, the Program works to enhance the technical know-how and training methods of sector institutions, both private and public. The center is now an established resource with strong links to sector agencies, educational institutions, and NGOs.

The Program is a partner with the World Bank and UNDP in several ongoing projects including the Bank's First Water Supply, Sewerage, and Sanitation Sector project, which seeks to improve water supply coverage in Luzon and sanitation coverage nationwide. Through technical assistance to this project, the RWSG-EAP has spurred local manufacturing of Afridev handpumps and established mechanisms for quality control. Successful management of the systems is the critical issue for the project, which includes such features as the expanded role of small-

scale "backyard" well-drillers, VLOM specifications for handpumps and latrine pans, local manufacturing capacity, quality control, and human resources development. In anticipation of the World Bank's Third Water Supply Project, the Program helped prepare the terms of reference for national strategy formulation and initial feasibility studies for improvement of wastewater collection and disposal for smaller urban centers outside Manila.

To test shallow-well handpumps for use in the Philippines, a Tara pump demonstration project that includes monitoring of field performance has been initiated through the Program's Technology Promotion Fund. During the coming year the pumps will be installed in Rizal and Bulacan provinces and in centers for refugees who fled the eruption of Mt. Pinatubo.

#### **South Pacific**

After a joint review with WHO/EHC of the Water Resources Assessment and Planning Project executed by UNDTCD, the RWSG-EAP drafted the proposal for a successor project, Water and Sanitation Sector Development for the Pacific Islands, which has received approval for the first phase. To support this new initiative, the RWSG-EAP will expand the efforts of the International Training Network into the South Pacific Region.

## WATER AND SANITATION FOR POOR COMMUNITIES: A STRUCTURED LEARNING APPROACH TO PLANNING AND IMPLEMENTATION

In an effort to reach the rural coverage targets in Indonesia's Fifth Development Plan, the government is preparing a Water Supply and Sanitation Project for Low Income Communities (WSSPLIC) that is proposed for funding by the World Bank. It is the country's first attempt to "go to scale" with a large project that is community-based and demand-driven. The design builds on the successful small-scale experiences of NGOs and several grant-funded government activities. To respond effectively to community needs, the project will feature a flexible, dynamic planning approach.

The project is also innovative for the World Bank. Because of the flexible design, appraisal will be based not on firm disbursement schedules and construction targets, but primarily on the credibility of plans for capacity and institution building. Most important, the project incorporates a process of structured learning, wherein the government and the Bank will monitor and assess progress and adapt the strategy and implementation plan to refine and improve the project's impact. The same approach is also being applied to project preparation, with a careful analysis of the lessons learned from previous Bank experience in the sector being incorporated into the design.

The project will be implemented over a period of five years in six of Indonesia's 27 provinces, primarily in the eastern part of the country but including Central Java as well. The objective is to raise coverage with *locally sustainable*, community managed water supply and sanitation systems to about 60 percent of the population in the targeted provinces. Provincial and local governments will work extensively with local and national NGOs in implementation.

Planning and preparation of this project have been highly collaborative. The government views the project as a

large pilot exercise that will provide a model for the preparation of a series of subsequent major RWSS projects, with funding expected from the ADB and other ESAs. With this in mind, GOI has established planning and coordinating bodies at several levels to ensure that the roles of the government agencies involved are effectively integrated. The key GOI agencies in the sector — National Development Planning Agency, and the Ministries of Public Works, Health and Home Affairs — are all represented on these committees, which meet ad hoc approximately four to six times a year, or more frequently when required.

Within the Executive Coordinating Committee at the level of Director General, three working groups have been established to carry out the preparation of specific elements of the project. Each of these WGs is chaired by the ministry with lead responsibility for the respective project element, but all involved agencies are represented through membership on each committee in order to enhance integration. Attached to the WGs is the Project Preparation Secretariat based within the Ministry of Health. It comprises the consultants and core government staff

who are actually executing the project preparation tasks.

Collaboration between ESAs has also played a role in the preparation of WSSPLIC. Funding for project preparation has come from UNDP through the ongoing Community Water Supply and Sanitation Project which is executed by the Program. This has allowed UNDP to achieve greater impact from its technical assistance by linking it to a subsequent investment project funded by a multilateral development bank.

Finally, NGO-GOI collaboration has been fostered by the project in several ways. It has been acknowledged by GOI and donors alike that several NGOs have achieved notable success, albeit on a limited scale, with WSS projects that inculcate a strong sense of community ownership and beneficiary responsibility for planning and management. Many of these projects have proven to provide efficient, low-cost service on a long-term basis with relatively small external capital inputs. Accordingly, NGOs have been employed to design the WSSPLIC, and it is expected that GOI will delegate substantial responsibilities for project implementation to NGOs.





# LATIN AMERICA



**U**neven development has created a mosaic of contrasting sector needs in Latin America. Overall, one out of four persons still lacks access to adequate drinking water, and two in five have no sanitation facilities. The urban population is expected to surpass 400 million by the end of the century, and at least half these people will live in unhealthy conditions in slums and shantytowns. Some countries have developed efficient sector institutions that manage a variety of effective water and sanitation systems. Others facing rapid population growth, weak institutions, and budget strains have been losing ground.

The Program is tackling these problems in several countries by promoting low-cost and intermediate technologies, building community-level capacity with the help of PROWWESS,

and strengthening human resources and institutions through the International Training Network. The country coordination unit based in La Paz has centered activities on rural and urban programs in Bolivia. Additional work is under way in Brazil, Ecuador, and Paraguay. In cooperation with a group of external support agencies, a new regional network has been established in Guatemala, initially to serve four Central American countries.

The Coordination Unit is staffed by four professionals: the country coordinator, an engineer, and consulting experts on water and human resources. The Guatemala office is composed of a network coordinator and a project officer.

## **Bolivia**

The Program is carrying out several

major projects in Bolivia, helping to bring services to diverse rural and urban populations. The Coordination Unit helps the Bolivian Social Investment Fund to review proposals for technical, institutional, and financial improvements in the sector. The country serves as headquarters for operational missions in neighboring countries through collaboration with the World Bank.

In the highlands of Potosi, the Government of the Netherlands is financing a \$2.8 million Rural Water and Sanitation Project, which is developing sustainable water and sanitation for the rural population in three provinces. The project employs proven low-cost technologies, community management approaches and institution building, and innovative financing mechanisms to expand coverage into a vast, sparsely populated department situated above



4,000 meters elevation. The Potosi team consists of eight Bolivian professionals from various disciplines. Four are Program staff and four are counterparts from the Potosi Regional Development Corporation and the Department of Environmental Sanitation.

During the past year, the implementation strategy was finalized and the three provincial offices were established. Staff were recruited for two offices through a subcontract with a local NGO and through an agreement with the Regional Development Corporation. To help develop a participatory approach, initial planning and training were carried out by PROWESS specialists from Mexico. The staff developed training materials for field use, adapting PROWESS materials to local conditions. Construction of sanitation units in schools served to train masons, to demonstrate latrine options to the communities, and to promote the locally produced Yaku handpump, a version of the Bangladesh Tara adapted by the Program to Bolivia in the late 1980s.

A market study for handpumps found sufficient demand for direct-action handpumps to justify support to a new production center, which has been established in Cochabamba. In addition, the Potosi project completed a performance evaluation of 117 Yaku handpumps.

Program efforts have been instrumental in helping to forge an agreement between the Bolivian government and the World Bank to develop a new rural water and sanitation project for future lending. Scheduled for FY95, the new project would draw on the lessons from Potosi, making Bolivia only the second country after Paraguay in Latin America with a Bank-funded rural water and sanitation project.

The Coordination Unit also



supervises two water and sanitation pilot projects for low-income neighborhoods in Santa Cruz and Cochabamba, the second- and third-largest cities of Bolivia. Financed by the World Bank's Integrated Health Project loan, the two pilot projects are preparing the way for an upcoming Bank project on urban management and services for the urban poor. The Santa Cruz pilot project addresses urban sanitation and has tested numerous intermediate and low-cost options for use in poor neighborhoods. It is developing partnerships with the city utility and a local NGO, and is also mobilizing community participation.

In Cochabamba, the periurban sanitation pilot project is nearing completion. More than 75 percent of the planned latrines have been built and are serving 300 families, and 100 percent of the population has paid the initial contribution to the \$110 water connection fee. With strong community participation and financial contributions, the project is serving as a model for expanding efforts in collaboration with Cochabamba's water and sewerage utility

and the Bolivian Social Investment Fund.

The Unit is designing a human resource development training project for Bolivia, with financing by UNDP's country program. The project aims to establish an in-country network of training institutions, including government, NGO, and private groups, with a coordinating center linked to a national university. A memo of understanding was recently signed with the Pan-American Center for Sanitary Engineering and Environmental Sciences (CEPIS) in Lima, Peru to formalize its role in the training project.

The Bolivian Country Coordination Unit also provides modest assistance to World Bank operational missions in neighboring countries of Ecuador and Paraguay. In Paraguay, where costly design standards combined with insufficient finances have caused low service coverage, the Program played a pivotal role in a preappraisal mission for a \$25-million rural water and sanitation loan. Reshaping investment to provide better services at lower cost, Unit staff

reviewed institutional capacity and formulated a technical assistance package to support sector development, and developed a \$3 million low-cost project component using appropriate technologies for smaller communities.

In Ecuador, the Program staff assisted in appraising a rural water and sanitation component of a World Bank health project. UNDP Ecuador will help to finance a chief technical advisor for this component. The project will employ a combination of government agencies, NGOs, and private organizations to test for the most efficient institutional grouping.

#### **Brazil**

The Program has continued supporting the technical assistance component of the World Bank-funded Water Project for Municipalities and Low Income Areas in some 16 cities in Brazil. Almost \$100 million is being invested in poor, periurban settlements for environmental sanitation improvements and augmentation of water supply based on what the residents want and are willing to pay for.

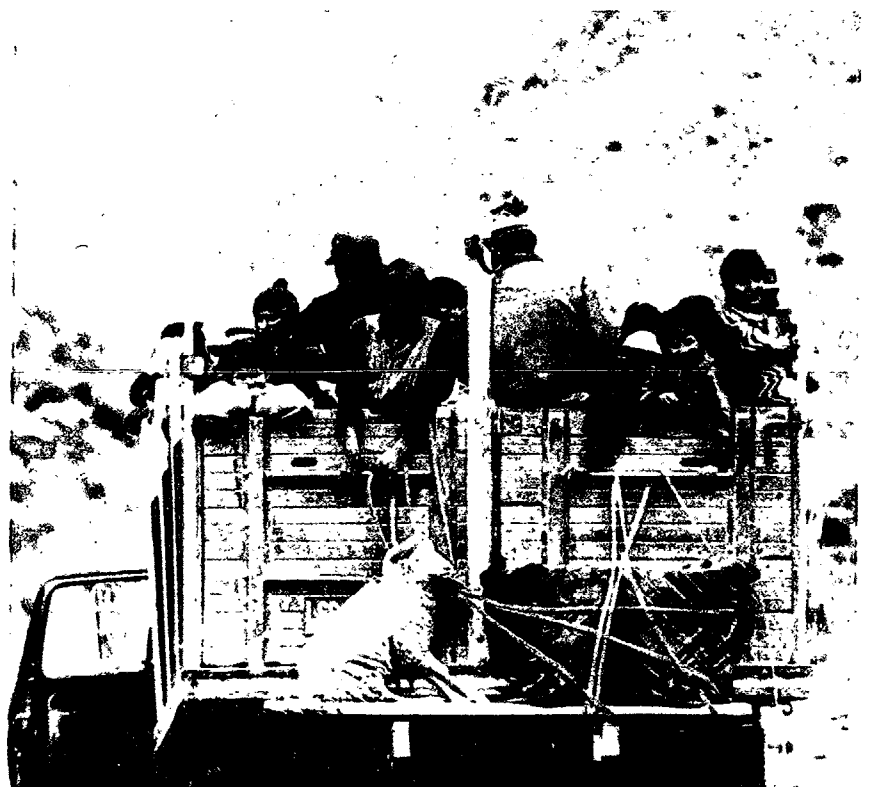
The technical assistance component is assisting the executing agency, Caixa Economica Federal (CEF), in implementing a variety of demand-based approaches involving community and private-sector participants. Monitoring and evaluation of the resulting activities and processes will greatly contribute to worldwide knowledge about what works best in low-income communities. Research work within the project is also analyzing innovations in design standards that are being tested at project and other sites. This assistance will provide CEF with a source of policy advice on practical solutions to environmental hygiene and sanitation problems in poor urban zones.

#### **Central America**

The Program and a number of multilateral and bilateral development agencies launched a new initiative in early 1991. This has initially produced a collaborative effort between four Central American Countries (El Salvador, Guatemala, Honduras, and Nicaragua) and UNICEF, UNDP, PAHO/WHO, the Inter-American Development Bank (IDB), the Swiss Development Cooperation (SDC), USAID/WASH, CIDA, and GTZ/CAPRE, with the goal of improving capacity to address policy issues and service coverage for the poor.

By mid-1992, this initiative had placed two sector specialists in the Regional Water and Sanitation Network for Central America (RWSN-CA) in Guatemala. The Network Unit began work by providing the four countries technical assistance and advice, especially regarding donor coordination in the sector. Participating countries and

external support agencies will select representatives for an Advisory Panel that will agree on common objectives and a collaborative program. The RWSN-CA staff will be responsible for assisting Network partners with implementation of their program.







# MIDDLE EAST AND NORTH AFRICA (MENA)



**M**ost countries in the region are in need of assistance in several areas including rural water supply and sanitation, water resource management, and urban sanitation. Cooperation is needed at the regional level to implement research and innovative projects. Within countries, moreover, solutions to pressing water, sanitation, and waste-management problems must be multisectoral — using an interdisciplinary approach that incorporates the needs of urban areas and agriculture, and industrial and domestic uses.

Waste management and resource recovery have been the principal areas of Program work in the MENA region. Through support from UNDP project RAB/88/009, work has been under way to stimulate the development of sector services through a variety of activities:

conducting surveys of existing facilities and projected needs, promoting interagency collaboration in operations and research, identifying country projects, improving training materials, and organizing national and regional workshops on wastewater reuse and waste management.

Authoritative studies now predict severe water shortages in many countries of the region in the coming decade. One response must be greater wastewater treatment and reuse. The Program is currently in the final stages of preparing a survey of practices in ten countries of the region for publication as a discussion paper.

With support from RAB/88/009, a study has been completed on institutional aspects of wastewater reuse in Tunisia. In November 1991, the study was presented at the Colloquium on

Institutional and Organizational Aspects of Reclaimed Wastewater Reuse, jointly organized by UNDP, FAO, and the World Bank. The workshop brought together officials from key ministries to exchange views and information on treatment technologies, irrigation impacts on plants and soil, soil-aquifer treatment, and monitoring and control of public health effects.

Again with the support of RAB/88/009, two regional workshops were organized this year under an agreement with the WHO Eastern Mediterranean Regional Office (EMRO). In August 1991, representatives from ten countries met in Amman, Jordan to exchange information on solid waste management. Technical papers covered the latest developments in reuse, recycling and disposal options, as well as health and human resource aspects. A set of ten



recommendations set the stages for formulation of national plans of action.

In February 1992, participants from 12 countries met in Amman to review the status of wastewater treatment and reuse in the region, to identify priority needs, and to promote the Health Guidelines for the Use of Wastewater in Agriculture and Aquaculture (WHO, 1989). Organized again by EMRO, the workshop helped to assemble state-of-the-art technical information on the subject from across the region, and generated a set of ten conclusions and recommendations in areas such as reuse in urban sanitation planning, adaptation of the WHO guidelines at the national level, and educational and training requirements for sector personnel.

The Program is providing technical assistance to two pilot projects executed by the World Bank in Tunisia and Morocco that are utilizing duckweed for wastewater treatment. With assistance from the Japanese Grant Facility, the new experimental facilities are the first of their kind on the African continent. Pioneered in the United States and Bangladesh, the duckweed process offers low-cost treatment and produces high-quality effluent, with the added benefit of producing high-quality feed for animals.

Adaptation and translation of eight of the Program's ITN training modules was completed this year by EMRO in Alexandria. The modules provide information on appropriate, community-based technologies for water supply, sanitation, and waste management and are being distributed for use by training institutions throughout the region.

The Program has undertaken initial efforts toward helping to improve rural water supply systems in Morocco. A study is under way to evaluate socio-economic aspects of the recently in-



stalled piped water systems in the Ziz-Tafilalet region serving more than 250,000 people. The objective is to evaluate and improve the system's performance, and determine the applicability of the Ziz-Tafilalet model for other rural regions.

## ANNEX

**Program Publications**

## WORLD BANK WORKING PAPERS

Rogers, Peter. 1992.  
***Comprehensive Water Resources Management: A Concept Paper.***  
Policy Research Working Papers, Water and Sanitation, WPS 879, Infrastructure and Urban Development Department, The World Bank, Washington, D.C.

## WORLD BANK DISCUSSION PAPERS

Lovei, Lazlo and Dale Whittington. 1991.  
***Rent Seeking in Water Supply***  
Sector Policy and Research Discussion Paper, Report INU 85, Infrastructure and Urban Development Department, The World Bank, Washington, D.C.

## PROGRAM DISCUSSION PAPERS

Tamm, Gordon. 1991.  
***Institutional Framework for Small Community Water Supply Systems in the United States: A Review of Experiences and Lessons for Developing Countries.***

UNDP-World Bank Water and Sanitation Program Discussion Paper Series, No. 7, The World Bank, Washington, D.C.

Katko, Tapio S. 1992.  
***The Development of Water Supply Associations in Finland and Its Significance for Developing Countries***  
UNDP-World Bank Water and Sanitation Program, Discussion Paper Series Number 8, Washington, D.C.

## PROGRAM REPORTS

Edwards, Peter. 1992.  
***Reuse of Human Wastes in Aquaculture: A Technical Review***  
UNDP-World Bank Water and Sanitation Program, Program Report Number 2, Washington, D.C., April 1992.

Whittington, Dale, Donald T. Luria, Albert M. Wright, Kyeongae Choe, Jeffrey A. Hughes, and Venkateswarlu Swarna.  
***Household Demand for Improved Sanitation Services: A Case Study of Kumasi, Ghana***  
UNDP-World Bank Water and Sanitation Program, Program Report Number 3, Washington, D.C., May 1992.

## REPORTS

Garn, Harvey and Alfonso Zavala. 1991.  
***FY 91 Sector Review: Water Supply and Sanitation***  
Report INU-OR9. Infrastructure and Urban Development Department, The World Bank, Washington, D.C.

"Improving Services for the Poor: A Program Strategy for the 1990s,"  
UNDP-World Bank Water and Sanitation Program, July 1992.

## ACRONYMS

ADB	Asian Development Bank	PEPAS	Regional Center for the Promotion of Environmental Planning and Applied Science, WHO
AfDB	African Development Bank	PROWWESS	Promotion of the Role of Women in Water and Environmental Sanitation Services
AIDIS	Asociación Interamericana de Ingeniería Sanitaria Ambiental (Inter-American Association of Sanitary and Environmental Engineers)	RAF	Regional Africa Bureau, UNDP
AIHPH	All-India Institute of Hygiene and Public Health	RAS	Regional Bureau for Asia and the Pacific, UNDP
AMREF	African Medical Research Foundation	RUSAFIYA	acronym in Hausa language (Nigeria) for water, sanitation, and health
BMZ	German Ministry for Economic Cooperation	RWSG-EA	Regional Water and Sanitation Group, Eastern and Southern Africa
BUET	Bangladesh University of Engineering Technology	RWSG-EAP	Regional Water and Sanitation Group, East Asia and the Pacific
CEPIS	Pan-American Center for Sanitary Engineering and Environmental Sciences	RWSG-SA	Regional Water and Sanitation Group, South Asia
CIDA	Canadian International Development Agency	RWSG-WA	Regional Water and Sanitation Group, West Africa
CIEH	Comité Interafricain d'Etudes Hydrauliques	RWSS	rural water supply and sanitation
CREPA	Centre régional pour l'eau potable et l'assainissement à faible coût (Regional center for potable water and low-cost sanitation)	SDC	Swiss Development Corporation
DANIDA	Danish International Development Agency	SDT	sector development team
DGIP	Division for Global and Interregional Programmes, UNDP	SIDA	Swedish International Development Authority
DGIS	Directorate General for International Cooperation (the Netherlands)	SKAT	Swiss Center for Appropriate Technology
EMENA	Europe, the Middle East, and North Africa	SSAP	national sector strategy and action plan
ESA	external support agency	TAG	technical advisory group
FINNIDA	Finnish International Development Agency	TCDC	technical cooperation among developing countries
GTZ	German Agency for Technical Cooperation (Deutsh Gesellschaft für Technische Zusammenarbeit)	TCWS	Technical Centre for Water and Sanitation, Harare, Zimbabwe
HRD	human resource development	TWUWS	Water and Sanitation Division, Transportation, Water, and Urban Development Department, The World Bank
IBRD	International Bank for Reconstruction and Development	TWUWU	UNDP-World Bank Water and Sanitation Program
IDA	International Development Association	UADE	Union of African Water Suppliers
IRC	International Reference Center for Community Water Supply and Sanitation	UNCDF	United Nations Capital Development Fund
IRC-WD	International Reference Center for Waste Disposal, Duebendorf	UNDP	United Nations Development Programme
ITB	Institute of Technology, Bandung, Indonesia	UNDTCD	United Nations Department of Technical Cooperation for Development
ITN	International Training Network	UNICEF	United Nations Children's Fund
KfW	Reconstruction Loan Corporation of the Federal Republic of Germany	USAID	United States Agency for International Development
LDC	less-developed country	UST	University of Science and Technology, Kumasi, Ghana
LWUA	Local Water Utilities Administration, Government of the Philippines	VIP	ventilated, improved pit (latrine)
NCO	national country officer	VLOM	village-level operation and maintenance
NETWAS	Regional (HRD) center for West Africa, based in AMREF, Nairobi	WASH	Water and Sanitation for Health Project
NGO	nongovernmental organization	WHO	World Health Organization
NORAD	Norwegian Agency for International Development	WID	women in development
ODA	Overseas Development Administration (United Kingdom)	WSSA	Water Supply and Sewerage Authority (Ethiopia)
PAHO	Pan American Health Organization	WSSLIC	Water Supply and Sanitation for Low-Income Communities
PAT	promotion of affordable technologies		

## UNDP-WORLD BANK WATER AND SANITATION PROGRAM

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### *United Nations Development Programme*

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P. O. Box 30577  
Nairobi, Kenya

### *Latin America*

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Casilla 9692  
La Paz, Bolivia

### *East Asia*

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P. O. Box 524/JKT  
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### *West Africa*

The World Bank  
01 B. P. 1850  
Abidjan 01, Côte d'Ivoire

### *South Asia*

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New Delhi, India

## REGIONAL WATER AND SANITATION NETWORK

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