



USAID
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INVESTMENTS IN DRINKING WATER SUPPLY
PROJECTS AND RELATED WATER RESOURCES ACTIVITIES
REPORT TO CONGRESS
FISCAL YEAR 2007



May 2008

Photo credit: Photo by Jay Tecson/ECO-Asia

Caption: Hand washing is important to reduce the incidence of diarrhea and other waterborne diseases. ECO-Asia supports Water, Sanitation, and Hygiene (WASH) campaigns in San Fernando, Philippines, to teach young children the importance of hygiene.

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Investments in Drinking Water Supply Projects and Related Water Resources Activities

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SECTION I.A: INTRODUCTION AND SUMMARY

This is the fiscal year (FY) 2007 Report to Congress from the U.S. Agency for International Development (USAID) about obligations made during the year in drinking water supply projects and related activities.¹ The figures presented in this report are based upon actual obligations reported by USAID Operating Units around the world. The report also briefly summarizes associated supporting water management programs that help ensure water security and sustainability with equity.² These include water resources management, water productivity, and water-related disaster risk reduction.

During FY 2007, USAID provided access to improved water supply to more than two million additional people. Another two million additional people were provided with access to improved sanitation. The Agency's investments in "drinking water supply projects and related activities" reflect the urgent need to provide safe and affordable domestic water supply that is effectively integrated into overall water resources management.

In FY 2007, USAID exceeded both the worldwide (\$200 million) and the Africa (\$50 million) Congressional directives, obligating \$213 million worldwide for drinking water supply projects and related activities, and obligating almost \$104 million for drinking water activities in Africa. This \$213 million for FY 2007 represents an increase from the \$203 million in FY 2006.

¹ The term "obligations," rather than "expenditures," is used throughout this report. It is important to note that *obligations* refer to funds appropriated by Congress and committed by USAID to a specific grant, contract or other agreement or activity in a particular fiscal year, while *expenditures* refer to those obligated funds that have actually been spent by the Agency.

² *Water security and sustainability with equity* simultaneously considers the need for human access to safe and affordable water for health and well-being, the assurance of economic and political stability, the protection of human populations from the risks of water-related hazards, the equitable and cooperative sharing of water resources, the complete and fair valuation of the resource, and the sustainability of ecosystems at all parts of the hydrologic cycle.

SECTION I.B: 2007 CONGRESSIONAL AND AGENCY BACKGROUND

In FY 2005, Congress increased the directive for “drinking water supply projects and related activities” through the Foreign Assistance Appropriations Act (Public Law 109-102, Nov. 14, 2005) from \$100 million (the level set from 2003–2005) to \$200 million. The Revised Continuing Appropriations Resolution (Public Law 110-5, Feb. 15, 2007) applied the \$200 million FY 2006 directive to FY 2007 (\$198 million, after rescission).

On June 1, 2006, following the enactment of the “Senator Paul Simon Water for the Poor (WfP) Act of 2005” (Public Law 109-121, Dec. 1, 2005), the State Department—with USAID and other U.S. Government (USG) support—developed and submitted a Report to Congress containing a comprehensive strategy for implementation of the Water for the Poor Act. The programs reported herein that deal with drinking water supply and related activities are a reflection of USAID’s continuing efforts to implement that strategy with the State Department and other USG agencies. These efforts during FY 2007 were carried out in a climate of reforms implementing a new Framework for Foreign Assistance in the Department of State and USAID. A new Operational Plan process with a Foreign Assistance Coordination and Tracking System (FACTS) was implemented for the first time during FY 2007. Much of the information provided in this report is derived from information made available through FACTS as submitted by all USAID Operating Units worldwide.

SECTION I.C: OVERVIEW

Water is an essential component to human health, food security, economic growth, national and regional political security, and environmental sustainability. However, more than 1.2 billion people worldwide, and one in every four people in the developing world, currently lack access to an improved water supply; two in every five people have no access to improved sanitation.³ The reasons for this shortfall are diverse, and include competition for and inadequate management of water resources; ineffective institutions and related human resources; shortfalls in financing; and lack of effective demand, especially for sanitation. Approximately 450 million people in more than 30 countries face serious shortages of freshwater. By 2025, this number is expected to increase to 2.8 billion people in more than 48 countries; 40 of these countries will be in the Middle East, North Africa, or sub-

³ Defined as a “connection to a public sewer or septic system, or access to a pour-flush latrine, simple pit latrine, or ventilated improved pit latrine.”

Saharan Africa. While most water demand is for agricultural production, competition for scarce local and regional water resources will increasingly have an impact on water requirements for domestic purposes. Globally, water demand tripled during the past century alone, and is doubling every 20 years—strongly suggesting that a continued strong commitment to, and substantial investment in, efforts to vigorously address the need for water security and sustainability with equity are required.

SECTION 2.A: “DRINKING WATER SUPPLY PROJECTS AND RELATED ACTIVITIES” ACTUAL FY 2007 OBLIGATIONS

The Foreign Operations, Export Financing, and Related Programs Appropriations Act, 2006 (Public Law 109-102, Nov. 14, 2005) stated: “Provided further, that of the funds appropriated by this Act, not less than \$200,000,000 shall be made available for drinking water supply projects and related activities, of which not less than \$50,000,000 should be made available for programs in Africa.” The Revised Continuing Appropriations Resolution, 2007 applies these same budget requirements to FY 2007 (less rescission) at a level of just over \$198 million.

USAID defines “drinking water supply projects and related activities” for purposes of this report as “those activities that improve access to and availability of clean drinking water to rural, peri-urban and urban populations; reduce water contamination through provision of proper drainage and removal of human waste (connection to public sewer or septic system, or access to a pour-flush latrine, simple pit latrine, or ventilated improved pit latrine); ensure water source protection; and promote improved hygiene behaviors. Large-scale wastewater treatment facilities are not included in this definition.”

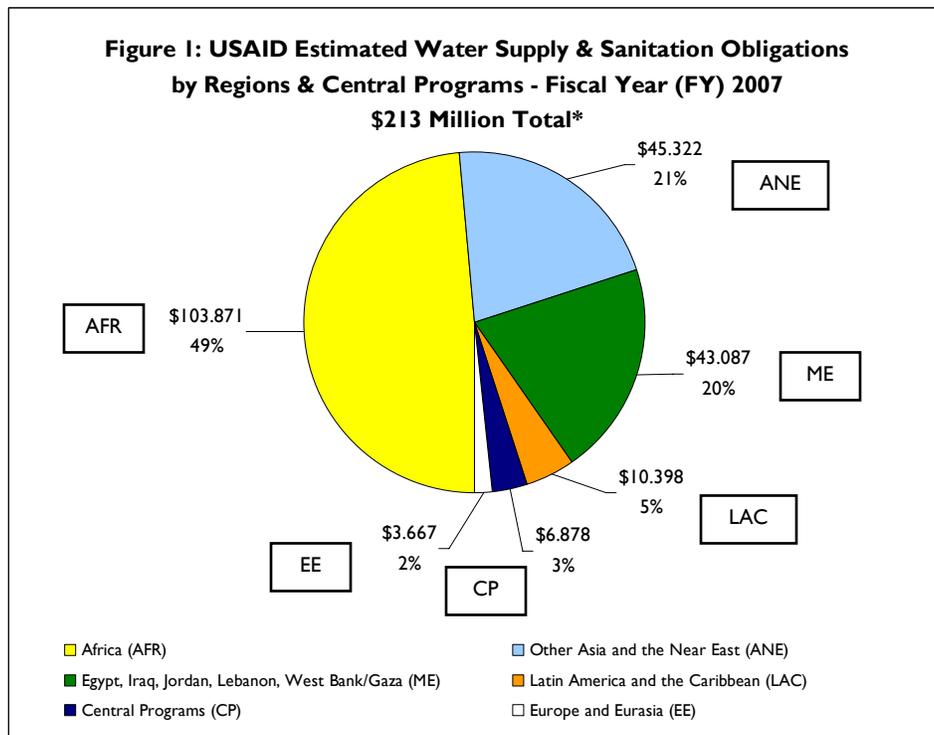
USAID analysis of information that was entered into the new FACTS database by USAID missions and other Operating Units during November of 2007 resulted in an estimate of \$213 million as the total amount obligated for drinking water supply projects and related activities during FY 2007. This includes \$77 million from the International Disaster and Famine Assistance (IDFA) account, plus \$135 million from all other accounts, such as Development Assistance (DA), Economic Support Fund (ESF), and Child Survival and Health (CSH). USAID obligated almost \$104 million for drinking water supply projects and related activities in Africa, of which almost \$66 million came from the IDFA account.

SECTION 2.B: REGIONAL DISTRIBUTION OF FY 2007 OBLIGATIONS and RESULTS

The Africa region has reported the largest actual obligations during FY 2007 for drinking water supply projects and related activities, with 49 percent of the worldwide total (see Figure 1).

The numbers of people receiving access to improved water supply (2,171,773) and/or access to improved sanitation (1,580,795), shown in Table 1, are figures

that have been reported through the FACTS. The definitions of the “numbers of people” indicators under the water supply and sanitation element in the new Framework for Foreign Assistance were, for the first time, focused on numbers of people receiving “access to improved” water supply and “access to improved” sanitation, to correspond with the definitions used by the United Nation’s Joint Monitoring Program (JMP) to measure progress of the internationally agreed-upon goals on water and sanitation.



* FY 2007 budget data represent best estimates from USAID analysis of information as of November of 2007.

In previous years, USAID has reported “numbers of people receiving improved access” to water supply and sanitation; those reported under this previous definition often already had some form of access to an improved water supply, or access to improved sanitation based on the JMP definitions, but their level of service was further “improved.”

The difference between the MDG “access to improved” and USAID’s previous use of “improved access” is important. The Millennium Development Goal (MDG) of “access to improved” refers to people who are receiving their first access to an improved water supply, or their first access to improved sanitation; these are people who did not previously have such access (these people are usually the very poor in urban slums or small rural villages). Because 2007 was the first year that

USAID implemented this change in definition to reflect the water supply and basic sanitation MDG goals, some confusion was experienced by USAID field staff and USAID cooperators; future reporting is expected to become increasingly routine with each additional year's experience in applying and using the new MDG indicator definitions for water supply and sanitation.

Table I: Additional People with Access to Improved Water Supply and Access to Improved Sanitation in FY 2007 from USAID Activities⁴
(Number of People)

Region/Bureau	Access to Improved Water Supply	Access to Improved Sanitation	TOTAL
Africa Region	202,647	101,620	304,267
Other Asia and the Near East*	1,595,861	1,363,930	2,959,791
Latin America and the Caribbean	373,265	115,245	488,510
Grand Total	2,171,773	1,580,795	3,752,568

*Excludes Egypt, Iraq, Jordan, Lebanon, and West Bank/Gaza

SECTION 2.C: PROGRAMMING TRENDS FROM FY 2005 and FY 2006 to FY 2007

The three-year trend in USAID support for “water supply projects and related activities” is a very positive one. USAID obligated \$161 million for the drinking water directive in FY 2005 (when the directive was \$100 million). Of this amount, \$96 million came from the IDFA account (disaster and famine) while only \$65 million was obligated from various “development” accounts to water supply and sanitation. In 2006, the Agency obligated \$203 million in response to meeting the doubling of the directive to \$200 million in 2006.

The IDFA portion dropped by \$10 million between 2005 and 2006, while the amount of the various “development” account obligations increased from \$65 million to \$117 million. This represented a significant increase in funding for regular water supply and sanitation activities in FY 2006. In 2007, USAID again increased its obligated funds, this time to \$213 million for the drinking water directive, while the IDFA account dropped again by almost another \$10 million. The result is that the “development” accounts funding increased still further to \$135 million, making regular water supply and sanitation activities even larger in FY 2007.

⁴ FY 2007 budget data represent best estimates from USAID analysis of information as of November of 2007.

In Africa, consistent with the trend during the past five years, USAID continued in FY 2007 to substantially increase its programming of development account funding for drinking water supply projects and related activities. Over the past several years, Africa has become the major recipient of USAID assistance in water. In FY 2004, Africa received 12 percent of USAID assistance in water supply and sanitation, while the Middle East countries (Egypt, Jordan, and West Bank/Gaza) received 55 percent. By FY 2007, Africa has risen to represent 49 percent (\$103 million) of all USAID assistance in water supply and sanitation worldwide, while the Middle East fell to 20 percent (\$43 million).

While not reported in the above numbers, it is worth noting that large wastewater infrastructure projects ended in 2006 in both Egypt and Jordan. Jordan directed some of its 2007 funding toward wastewater infrastructure feasibility and design efforts that may lead to the launching of additional large wastewater infrastructure work and funding in future years.

SECTION 2.D: DRINKING WATER SUPPLY, SANITATION, HYGIENE, and WASTEWATER ACTIVITIES

USAID's water supply activities provide or improve the availability of clean drinking water to urban and rural populations. They include water well development, improvement, or rehabilitation; water delivery systems; removal of contaminants through both large-scale water treatment and small-scale or household point-of-use treatment; and drinking water source protection. Larger scale, basin-wide source water protection is captured within the broader water resources management category. Drinking water supply projects and related activities specifically address the provision of clean and adequate supplies of drinking water to rural and urban communities, and the promotion of practices that protect these supplies from contamination by improper handling of domestic water and household waste and inadequate sanitation. USAID activities also address the need to improve the capacity of city governments and both public and private organizations to deliver potable water and sanitation infrastructure services in a sustainable, cost-effective, and water-efficient manner. Additional activities include legal, regulatory, and governance reforms needed to operate and maintain such infrastructure.

Illustrative Activities in Drinking Water Supply, Sanitation, Hygiene, and Wastewater

USAID Public-Private Partnerships in Drinking Water Supply, Sanitation, Hygiene, and Wastewater

The Coca Cola Company (TCCC)/USAID Water and Development Alliance (WADA)

This strategic global public-private partnership has continued its innovative work to address water resources and development needs in priority countries where both USAID and TCCC work. The global alliance has directed more than \$14 million in combined resources to water-related activities in 17 countries to date, supplemented by millions of dollars of complementary support from other partners. WADA was recognized with USAID's 2007 Alliance of the Year award for its combination of strong corporate leadership and catalytic water resources management work. Through WADA, Coca-Cola is able to reinforce its commitment to high corporate standards in the area of water stewardship, which will eventually create a ripple effect to hundreds of production facilities and thousands of employees around the world. WADA advances positive change in community development through the promotion of innovation and creative application of at-scale approaches to service access, behavioral change, and policy and governance reform in the water sector. WADA projects are locally owned and customized to the context of each country, and are providing benefits to more than 300,000 people through increased access to safe water supply and sanitation, improved livelihoods and productive water use, and sustainable management of water resources. The alliance is spreading rapidly through both institutions, and several new partnership activities are under development in the Middle East, North Africa, sub-Saharan Africa, Central America, and Eastern Europe.

West Africa Water Initiative (WAWI)

As one of the first USAID partnerships sponsored through the Global Development Alliance model, the West Africa Water Initiative (WAWI) was launched in 2002 to invest in potable water supply, sanitation, and hygiene activities in Ghana, Mali, and Niger, as part of an integrated approach to water resources management and development. The combined budget from all partners has been more than \$57 million for seven years, and USAID has invested approximately \$11.5 million to date. The Initiative was founded by the Conrad N. Hilton Foundation, WAWI's principal funding institution. Implementation occurs through 13 international partners, who each bring expertise and significant matching resources to this work: World Vision; WaterAid; UNICEF; Desert Research Institute; Winrock International; Cornell International Institute for Food, Agriculture and

Development (CIIFAD); Lions Clubs International; Helen Keller International; the International Trachoma Institute; and the Carter Center. The full range of activities undertaken by the Initiative includes water source development and rehabilitation, latrine construction, household- and school-based sanitation and hygiene education, community mobilization, hydrogeological analysis, policy development, livelihoods, small-scale irrigation, and income generation.

WAWI has met its target to provide positive benefits in water supply, sanitation, and hygiene, and water resources management in Ghana, Mali, and Niger. Almost 300,000 people in these three countries have been provided with access to improved water sources, and approximately 60,000 people have received access to improved sanitation. Thousands more have benefited from income generation, capacity building, and other interventions. In 2008, WAWI is transitioning to a follow-on phase of activity, where there will be an increased emphasis on regionwide learning and dissemination of experiences, and building on the actions of other strategic actors in the sector in West Africa. USAID-funded activities will also expand to Burkina Faso.

HIGHLIGHT on the ECO-ASIA⁵ Water and Sanitation Program: ASEAN Initiative on Environmentally Sustainable Cities

Cities in ASEAN countries face similar water and wastewater challenges, including inadequate sewerage and drainage infrastructure, water supply shortages, and limited access to improved and safe water supply and sanitation services. In 2003, ASEAN launched the ASEAN Initiative on Environmentally Sustainable Cities (ESC) to promote clean water, land, and air in 24 cities.

The ESC Clean Water Framework aims to achieve ASEAN's long-term goal of safe water quality for all by 2010, and to promote the sustainable supply and use of water. The framework includes four pillars: (1) high accessibility and safe quality of the water supply; (2) protection of water resources and public health; (3) sustainable and efficient use of water; and (4) promotion of environmental responsibility. City-to-city networking is a key ESC objective.

The Environmental Cooperation-Asia (ECO-Asia) ECO-Asia Water and Sanitation Program assists with implementation of the ESC Clean Water Framework through demonstration projects with selected member cities, and through regional cooperation activities. Activities include:

⁵ Under the ECO-Asia program, USAID Regional Development Mission-Asia (RDMA) works to support achievement of the Millennium Development Goals in urban areas in four program areas: (1) water services delivery to the poor; (2) sustainable sanitation solutions; (3) water and wastewater utility strengthening; and (4) innovative financing.

- In Phnom Penh, Cambodia, ECO-Asia facilitated an innovative participatory planning process to develop strategic interventions for addressing water and sanitation challenges. As part of this pilot effort, ECO-Asia facilitated a twinning linkage between Phnom Penh and Iloilo City in the Philippines on raising awareness of sanitation and hygiene. With assistance from Iloilo, Phnom Penh has developed a strategy to raise residents' awareness of improved sanitation services, initially targeting a single city district.
- In Halong, Vietnam, ECO-Asia linked the Halong Urban Environmental Company with Indah Water Konsortium, a Malaysian utility, to strengthen Halong's capacity for effectively operating its wastewater treatment plants. With assistance from Indah Water, Halong has adopted standard operating procedures for sustainable operations to manage its two wastewater treatment plants.
- ECO-Asia and ASEAN developed a regional strategy to implement the Clean Water Framework through a regional workshop attended by 19 ESC member cities. Two priority challenges noted in the strategy are: (1) raising citizen awareness of water supply and sanitation to enable equitable provision of services, including to the urban poor; and (2) applying good governance in services delivery to ensure adequate public involvement and enhanced human capacities, policies, and financing. In implementing the regional strategy, ECO-Asia and ASEAN are collaborating to replicate city-to-city twinning initiatives with other ESC member cities.

Pioneering Water and Wastewater Utility Twinning in Asia

Water and wastewater service utilities worldwide engage in sustained partnerships, or twinning relationships, to share experience on improved policies and practices, and to build human and institutional capacity. The Hashimoto Action Plan developed during the 4th World Water Forum in 2006 calls for increased development of Water Operators Partnerships “in order to strengthen the capacities of the public water operators that currently provide over 90 percent of the water and sanitation services and who are key players for attaining the Millennium Development Goals on drinking water supply and sanitation.”

While most Asian utilities face institutional and operational challenges, some have achieved remarkable successes. These utilities include Ranhill Utilities Berhad and Indah Water Konsortium of Malaysia, Singapore Public Utilities Board, Phnom Penh Water Supply Authority, and Manila Water Company Inc.

The ECO-Asia Water and Sanitation program has pioneered a strategy for utility twinning in Asia aimed initially at improving utility performance and expanding

services. Through twinning, utility managers and staff share experience and gain practical knowledge. ECO-Asia facilitates twinning by identifying partners, developing twinning agreements and work programs, and supporting work program implementation. Under this approach, partners work together to define needs and capabilities, roles and responsibilities, resource requirements, and expected outcomes. ECO-Asia supports technical exchange, technical assistance, study tours, workshops, on-the-job training, and short-term internships.

ECO-Asia twinning arrangements have resulted in the adoption of policies or practices that have led to improved or expanded services. Ongoing twinning arrangements include:

- Ranhill Utilities Berhad of Malaysia sharing with Provincial Waterworks Authority (PWA) of Thailand and Sewerage Company of Vietnam on improving operational efficiencies;
- Manila Water Company of the Philippines sharing with Surabaya City Water Enterprise of Indonesia on developing innovative schemes for serving the urban poor;
- Indah Water Konsortium of Malaysia sharing with Halong Urban Environmental Company in Vietnam on strengthening wastewater management services delivery; and,
- King County Wastewater Management, USA, sharing with the Wastewater Management Authority of Thailand on optimizing system operations and maintenance.

While utility twinning catalyzes sustainable outcomes at the utility level, key regional leaders such as Ranhill Utilities Berhad, Manila Water, and Singapore PUB are serving as regional centers for twinning. To disseminate and replicate results, ECO-Asia cooperates with regional networks and platforms on knowledge sharing, training, and networking, including Southeast Asian Water Utilities Network, South Asia Water Utilities Network, ASEAN, Association of Development Financing Institutions in Asia and the Pacific, and Singapore PUB WaterHub.

Piloting Continuous Water Supply in Pune, India

Intermittent water supply is a significant challenge in India. Major cities such as Kolkata, Delhi, Chennai, Bangalore, and Hyderabad have water supplies for fewer than 8 to 10 hours a day. While some city residents receive piped water throughout the day, most citizens in Pune cope with intermittent supply through the use of

storage tanks, booster pumps, and tube-wells, which can have significant negative impacts on human health and economic productivity. To address this challenge, the Pune Municipal Corporation (PMC) has committed in its City Development Plan to improving the living conditions of the city's three million residents by providing continuous piped water supply.

The ECO-Asia Water and Sanitation Program is working with PMC to demonstrate an innovative approach for converting intermittent to continuous water supply in Pune's Gandhi Bhawan area, which has a population of approximately 75,000. In this pilot activity, ECO-Asia and PMC have pioneered a model that enables PMC to improve service reliability, prevent leakages, manage water pressure, and reduce non-revenue water (NRW) by adjusting system hydraulics. In developing this approach, ECO-Asia exposed Pune decision-makers and engineers to international best practices by facilitating technical exchange with counterparts from Manila Water Company.

PMC has initially targeted 10,000 residents in one area within Gandhi Bhawan, and plans to increase this number to 35,000 in 2008, including residents in a large slum area. In reaching this goal, PMC will have invested more than \$100,000 and trained more than 20 staff. Encouraged by the success of the pilot activity, PMC will launch a full-scale effort for citywide continuous water supply. As a first step, PMC is planning to issue an international competitive bid for improvements in citywide metering, water auditing, leakage detection for consumer meters, rehabilitation of existing systems, and implementation of continuous water supply. The city will issue performance-based management contracts for managing citywide continuous water supply operations. PMC also plans to complete implementation of 100 percent metering by the end of 2008.

Pune's initiative is proving to be a role model for other Indian utilities. To replicate this experience, the Maharashtra Water Supply and Sewerage Department is working with ECO-Asia to build the capacity of a state-level utility that manages water supply in 25 cities in Maharashtra. ECO-Asia has twinned this utility with a counterpart, Ranhill Utilities Berhad in Malaysia, to develop a continuous water supply system at Badlapur near the state capital of Mumbai.

Improving Access to Water Supply in Urban Poor Communities in Indonesia

An estimated 30 million people in Indonesian cities, especially the poor, lack access to safe drinking water due in large part to the weak institutional capacity and governance systems of water utilities. City decision-makers retain outdated tariff structures, and have not recognized that the urban poor are willing and able to pay for piped water. Despite these challenges, some cities, such as Bandung,

Medan, and Surabaya, are devising innovative schemes for delivering piped water to the urban poor based on the experiences of other cities in Asia. Utilities in Manila, Philippines, and Phnom Penh, Cambodia, have demonstrated that community-run distribution systems can supply bulk water provided by a water utility. These master meter schemes provide a win-win solution wherein the poor benefit from lower connection costs and flexible payment options, while the water utilities recover costs and reduce administrative burden.

The ECO-Asia Water and Sanitation Program is working with water utilities in Surabaya and Bandung to convert public taps into bulk connections that community-based organizations (CBOs) then distribute to between 20 and 50 households. Assistance includes: (1) identifying poor households through willingness-to-connect surveys and poverty mapping; (2) mobilizing communities through social marketing; (3) developing master meter schemes; and (4) establishing and training CBOs on operation and maintenance of the network and fee collection. To support these efforts, ECO-Asia facilitated linkages with counterparts from Medan, Indonesia, and Manila Water Company.

Surabaya adopted Manila Water's practical approach to serving the urban poor through small-scale water distribution and management systems. Based on a willingness-to-connect survey, Surabaya has leveraged World Bank output-based-aid (OBA) funds for connecting 15,000 poor households to piped water. OBA funding will support 10–15 master meter schemes. In Bandung, despite the limited raw water availability, the water utility, PDAM Kota Bandung, is piloting a master meter scheme and community-based distribution system to serve 150 poor residents.

As a result of OBA financing in Surabaya and community willingness-to-pay in Bandung, both utilities are building on pilot efforts to replicate best practices and expand services to the urban poor. ECO-Asia is facilitating a twinning relationship between Surabaya and Manila Water to share experience. PDAM Kota Bandung is also establishing a revolving fund to leverage its own financial contribution to convert more of its 300 public taps into bulk connections for community-run distribution systems. In addition, the Indonesian Ministry of Public Works is planning to replicate the community-managed bulk supply and distribution system model in other cities.

Demonstrating Sustainable Sanitation Solutions in Marikina, Philippines

In the Philippines, more than 30 people are estimated to die each day from preventable waterborne diseases. A principal cause of these diseases is groundwater contaminated by poorly treated or untreated human waste. According

to a recent USAID study, only three percent of urban dwellers in the Philippines are connected to sewers, since most urban residents have on-site septic tanks. Most cities in the Philippines do not provide desludging services, causing septic tanks to overflow and contaminate groundwater.

Through a participatory planning approach, the ECO-Asia Water and Sanitation Program is working with Marikina City and Manila Water Company Inc. to develop sustainable sanitation solutions that include septage management, infrastructure development, and citizen awareness. Marikina has enacted a septage management ordinance and developed a citywide septage management program. To promote the construction of sewer systems, ECO-Asia has facilitated cooperation between Marikina City and Manila Water Company, which is designing and constructing municipal wastewater treatment plants and sewerage collection systems that eventually will connect all city residents to sewerage and wastewater treatment.

ECO-Asia also helps raise awareness of the importance of good sanitation by training community leaders in developing community education and hygiene promotion campaigns, including WASH (Water, Sanitation, and Hygiene) days for children, and information outreach events. These programs build support for Marikina's efforts in promoting sustainable sanitation and hygiene, resulting in an increased willingness to pay for sanitation services.

Manila Water Company is applying innovative financing schemes to sustain sanitation services by levying surcharges to monthly water bills to fund its septage management program, and wastewater treatment plant construction and maintenance. Marikina conducts targeted information and education campaigns to increase demand for improved sanitation, and to promote community willingness-to-pay.

Marikina's innovative solutions, such as the community-based wastewater treatment facility, serve as models for other cities in the Philippines, and the region.

Low-Cost Sustainable Wastewater Management in San Fernando, Philippines

Urban wastewater pollution remains a significant environmental and health challenge in the Philippines, despite the enactment of the Clean Water Act of 2004, which requires cities to develop wastewater treatment facilities by 2009. Most cities lack the capacity to design and operate wastewater systems. Urban residents also have a limited understanding of the benefits of sanitation, and are generally not willing to pay for improved services. The decision-makers of San Fernando

City, which has more than 120,000 residents, recognize the value of adequate sanitation, and have demonstrated an effective model for developing sustainable sanitation solutions.

Through a participatory planning approach, the ECO-Asia Water and Sanitation Program works with San Fernando City to demonstrate sustainable sanitation solutions. Project components include the development of wastewater systems for municipal facilities, such as the public market and slaughterhouse, and a comprehensive septage management program that requires routine septic tank desludging and sludge treatment and disposal. ECO-Asia is working with San Fernando to provide comprehensive operation and maintenance training that builds the capacity of municipal engineers to design, construct, and operate low-cost facilities for wastewater treatment. ECO-Asia also assists the city in organizing stakeholder meetings and conducting social marketing and hygiene promotion campaigns to build community support for both the point-source treatment facilities and septage management.

With an investment of more than \$130,000, San Fernando has successfully designed and constructed a sewage treatment facility for its public market, which benefits more than 5,000 daily users. The facility employs innovative low-cost technologies that use reclaimed water in the market's public restrooms. The wastewater system for the slaughterhouse and the septage management program will be fully operational in 2008. In addition to technical assistance for wastewater systems development, ECO-Asia has assisted San Fernando in setting appropriate sustainable user fees to ensure full cost recovery. For the city market, stall owners and restroom users pay a fee to cover both infrastructure development and system operations.

San Fernando's public market wastewater system will achieve full cost recovery in seven years. It can be replicated both locally and regionally, and provides an example of how city governments can address wastewater using their own resources.

Developing Water Utility Efficiency Loans, Philippines

The Local Water Utilities Administration (LWUA) is the principal lending agency for the water sector in the Philippines. In July 2004, the Philippine Government enacted Executive Order 279 (EO 279) to strengthen and restructure LWUA. EO 279 requires LWUA to classify water districts according to their creditworthiness status: creditworthy, semi-creditworthy, pre-creditworthy, and non-creditworthy. Creditworthy water districts are to source their financing needs from government financing institutions and eventually from private financing institutions, while LWUA is required to focus its lending and technical assistance on water districts

classified as less creditworthy. EO 279 also requires LWUA to review its financial products and determine their appropriateness based on the needs and financing risks of lending to less creditworthy borrowers.

With support from USAID, LWUA has developed new financial products targeting pre- and semi-creditworthy water districts by financing efficiency improvements to strengthen their financial and operational performance, and ultimately to improve creditworthiness. To pilot these new financial products, known as Efficiency Improvement Program (EIP) loans, USAID assisted two water districts in preparing EIP proposals for tailor-made financial product designs. USAID also assisted LWUA in evaluating risks, and helped determine appropriate tenor, grace period, security types, and other conditions for loans. LWUA issued its first EIP loan of about \$200,000 to the Laguna Water District.

LWUA's EIP loan window represents an important opportunity to further develop the water sector in the Philippines. In December 2007, the Philippine Government released approximately \$3 million to LWUA for financing a range of efficiency improvements nationwide. The Dutch SNS Water Fund has also shown interest in additional capitalization of the EIP loan window.

Numerous water districts have approached LWUA with EIP loan inquiries. With support from USAID, LWUA has short-listed 10 eligible water districts, and expects future expansion of EIP loans nationwide. LWUA is also working to secure additional funding resources for EIP loans.

Connecting the Urban Poor to Piped Water in Negombo, Sri Lanka

An example of USAID's work in the country is in Dupatah-1 an urban community of 80 households (about 400 people) in Negombo, relied on a public standpipe that supplied water for only two hours in a day. Connecting the urban poor to piped water remains a significant challenge for national and municipal decision-makers in Sri Lanka. The National Water Supply and Sewerage Board (NWSDB), which delivers water to community standpipes, does not receive revenues for this service and therefore considers the standpipe supply as non-revenue water.

The ECO-Asia Water and Sanitation Program is working with the Negombo Municipal Council (NMC) and NWSDB to demonstrate an innovative approach for supplying piped water to Dupatah-1 through a master meter scheme. In this pilot approach, a bulk master meter and small piped distribution network replace the public standpipe. A CBO is established to mobilize the community to enter into a bulk water supply agreement with NWSDB. The CBO helps to maintain the distribution network, and facilitates user fee payment to NWSDB.

ECO-Asia provides assistance in developing the master meter scheme in part by facilitating linkages among NMC, NWSDB, community leaders, and regional counterparts who have developed similar schemes. In particular, Manila Water Company has shared experience with Negombo on its model for providing access to urban poor communities via a master meter scheme.

While the master meter scheme demonstrated a sustainable solution for connecting Negombo residents, the project also demonstrated an effective strategy for mobilizing communities on a voluntary basis in the design and construction of the distribution network. As a whole, the community paid for the connection charges and user fees to NWSB and devised a fee collection approach. NWSDB trained more than 20 community members and NMC staff on effective operations and maintenance for the small distribution network. The Dilmah Tea Company also contributed funding for the purchase of pipes and other equipment.

Encouraged by the success of the pilot, NMC and NWSDB are working to replicate this approach in other parts of Negombo and Sri Lanka. The Dutch SNS Water Fund has also requested the assistance of ECO-Asia in facilitating a linkage with a local development bank for financing replication of the master meter scheme in other Negombo communities and regions of Sri Lanka.

Improving Operational Efficiencies for Water Services Delivery in Thailand

Serving more than 11 million urban residents through 228 waterworks throughout Thailand, the Provincial Waterworks Authority (PWA) anticipates not only increased water demand in the near future, but also dwindling water availability. These challenges, combined with outdated water tariff structures and mandates to upgrade service delivery, compel PWA to focus on improving its operational efficiencies by reducing NRW, a key measure for efficient utility performance. Although PWA has reached a relatively steady NRW level of 26 percent by outsourcing NRW reduction efforts to the private sector, it is also taking an active role in NRW management by adopting international best practices and building staff capacity.

USAID's ECO-Asia Water and Sanitation Program assists PWA in building its NRW management capacity by facilitating a utility-to-utility twinning arrangement with Ranhill Utilities Berhad, a Malaysian utility recognized as a leader in the region in NRW management. By providing in-kind assistance, Ranhill has transferred best practices to PWA through targeted workshops, on-the-job training, and discussion groups with operations staff and senior managers. PWA has gained practical knowledge in conducting an internationally accepted water audit method for identifying major causes of NRW; in implementing critical measures for

reducing NRW through effective customer metering and leakage detection; and in sustaining NRW management through the proper establishment and operations of district metering areas (DMAs).

Through this model partnership, PWA has increased its core capabilities and is actively applying international best practices to improve operational efficiencies by reducing NRW. Ranhill has trained more than 100 core PWA staff from waterworks nationwide and three major training centers. Key engineers and managers have adopted standard forms, worksheets, and approaches presented for conducting water audits, collecting and analyzing field data to locate leakages, and managing DMAs. PWA has also adopted Ranhill methodologies in verifying and ensuring water meter accuracy. NRW reductions and other improvements result in increased revenues that can support PWA service expansion.

PWA training centers are now training staff and managers from all 228 PWA waterworks, based on best practices shared through the twinning activities. PWA is also interested in sharing experience with other regional partners, including the National Water Supply and Drainage Board of Sri Lanka, other members of the South Asia Water Utilities Network, and the Southeast Asia Water Utilities Network.

OTHER PROGRAMS

Hygiene Improvement Project (HIP)

USAID's Hygiene Improvement Project (HIP) aims to reduce diarrheal disease prevalence and improve child survival through sustainable improvements in three key hygiene behaviors: hand washing with soap, safe feces disposal, and safe storage and treatment of drinking water at the household level. To expand programmatically and sustain impact, HIP includes a wide range of likely and uncommon stakeholders at all levels, and promotes a range of effective options and interventions as part of its hygiene improvement programs. HIP strengthens partnerships; coordinates efforts among the various actors, including those supported by USAID; integrates hygiene into health and non-health platforms; and engages the private and commercial sectors to ensure that hygiene and sanitation products and services are available and affordable.

In **Ethiopia**, HIP works in collaboration with the World Bank's Water and Sanitation Program to guide the implementation of the National Hygiene and Sanitation Strategy. Through a "learning by doing" approach in the Amhara region of 20 million people, HIP is building capacity within regional, district, nongovernmental organization (NGO), and private commercial entities to plan, budget, and implement hygiene and sanitation improvement that supports national commitments to achieve universal sanitation coverage by 2012. This

comprehensive approach includes identifying and popularizing a set of key hygiene practices that are feasible and cost-effective, and that can be implemented on a large scale through the programs of participating partners. Through HIP, USAID is also supporting a small but important initiative with other USAID partners in the President's Emergency Plan for AIDS Relief (PEPFAR) to integrate hand washing, sanitation, and safe water practices into home-based and palliative care for people living with HIV and AIDS (PLWHA). This initiative will directly address Ethiopia's needs, while also helping to build the evidence base for the importance of safe water and improved hygiene to PLWHA, and providing concrete programming guidance at a global level.

In **Madagascar**, HIP is working with the national Water, Sanitation, and Hygiene (WASH) network to promote improved hygiene practices at scale. This partnership combines the power of multiple government, NGO, faith-based, and private sector agencies to bring about real, sustained change in hygiene and sanitation practices on a large scale. With HIP support, this partnership launched a year-long nationwide campaign to promote the adoption of the three key hygiene behaviors. HIP places special emphasis on developing a sanitation marketing approach to increase the demand for and availability of low-cost sanitation options through local artisans. HIP also works with the Ministries of Health and Education to define norms and standards for WASH-friendly health centers and schools, and to integrate hygiene in school curricula and after-school programs. HIP has developed relations with a network of established USAID partners in the areas of health, the environment, and water and sanitation to incorporate the adoption of its local-level activities for improved hygiene into their existing program activities, greatly increasing the potential for achieving scale and sustainability.

Water Availability in the Kabul Basin, Afghanistan

Due to a large influx of refugees returning to their homeland and high birth rates, the City of Kabul has a critical need for water resources assessments to allow informed decision-making regarding sustainable water resources management. To meet this need, in 2004, the U.S. Geological Survey (USGS) implemented a scientific, capacity-, and institution-building program for water resources availability, in cooperation with various ministries of the Government of Afghanistan and USAID.

This effort has increased the understanding of water resources availability and water use in the Kabul Basin, and added much-needed capacity and institution building, with emphasis on the Afghan Geological Survey. These programs have identified new potential water resources and improved the likelihood for sustainable water resources management in the area. Ensuring access to clean

water for Afghanistan's poor, especially in the rapidly expanding City of Kabul, will help improve public health and may improve the region's stability.

USAID/Armenia Long-Term Water/Sanitation Financing Options

USAID began a new activity in 2007 with the long-term objective of improving the performance of Armenia's water sector management and regulatory institutions. Armenia's water and sewerage services face serious challenges, including the need for significant capital investment to repair and replace sector infrastructure that has fallen into disrepair. To decrease the sector's dependence on donor financing and support, it is essential that long-term, non-donor financing options be explored and developed. To support this effort, in FY 2007 USAID initiated a program to assist in exploring long-term domestic financing options for increasing Armenian public and private sector financing for water and sanitation infrastructure repair and development. The program's activities in this area include conducting a feasibility study on the mechanisms to finance the rehabilitation of the water and sanitation sector's infrastructure.

USAID/Ecuador Municipal Support for Hygiene and Health Education

This mechanism complements those involved in new/improved water supply and sanitation system development with expertise in health education and hygiene to improve maternal and child health results by improving the knowledge, attitudes, and behavioral practices of the beneficiaries of new/improved basic water and sanitation systems. This activity targets marginalized sectors of border populations, particularly indigenous peoples and Afro-Ecuadorians. Border municipalities simultaneously address hygiene improvements with infrastructure improvements. Access to potable water, sanitation, and especially health education has been a priority of the USAID Mission's border programs for many years. USAID has also been documenting the health impacts of these activities. A 2006 survey that compared health statistics from 2002 to 2005 in nine northern border communities where USAID financed water, sanitation, and health education activities showed dramatic decreases in the incidence of parasitosis, skin, and diarrheal diseases. In the village of Mataje, for example, parasitosis decreased from 437.5 to 122.6 cases per thousand and diarrheal diseases decreased from 333.3 to 233 cases per thousand. Similar results were noted in the town of Jambelí, where parasitosis decreased from 340.4 to 76.9 cases and diarrheal diseases from 96.7 to 6.4 cases per thousand. In the town of General Farfan, the incidence of dermatitis decreased from 172.9 to 21.7 cases per thousand.

Water Sector Development Program & Millennium Water Alliance, Ethiopia

Water plays an important role in health, food security, and sustainable economic development in Ethiopia, but numerous technical and financial limitations prevent the country from exploiting and benefiting from its freshwater wealth. Only 13 percent of the rural population has access to piped water; 70 percent of rural households have no sanitation facilities. Inadequate water and poor sanitation services are the major cause of disease burden in Ethiopia. The Water Sector Development Program (WSDP) has set a target to increase the percentage of the rural population with access to safe water to 71 percent by 2016. USAID is Ethiopia's major humanitarian and development partner and is committed to implementation of WSDP policy. The short-term goal is to increase the number of people with access to improved drinking water supply and improved sanitation facilities by 33 percent during FY 2007. FY 2007 funding increased citizens' access to improved water and sanitation services, improving their health and nutrition status.

One of USAID's implementing partners is the Millennium Water Alliance (MWA), which is a consortium of NGOs partnering with USAID, UNICEF, and local organizations to improve access to water and sanitation services in Ethiopia. The MWA program is ongoing and to date has benefited approximately 117,000 people. Using FY 2007 funding, MWA is undertaking inexpensive, technically appropriate and environmentally friendly water source development to further improve access to safe water at the community level. The Alliance integrates access to safe water sources with hygiene and sanitation improvement services, and mobilizes participating communities to construct latrines from local materials. In addition, MWA establishes and trains water and sanitation committees at all water source sites to ensure community ownership of the process, and strives for 50 percent of committee members to be women. MWA trains technicians to maintain each water scheme and provides them with basic maintenance kits. MWA also involves government district water offices and builds their capacity to provide supportive supervision and monitoring beyond the life of the MWA grant program.

Georgia Water Supply and Sanitation Sector Reform

The Government of Georgia (GOG) has limited capacity to modernize water supply and sanitation systems. In 2007, USAID conducted a water sector assessment during which advisory assistance was provided to the Ministry of Economy and the Prime Minister. This assessment looked into the government's effort to reform the sector. It advised the GOG to establish a commission responsible for the development/elaboration of Georgia Water Supply and Sanitation sector state policy that would address issues related to the sector

performance and create conditions that could eventually attract private sector involvement.

In response, the Government of Georgia established the Water Reform Commission (WRC) in February 2007. By its own admission, the WRC and the GOG lacked the knowledge and understanding of sector-related specifics and were unable to plan and implement reforms on their own. Therefore, the GOG requested that USAID assist the WRC and the Ministry of Economy to develop a water supply and sanitation sector reform plan that would identify necessary steps and actions to be undertaken by the GOG to develop a pragmatic national water sector policy, an appropriate legal and regulatory framework, and an effective institutional structure to facilitate the reform of the sector.

In late 2007, the GOG removed the tariff-setting function from municipalities and charged the national independent energy regulator with the authority to elaborate and approve tariff methodology and set tariffs for water supply and sanitation companies nationwide. Simultaneously, the GOG acknowledged the potential need for consolidation, and stopped transferring water supply and sanitation assets to local municipalities. Based on USAID advice, the GOG started discussing different schemes for consolidating of those utilities to optimize their operations and make them more attractive for private investors. As the Georgian government completes its water utility reform action plan, USAID will be working with the European Union's DG Environment to solicit its support in jointly undertaking implementation of the action plan.

USAID/India Financial Institutions Reform and Expansion – Debt (FIRE-D) Project

USAID has supported water and sanitation sector reform in Orissa State, India, through the Financial Institutions Reform and Expansion – Debt (FIRE-D) Project. Orissa is one of the poorer states in India. Bhubaneswar, the capital city, with a population of almost one million, is growing quickly. It is supplied water by the state Public Health Engineering Organisation (PHEO). However, the quality of services is poor due to inadequate network coverage; the urban poor are largely excluded from services; and low-cost recovery is leading to low investment capability.

The reform process to address these problems is under way. The strategy is to put water and sanitation services under a new state-level commercialized public water and sanitation operating services company. This new company will sign a contract with the Bhubaneswar Municipal Corporation for three years. The business plan will ensure progressively improved service levels to the local residents, including the poor. This new arrangement will enable the city to begin to recover all of its

costs associated with water and sewerage services and to expand services into slums. Cost recovery is a particularly important objective, because the Japan Bank for International Cooperation (JBIC) is investing substantial amounts in new wastewater facilities, and resources to operate and maintain these facilities are not yet available. Approval of the corporatization and contracting plan is expected from the Orissa state government in May 2008, and further implementation is being planned with support from the JBIC sewerage project.

USAID/Indonesia Environmental Services Program (ESP)

The Indonesia Environmental Services Program (ESP) is designed to promote better health and a cleaner environment through improved water resources management, expanded access to clean water and sanitation services, and watershed and biodiversity conservation. In FY 2007, ESP provided technical assistance and training to: (1) improve the drinking water supply to 190,000 people; (2) improve sanitation facilities for 9,000 people; (3) improve solid waste management for 2,800 people; (4) improve water resource management and delivery in 26 water supply companies; (5) enable eight water supply companies to achieve full cost recovery; (6) conduct more than 34 campaigns to ensure that households adopt adequate health and hygiene practices; and (7) mobilize alternative financing for water utilities and their customers. To support biodiversity conservation, ESP ensured that 43,000 hectares of biologically significant areas were brought under improved management and biodiversity conservation (based on analysis of threats to biodiversity); implemented seven policies; trained more than 100 community groups (2,000 Indonesians, 40 percent of whom were women); and provided economic benefits to these communities from biodiversity conservation.

USAID/Jordan Tafilah Wastewater Treatment Plant

USAID embarked on a new project that includes the design, construction, and supervision of the upgrade of the Tafilah Wastewater Treatment Plant (WWTP), which was originally put into service in 1988. A host-country contract will be used to support design and construction activities, while a centrally funded instrument will support construction supervision.

A mix of commodities, construction/rehabilitation, technical assistance, and training provided needed support to the key issue of water and to improve basic sanitation services for the approximately 400,000 residents of Tafilah. In FY 2007, USAID's implementing partners worked to design an upgrade of the plant, including drafting bid documents that will allow the Government of Jordan to solicit tenders for the rehabilitation work. Once the upgrade is completed, wastewater services for Tafilah will be significantly improved, contributing to

USAID's and Jordan's overall goals of improving water infrastructure, water quality, and wastewater reuse.

Lebanon Water Policy Program

This activity targets assistance to water establishments by strengthening capabilities, training employees, introducing information technology systems, and implementing new tariff structures. With FY 2007 funds, USAID expanded these activities and focused more on the South Lebanon Water Establishment (SLWE). The SLWE has developed into the only water management entity in Lebanon with a clear vision and strategy, and is in a position to identify requirements needed for running an efficient operation. In FY 2007, the program identified means for installing consumer meters for water consumption, and implemented different tariff scenarios developed for South Lebanon by selecting a pilot area for the installation of water consumption meters. This activity is accompanied by extensive training of water establishment staff on tariff monitoring and bill collection, establishment of a client service office, targeted campaigns on water metering, and terms of reference for a capital investment plan. Assisting this Lebanese water establishment to operate more effectively, attract private investors, and raise revenues contributes to improved water resources management.

USAID/Madagascar Water Supply and Sanitation Activities

Diarrheal diseases are the primary cause of mortality and morbidity among children under five in Madagascar. These diseases take their greatest toll in rural areas, where, for most households, the water supply is a river, lake, or pond. According to the 2003–2004 DHS, some 65 percent of Malagasy households do not have access to safe water. Madagascar's president has placed improved water and sanitation as a high priority for development in this country. In support of this, USAID continues to bring together stakeholders who work to reduce the incidence of diarrheal disease, and to facilitate cross-sectoral collaboration on water-related interventions that contribute to poverty reduction and economic growth. USAID is providing leadership in the national arena to develop the national hygiene improvement behavior change strategy, and carries out activities that improve health and hygiene, including linking potable water, health, nutrition, food security, and watershed management. USAID is working to expand access to potable water by increasing access to clean water, promoting hygiene and sanitation, and improving local water management capacity.

Water Sector Reform, Montenegro

USAID assisted the Government of Montenegro in designing its Water Utility Reform Plan, which was adopted in 2007. The implementation of this comprehensive water and sanitation plan is critical in Montenegro, which has very

limited sewerage service and severe summertime water shortages along its coastal tourism areas. Given this new nation's dependence on tourism to provide jobs and economic opportunities, reform of the water and sanitation system is a key government priority.

The Water Utility Reform Plan includes six Reform Action Plans:

- (1) Implementation of a new Water Utility Law and related amendments to existing laws;
- (2) Establishment of a National Economic Monopoly Regulator;
- (3) Support to Local Government in Corporate Governance, Service Delivery Agreements and PSP Model Contracts, in towns larger than 10,000 permanent residents;
- (4) Support to Local Water Utilities in Commercial Practices, Business Planning and Full Cost Recovery;
- (5) Assistance to Central Government to Establish a Water and Sewerage Capital Investment Mechanism and National Water and Sewerage Financing Authority; and
- (6) Assistance to Central Government to Develop a Model to Encourage Regionalization of Water Utility Services.

USAID is working with the Government of Montenegro and key stakeholders to draft legislation that will support the commercialization of water and sewerage utilities. Additionally, the Government of Italy has pledged one million Euro toward establishing a national regulator for the sector, and other donors are looking at supporting remaining elements of the reforms.

Pakistan Safe Drinking Water & Hygiene Promotion Project (PSDW-HPP)

Access to safe drinking water is a critical health issue for Pakistan, where data indicate that only 65 percent of the population has access to improved drinking water, 40 percent of hospital beds are occupied by patients with waterborne diseases, and more than 200,000 children under the age of five die each year from diarrheal diseases. Pakistan's population is expected to increase by more than 70 million people by 2025, which will only exacerbate water demand and make access to safe water even more challenging.

USAID is supporting the Government of Pakistan's (GOP) Safe Drinking Water & Hygiene Promotion Project to provide Clean Drinking Water for All (CDWA), which will install 6,000 water filtration plants across the country. The Agency's \$16.7 million Pakistan Safe Drinking Water and Hygiene Promotion Project (PSDW-HPP) is providing technical assistance to strengthen the capacity of local governments and communities to provide and maintain safe drinking water through participatory management of water treatment facilities, and is promoting positive hygiene practices among the general population to help reduce waterborne diseases, particularly diarrhea.

Specifically, the PSDW-HPP:

- Provides technical assistance to government agencies, NGOs, and communities through capacity building and training in operations and management of water treatment units, community mobilization, planning, cost recovery, and water resources management to ensure that investments in hardware and promotional activities will be sustainable in the long term.
- Conducts intensive hygiene promotion interventions in the 136 union councils within the 31 districts/agencies where small filtration plants are installed. Hygiene promotion activities are implemented through grantee NGOs, who conduct activities in schools and communities and train others to conduct interpersonal communication activities. Radio spots will be aired nationwide to raise awareness of critical hygiene messages and to reinforce interpersonal activities being conducted at the community level. This program, targeted to parents of children under five years of age from lower socioeconomic backgrounds and in Pakistan's peri-urban and rural areas, is expected to reach more than 30 million people.

USAID/Philippines Progress on Philippines Water Revolving Fund

The collaborative efforts of USAID, the Japan Bank for International Cooperation (JBIC), and the Philippine government to create a water revolving fund has leveraged in FY 2007 \$5 million in private funds for two water supply projects that will provide clean water for 283,900 people over the next six to ten years. This collaboration between USAID and JBIC helps also to fulfill a USG commitment under the U.S.-Japan Clean Water for People Initiative. The leveraging of private funds for water projects will also help free up public resources, thereby enabling the Philippine government to channel scarce resources to subsidize the financing of less-than-creditworthy water utilities and help expand services to the poor.

Disinfecting Water Saves Lives in Rwanda

USAID has re-launched Sûr'Eau, a safe-water solution that reduces the risk of diarrhea. Sûr'Eau is a water purification solution that prevents waterborne diseases. The chlorine solution can be added to water immediately before use and is designed to protect people—principally young children and people living with HIV and AIDS—from deadly diarrheal diseases. Across Rwanda, nearly 40 percent of urban households and more than 70 percent of rural households do not have reliably clean water. Contaminated water increases the risk of contracting diarrheal diseases, which contribute to Rwanda's high childhood mortality rate—one in seven children does not live to age five. With support from USAID and the Government of Rwanda, Sûr'Eau is produced locally and is available in the public and private sectors. USAID funds Population Services International (PSI) to implement this safe-water initiative as part of the five-year, \$20 million Behavior Change and Social Marketing (BCSM) project. The BCSM project builds the capacity of Rwandan institutions to implement HIV/AIDS prevention, malaria, and child survival programs.

USAID/South Africa Water Supply and Sanitation Results in 2007

In 2007, USAID helped 44,312 South Africans gain access to improved sanitation and 65,326 South Africans gain access to drinking water. USAID achieved this through a number of initiatives that involved partnering with the South African Government (SAG) to develop models that can be scaled up and replicated. USAID provided technical assistance to the Eastern Cape Provincial Housing Department to identify and unblock obstacles to housing development, such as cumbersome processes for zoning approvals and for the provision of bulk services to housing projects.

USAID co-funded a water caretaker management system with a major urban municipality that contributed \$346,811 for the project. This model included a bulk water metering system, a pressure management plan, and leak repairs. Through this effective community water bailiff system, an additional 2,014 people have access to water. As a result of its success, it is anticipated that this model will be replicated in other municipalities in FY 2008.

South Africa and USAID partnered to begin eradicating the bucket sanitation system within formal areas by replacing this unacceptable system with appropriate sanitation such as ventilated, improved pit latrines and waterborne sewage. This endeavor will directly contribute to South African efforts to meet its Millennium Development Goals. USAID deployed a technical team to accelerate access to improved sanitation for 109,000 households in 56 priority municipalities in five provinces during 2007.

Table 2: Actual FY 2007 USAID Obligations for Drinking Water Supply Projects and Related Activities by Country and Region⁶
(Dollars in Millions)

Region/Bureau	Country or Operating Unit	Water Supply & Sanitation	IDFA Water & Sanitation	Grand Total
Africa	Angola	-	0.320	0.320
	Burundi	0.043	-	0.043
	Central African Republic	-	0.274	0.274
	Chad	-	1.287	1.287
	Cote d'Ivoire	-	0.244	0.244
	Democratic Republic of Congo	-	1.260	1.260
	Eritrea	-	1.469	1.469
	Ethiopia	2.989	3.411	6.400
	Ghana	0.100	-	0.100
	Kenya	1.000	0.560	1.560
	Madagascar	1.618	0.288	1.906
	Malawi	0.190	-	0.190
	Mali	0.135	-	0.135
	Mozambique	1.550	0.470	2.020
	Nigeria	0.100	-	0.100
	Rwanda	0.034	-	0.034
	Somalia	0.550	8.020	8.570
	South Africa	0.750	-	0.750
	Swaziland	-	0.625	0.625
	Sudan	6.950	42.719	49.669
	Uganda	2.492	5.029	7.521
	Zambia	0.900	-	0.900
	Zimbabwe	-	0.344	0.344
East Africa Regional	0.500	-	0.500	
WARP	-	0.250	0.250	
Africa Regional Bureau	17.400	-	17.400	
	Africa Total	38.301	65.570	103.871
Other Asia & the Near East (Excludes Egypt, Iraq, Jordan, and West Bank/Gaza)	Bangladesh	0.010	-	0.010
	China	1.500	-	1.500
	East Timor	-	0.277	0.277
	India	1.267	0.500	1.767
	Indonesia	8.759	0.049	8.808
	Maldives	-	0.100	0.100
	Nepal	0.061	0.384	0.445
	Pakistan	22.990	0.600	23.590
	Philippines	2.332	0.037	2.369
	Solomon Islands	-	0.113	0.113
	Sri Lanka*	0.861	0.632	1.493
	RDM/A	3.200	-	3.200
	ANE Regional	1.650	-	1.650
		Other Asia & the Near East Total	42.630	2.692

⁶ FY 2007 budget data represent best estimates from USAID analysis of information as of November of 2007.

Table 2: Actual FY 2007 USAID Obligations for Drinking Water Supply Projects and Related Activities by Country and Region (continued)
(Dollars in Millions)

Region/Bureau	Country or Operating Unit	Water Supply & Sanitation	IDFA Water & Sanitation	Grand Total
Egypt, Iraq, Jordan, Lebanon & West Bank/Gaza	Egypt	1.410		1.410
	Iraq		5.508	5.508
	Jordan	19.000		19.000
	Lebanon	2.846	1.668	4.514
	West Bank / Gaza	11.655		11.655
	Middle East Regional	1.000		1.000
	Egypt, Iraq, Jordan, Lebanon, & West Bank/Gaza Total	35.911	7.176	43.087
Latin America & the Caribbean	Bolivia	2.475		2.475
	Colombia	0.671		0.671
	Ecuador	3.274		3.274
	El Salvador	0.060		0.060
	Guatemala	0.118		0.118
	Haiti	3.385		3.385
	Nicaragua	0.067		0.067
	Panama		0.020	0.020
	Paraguay	0.035		0.035
	Peru	0.293		0.293
	Latin America & the Caribbean Total	10.378	0.020	10.398
Central Programs	EGAT	1.554		1.554
	OFDA - Global		1.677	1.677
	Global Health	3.647		3.647
	Central Programs Total	5.201	1.677	6.878
Europe & Eurasia	Armenia	2.350		2.350
	Georgia	0.500		0.500
	Kosovo	0.380		0.380
	Moldova	0.150		0.150
	Europe Regional	0.287		0.287
	Europe & Eurasia Total	3.667		3.667
Total Directive – All Regions		136.088	77.135	213.223

*Excludes \$1 756 million for Sri Lanka in a Supplemental (Tsunami)

SECTION 3: WATER RESOURCES MANAGEMENT ACTIVITIES

Water resources and watershed management activities promote the conservation and sustainable use of water resources in freshwater and coastal areas, thereby protecting the quality of surface water and groundwater for drinking, irrigation, and other uses, while maintaining aquatic ecosystem services provided by rivers, lakes, aquifers, fisheries, wetlands, and coastal environments. Water resources management also addresses a wide array of land uses within watersheds that may cause local impacts, while also affecting downstream communities and ecosystems. Integrated water resources management (IWRM), water quality protection, and pollution prevention and control support the management of ground and surface water and their watersheds. These include broad-based, water-related policy development and institutional strengthening to help governments, civil society, and communities plan, finance, and regulate instruments for transparent and equitable water allocation and management, based on multi-stakeholder dialogue and input. They also encompass structures and strategies to conserve the quality and supply of water, slow runoff, and buffer storm flows; surveys dealing with water balances, water supply, aquatic life, and habitat protection; and transboundary water resources management focused on data sharing and common water protocol development in river basins shared by two or more countries. Clean production promotes environmentally sound technologies and cleaner production practices that reduce raw material, water, and energy inputs in production processes. It includes programs to reduce, prevent, and mitigate water pollution to reduce human health risks from water and to enhance beneficial uses of water.

In FY 2007, USAID actual obligations for improved watershed, coastal zone, and freshwater ecosystem management from an IWRM perspective are found under the natural resources and biodiversity element of the new Foreign Assistance Framework. Water quality management and water use efficiency in industry and commerce are found under the clean productive environment element. The FACTS database reports water management at approximately \$27 million in FY 2007. This amount is down from the \$43 million reported in 2006 and represents the lowest amount of water resources management activity in USAID for the past eight years of record, when water obligations tracking was first initiated. Water Resources Management funding has declined each year since FY 2000. Further discussion of this phenomenon and the possible explanations are discussed in the last section of the report, “Overall USAID Water Sector Program Funding Trends: Declining.”

Illustrative USAID Activities in Support of Water Resources Management

The Global Water for Sustainability (GLOWS) Program

The USAID GLOWS program is working to increase social, economic, and environmental benefits to people in the developing world through clean water, healthy aquatic ecosystems, and sustainable water resources management. Launched in early 2005, GLOWS works to promote the integrated management of water resources and aquatic ecosystems worldwide. Program activities seek to maximize the economic and social benefits derived from water resources while sustaining freshwater ecosystems. The GLOWS consortium is led by Florida International University and includes organizations such as World Wildlife Fund, World Vision, CARE, and Winrock International. The GLOWS consortium provides expertise across the policy, governance, institutional, educational, and technical dimensions of water management and service delivery. Approaches combine advanced analytical techniques, innovative mechanisms for sustainable resource management and biodiversity conservation, community-based programs in poverty alleviation, and improved potable water supply and sanitation service delivery. On-the-ground activities are underway in the Mara River Basin in East Africa, the Pastaza Basin in South America, and the Wakal Basin in India. In addition to site-based work, GLOWS also supports water sector capacity building of USAID field staff and local partners, and demonstrates international leadership through extensive networking with other leading international water institutions around the world.

USAID's Post-tsunami Sustainable Coastal Livelihoods Project Ends on a High Note

The USAID-funded Post-tsunami Sustainable Coastal Livelihoods Project successfully completed its final Regional Workshop on Post-tsunami Sustainable Coastal Livelihoods and Integrated Ecosystem Management at the Asian Institute of Technology (AIT) Conference Center in Bangkok, Thailand, on February 18–21, 2008. More than 50 participants representing the United Nations, government and NGOs, and universities from the People's Republic of China, Indonesia, India, Maldives, Malaysia, Sri Lanka, Thailand, the United Kingdom, and the United States gathered to share lessons learned and best practices in the post-disaster context, and to build a consensus on key unresolved issues. The project's final goal was to create practical action items and solutions that can be used to strengthen community resilience and disaster preparedness in the future.

The USAID Post-tsunami Sustainable Coastal Livelihoods Project has been a three-year, \$4 million dollar partnership between AIT, the Coastal Resources Center, Coca-Cola, and the University of Hawaii, and will close in March 2008.

USAID/Armenia Institutional and Regulatory Strengthening of Water Management

USAID's Institutional and Regulatory Strengthening of Water Management is an ongoing activity with the long-term objective of improving water resources management and the regulation of clean water and sanitation services. In FY 2007, the program revised the National Water Code, assisted in completing the Drinking Water Law, and helped prepare associated implementing regulations, which together will enable the ongoing commercialization of clean drinking water and sanitation services. Also in FY 2007, USAID funded more than \$3 million in water system improvements in the town of Artashat, as one contribution to our partnership with the World Bank and the Armenia Water and Sewer Company. USAID will help build the Public Services Regulatory Commission's institutional capacity by providing training and by supporting the development, adoption, and proper use of management tools. USAID will also assist in redesigning the water use permit and fee system to create a coherent regulatory program that will effectively regulate water extractions and wastewater discharges by water utilities and industries and assist in the adoption of the National Water Program. The monitoring of groundwater resources that provide 95 percent of the drinking water supply is being reestablished throughout the country by rehabilitating previously used monitoring points and building capacity in a new monitoring agency. A computerized National Water Cadastre that contains relevant data for adequate analysis, reporting, and dissemination has been completed.

Sava River Commission Involving Bosnia, Croatia, Serbia, and Slovenia

The Sava River Commission (SRC) was formed to manage navigation, trade, flooding, and water quality issues on the Sava River, which is a major tributary of the Danube River. Through its Secretariat in Zagreb, the SRC addresses new transboundary issues that used to be handled within the boundaries of the former Yugoslavia. The SRC plays an important role, working in close cooperation with the International Commission for Protection of the Danube River (ICPDR) in Vienna, and the Danube Commission in Budapest. The SRC represents interests that go beyond the interests of the member countries (e.g. Slovenia, Croatia, BiH, Serbia, Montenegro) and serves to protect the environmental and ecosystem values of the entire Danube River Basin, helping to ensure sustainable inland river navigation/transportation, all in accordance with the EU Water Directive, and EU Directive on Trans-European Transportation Network (TEN-T).

USAID assisted Bosnia, Croatia, Serbia, and Slovenia in developing their initial framework agreement and later a treaty; securing ratification of the treaty; and establishing a professional Secretariat. As one mark of the signatories' dedication to this cooperative process, the expenses of the Commission and its Secretariat are fully borne by the member countries, without donor support.

USAID also provided analytical support to the Commission for an in-depth feasibility study of restoring navigation and commercial trade on the river—a necessary precondition for major new port investments. With the steps to restore trade in place, the upstream countries with the most to gain from trade should begin addressing water quality and flooding concerns of the downstream riparians, but at the time of this report, no immediate actions to address these problems have been undertaken. This process of moving from conflict to cooperation is the hallmark of a successful transboundary program, and requires time to achieve lasting results.

USAID/Ecuador Watershed Conservation through Municipal and National Protected Area Management

This new public-private alliance conserves and better manages protected areas that are key water sources for urban and rural populations. Implementation is primarily undertaken by local NGOs, with technical assistance as needed from international NGOs, universities, and USG agencies. This activity is being implemented through the Mission's Local Government and Decentralization implementing mechanism. Objectives are to: (1) assist local governments to improve watershed management through improved policies, integrated watershed management, and improved monitoring of water resources, directly benefiting downstream users; (2) establish financial incentives and mechanisms to support long-term investment in watershed and biodiversity conservation; and (3) increase civil society and private sector participation in and support for watershed management, through environmental education, joint planning, conflict management, and improved monitoring. Targets are still being finalized, but it is estimated that 20,000 hectares will be under improved management by the end of FY 2008.

Sustainability of the water infrastructure is attained through technical assistance from the USAID project, which is provided to members of local water boards that are democratically elected by communities. They are trained in revenue collection for use of water services as well as maintenance of the water infrastructure itself. For a period of one year after the investment, project implementers provide close follow-up on the boards' work by setting up a file that monitors—among other things—tariff rates established by the boards and their ability to collect the fees. This information is used to identify and correct problems that might arise in the water boards' administration. Such follow-up helps these boards “graduate” to

self-sustainability. Furthermore, the Ecuadorian Ministry of Public Health is responsible for ensuring water quality—thus the host government’s buy-in to the process. All of this, in turn, ensures that the health benefits derived from access to clean water supplies are also sustainable.

USAID/EI Salvador Improved Management and Conservation of Critical Watersheds (IMCCW) Activity

The Improved Management and Conservation of Critical Watersheds Activity implemented by Development Alternatives, Inc. supports the effective management of selected areas of high biodiversity importance while promoting responsible economic growth, meeting the four key criteria of the biodiversity code. Through technical assistance and training, it will focus on the conservation and managed use of biodiversity, water, and forests. The biodiversity focus will be 43 protected areas, buffer zones, off-shore areas, and biological corridors that are contained within the two watersheds. Incentives for long-term conservation will be developed and promoted to support conservation and management goals. Expected results include: (1) the creation of 60,000 hectares (ha) of biological corridors and buffer zones; (2) awareness of biodiversity and natural resources reaching 75 percent of the adult population; (3) 33,000 ha of protected areas delineated; (4) \$10 million generated from sales of products or services; (5) \$100,000 generated by payment for environmental services (PES); and (6) six sub-watersheds (115,000 ha) under sustainable management, with benefits for maintaining the flow and quality of water supplies for downstream communities. Among actions explicitly for potable water supplies, the Activity conducted a water balance study covering 155,000 ha; determined the areas that recharge aquifers used by three local water systems; helped local water associations to implement conservation measures financed by a PES surcharge; and incorporated potable water considerations in watershed management activities. The Activity encourages active participation of both men and women in both conservation and income-producing activities.

USAID/Georgia South Caucasus Water (SCW) Program

The SCW Program implemented by PA Government Services Inc. is an ongoing activity funded by USAID/Caucasus (Georgia/Azerbaijan) and Armenia Missions. Conflict between Armenia and Azerbaijan keeps the South Caucasus region politically insecure and hinders cooperation on transboundary water resource issues that are critical for economic development and environmental sustainability. The SCW Program’s long-term goal is to facilitate reconciliation processes between the two countries by supporting cooperation between the governments over shared Kura-Aras river resources. Georgia mediates trilateral discussions/agreements over shared water resources. FY 2007 funds are helping to achieve the program’s goal by strengthening water institutions through trainings, technical assistance, and commodity support (rehabilitation of key transboundary

hydrological stations); developing common water monitoring methodologies for regional data sharing; conducting trilateral taskforce meetings; and strengthening civil society participation in water resource management through media training, grants, and public outreach.

USAID/Honduras Integrated Management of Environmental Resources (MIRA in Spanish)

The MIRA program is designed to protect Honduran natural resources by promoting sound management and environmental policies, building local capacity for resource management, and conserving biodiversity through protected areas. The natural resources policy and governance component responds to recent policy changes due to the implementation of CAFTA. This program provides advice on matters related to the Honduran Government's implementation of CAFTA environmental requirements. It also supports the growing tourism industry and its connection to protected areas. Activities include conducting economic analyses, improving local policies, designing special funds for protected areas, and developing specific regulations for implementing the national environmental law. The sustainable natural resource management and production component includes strengthening local capacity and preparedness for response to disasters, water balance analyses, recommendations for efficient water use, local environmental policy reforms, and environmental education activities. The project will also help conserve biodiversity through the improved management of four protected areas.

USAID/Indonesia Clean Productive Environment

Household solid waste contains significant organic and non-organic contaminants and pathogenic bacteria, requiring processing before disposal. But in much of Indonesia, solid waste infrastructure is unavailable. Waterways are thus a common place for the disposal of household solid waste. The consequences of living with no or inadequate solid waste management systems are degraded waterways and environmental deterioration, which has negative impacts on economic productivity and human health, particularly in poor and underserved communities.

In FY 2007, USG-funded programs reached out to communities and schools in both upstream and dense urban areas, cities, and districts to improve solid waste management. A total of 2,973 community-based solid waste management systems were established in FY 2007, benefiting about 104,000 people. The establishment of solid waste disposal systems took place in concert with interventions promoting the separation of household waste, the composting of organic waste, and the recycling of non-organic waste.

FY 2007 actual results exceeded targets due to the integrated approach of solid waste management within a package of health and hygiene campaigns, which

encouraged community participation and the leveraging of local resources. Communities, local government leaders, and NGOs take part in the assessment of current conditions and the development of participatory action plans. They then build solid waste management systems and initiate strategies for behavioral change in the areas of health and hygiene.

USAID/Jordan Pollution Prevention and Environmental Health Protection (P2EHP) Project

The Pollution Prevention and Environmental Health Protection Project is designed to reduce contamination of drinking water supplies; reduce groundwater contamination; improve fertilizer, pesticide, and farm water use; increase pollution prevention awareness; improve watershed management; build capacity; and help to share information among government water quality labs. In FY 2007, the activity helped the Jordanian government to implement regulations for land-use restrictions at water supply locations, fund homeowner sewer connections, demonstrate compost farming, and launch information campaigns. This water quality activity contributes to environmental policy and governance by providing construction and rehabilitation support, technical assistance, and training. Benefits accrue to the general population, with a focus on government, business, community, and religious leaders, students, and NGOs. Addressing the key issues impacting water quality, the activity will protect needed drinking water supplies and strengthen linkages between water and the environment, which contributes to USAID's overall goals in Jordan.

USAID/Jordan Institutional Support for Environment (Implementation of a Manifest System for the Management of Industrial Liquid and Semi-Solid Wastes)

Jordan's Ministry of Environment requested assistance to develop a practical manifest system to track industrial wastewater and semi-solid wastes from source to final disposition. The need for this "cradle-to-grave" system is due to the prevalence of illegal or inappropriate industrial disposal of wastes. In addition, industry waste disposal occurs at sites where industrial waste discharges exceed the sites' capacity to effectively process the waste, thus posing significant environmental risks. This new wastewater management activity supports environmental policy and governance, clean production, and sound waste management through provision of commodities, technical assistance, and training. Benefits will accrue to the general population, with a particular focus on national and local governments, business and community leaders, and NGOs. Addressing the key issue of wastewater, the activity will help bridge water and environmental issues and contribute to improved water quality as an alternative to

increased water supply solutions, which supports USAID's long-term goals in Jordan.

USAID/Jordan's Portfolio in Natural Resources Management Supports Water Supply Objectives

Instituting Sustainable Water Demand Management, a four-year water activity, is working to establish the institutional and regulatory frameworks needed to strengthen natural resource policy and governance and sustainable natural resource management. This entails: (1) building institutional capacity; (2) developing and supporting enforcement of laws and regulations for efficient water use; and (3) demonstrating selected water-demand management initiatives to the public. The latter will contribute to short- and long-term goals of balancing water supply and demand-side solutions and promoting a water conservation ethos in Jordan. The key issue being addressed in this natural resources management activity is the "water" issue.

Through provision of commodities, technical assistance, and training, the project works with U.S. water utilities and Jordanian partners, including the Ministries of Water and Irrigation, Municipal Affairs, and Industry and Trade; Vocational Training Centers; the Institute for Standards and Metrology; and various regional and local government and council representatives (mayors, governors). The project's activities that will improve water demand management are intended to benefit all Jordanians.

USAID/Philippines Clean Productive Environment

In FY 2007, USAID assistance increased the capacity of more than 7,000 government staff, community leaders, and entrepreneurs to take steps toward greater compliance to critical environmental legislation on clean air, clean water, and solid waste management. This increased capacity has resulted in 15 local government units (LGUs) diverting at least 25 percent of waste generated to recycling and composting facilities, wastes that would otherwise pollute landfills, rivers, and coastal areas. Together, these LGUs secured \$2.3 million from their annual budgets to fund waste management activities. Additionally, 39 hotels and resorts in popular coastal tourism destinations in Panglao, Palawan, Puerto Galera, and Batangas are working with LGUs to reduce the pollution of nearby coastal ecosystems by establishing wastewater treatment facilities and halving waste generation. To sustain some of these efforts, three LGUs have instituted environmental user fees from tourists to fund environmental protection and conservation activities. USAID also supported the pilot-testing of wastewater treatment facilities in four LGU-owned enterprises, such as public markets and slaughterhouses, to reduce the organic load of nearby water bodies and prevent groundwater contamination.

Targets for the number of improved laws/policies/regulations were exceeded due to higher-than-expected local participation, resulting from effective advocacy, social marketing strategies, and excellent collaboration with local councils in developing ordinances.

USAID/Rwanda

The USAID biodiversity program targets Nyungwe National Park (NNP) in southern Rwanda, which shelters watersheds that provide early 70 percent of the country's water supply. NNP straddles the Nile-Congo ridge and feeds two major watersheds—the Congo basin and the much larger Nile basin. NNP is home to the origins of the Nile River. USAID is working in partnership with local communities and the Government of Rwanda to protect what is the largest mountain rainforest in all of Africa. Water-related tourism includes large numbers of visitors to the NNP's waterfalls. USAID is working with two adjoining tea factories to estimate the value of water used without cost in tea production that originates in the NNP park. If in the future tea can be marketed as a premium to allow for park conservation support, the premium on "Nyungwe tea" might be used to partially subsidize the costs of protecting these valuable watersheds. USAID is also currently assessing the feasibility of increasing protection for water catchment systems in communities surrounding the NNP park.

SECTION 4: WATER PRODUCTIVITY ACTIVITIES

Economic activities, ranging from agriculture and mining to industrial production, require a dependable water supply. Food production is completely dependent on predictable and high-quality supplies of freshwater or healthy estuarine and marine waters for sustainable fisheries. Approximately 80 percent of all human freshwater use in the world is devoted to agricultural production, often in irrigation systems that are inefficient and environmentally unsustainable. Water productivity improvement activities include irrigation improvement and livestock water supply, and improved water-related agricultural soil and water management practices, fisheries management, and aquaculture. Funding levels for Water Productivity in 2007, which appear in the Framework primarily under Agricultural Sector Capacity, are reported at \$17 million. This is the lowest level in this category since USAID began tracking water sector obligations in FY 2000. The FY 2006 funding level in Water Productivity was more than \$22 million. Water Productivity funding has declined each year since FY 2000. A separate discussion is provided in the last section of this report explaining some of the possible reasons for this decline, under “Overall USAID Water Sector Program Funding Trends; Water Supply and Sanitation: Increasing; Water Management, Productivity, and Risk Reduction: Declining; Large-scale Wastewater Infrastructure: Variable.”

Illustrative USAID Activities in Water Productivity

USAID’s Washington, DC-based Economic Growth, Agriculture and Trade (EGAT) Bureau: Aquaculture and Fisheries Collaborative Research Support Program (CRSP)

Sustainable agricultural growth requires functioning institutions, conducive policy environments, and innovative technologies and management approaches to increase productivity and reduce vulnerabilities and risk. Under Title XII, EGAT mobilizes the capacities of U.S. universities through the Collaborative Research Support Program (CRSP) to undertake applied research on critical constraints, disseminate best practices, and build local capacity. Aquaculture and Fisheries is one of nine CRSPs working in global priority areas. This program develops more comprehensive, sustainable, ecologically and socially compatible, and economically viable aquaculture systems. With FY 2007 funds, selected institutions and organizations underwent capacity/competency assessments, and both men and women received short- and long-term training. The target populations are scientists and host country government agencies; the key issues being addressed are applied research, the Initiative to End Hunger in Africa, increasing gender equity, and local organization capacity development related to agricultural resource policy.

USAID/Jordan's Portfolio in Agricultural Productivity Contributes Substantially to Water Supply and Sanitation Objectives

Water is a critical input for Jordan's economic growth. Agriculture provides a small portion of Jordan's GDP, but utilizes 68 percent of the country's water. To optimize the agricultural sector contribution and water consumed, it is important to find ways to balance agricultural output with available water supply for agricultural purposes. Jordan can develop high-value export agriculture, which has the potential to provide employment, contribute to economic growth, and use less water.

Jordan's limited water resources mandate investments in agriculture that increase economic return from each drop of water used. USAID's programs aim to improve on-farm water-use efficiency through a mix of methods, including working with small and medium agribusiness and producers' organizations, the transfer and adaptation of proven technologies, and the development of much-needed standards, policies, and regulations. Demonstrating sustainable and profitable use of brackish water for aquaculture will introduce farmers to new technologies and production methods. Improved water resources management will protect the livelihoods of poor farmers.

FY 2007 resources were directed at promoting appropriate crop choices and improving returns for water used. Results from an evaluation of water value are being used to encourage more effective governance of water, including setting more appropriate tariffs to encourage greater efficiency.

Short-term goals include decreasing the quantity of water consumed in the agricultural sector and reducing the over-drafting of limited groundwater resources. Within five years, water resource management in the agricultural sector will improve through changes in knowledge and behaviors, appropriate crop selection, use of efficient irrigation, and the setting of appropriate tariffs. Long-term goals include the sustainable management of agricultural water, while maximizing productivity and contributions to GDP. This will then free up water for use in both the industrial and urban water supply sectors.

USAID/Jordan Sustainable Development of Drylands Project

The Sustainable Development of Drylands project is implemented by International Arid Lands Consortium partners New Mexico State University (NMSU) and University of Arizona (UA). This project is providing training-of-trainers to local partners to enhance sustainable natural resource management and production

through the key issues of improved local organization capacity and applied research.

Technical assistance and training includes farmer cooperative management, product development and marketing, rangeland restoration, and water resources curriculum improvement. These activities were conducted during FY 2007 with an expansion of the distance-learning program and improved rangeland management in the desert region. The activities were targeted to rural men and women, students, and business and community representatives.

These activities contribute to USAID/Jordan's larger portfolio of water conservation projects by demonstrating approaches and technologies for more efficient water use and alternatives to irrigated agriculture. Additionally, the project is expected to promote more productive rural enterprises and the sustainable management of larger rangeland areas as pilot projects are expanded.

Kyrgyz Republic Water Users Association Support Program

The Water User Association Support Program has been working for three years to create and strengthen WUAs to help farmers operate, manage, and make investment decisions to maintain and improve on-farm irrigation systems. In FY 2007, this activity assisted 12 existing and five new Kyrgyz WUAs to ensure improved operation and maintenance of on-farm irrigation systems that will raise productivity and incomes. More than 40,000 people are expected to benefit from the rehabilitation of local irrigation networks belonging to selected WUAs. It is expected that more than 1,000 WUA participants will be trained during 2008, one quarter of whom will be women. The target population includes WUA members, rural agricultural workers, and farmers interested in learning principles of better management of local water delivery systems and using sound business practices and democratic principles. This assistance is essential to develop sustainable on-farm water management and to allow farmers to gain the economic benefits of increased water use productivity.

USAID/Philippines Fisheries Improved for Sustainable Harvest (FISH)

The Fisheries Improvement for Sustainable Harvest (FISH) Project implemented by Tetra Tech EM INC has the goal to conserve biological diversity in biologically and economically important marine ecosystems in the Philippines, as measured by an increase in fish stocks and maintenance of coral reefs, seagrasses, and mangroves that support fisheries with environmental services. The expected project result is an increase in marine fish stocks by at least 10 percent from 2004 baselines in four areas within seven years, namely: Calamianes in Palawan, Danajon in Bohol, and Tawi-Tawi and Surigao del Sur in Mindanao. FISH

supports the efforts of coastal communities, the Department of Agriculture's Bureau of Fisheries and Aquatic Resources, and LGUs to sustainably manage fisheries resources by: (1) strengthening the capability of local and national institutions to manage marine fish stocks and coastal resources; (2) improving local and national policies for more sustainable use of marine fish stocks and coastal resources; and (3) building the political will to advocate for more responsible management of marine fish stocks and coastal resources. FISH integrates population, health, and environment issues to improve fisheries resources management.

Water Users Association Support Program, Tajikistan

The Water User Association Support Program implemented by Winrock International has been operational for three years and has achieved its objective of creating and strengthening WUAs so that farmers can operate, manage, and make investment decisions needed to improve on-farm irrigation systems. As a result, more land is irrigated, crop yields are increased, natural resources are not wasted, and farmers are experiencing economic benefits. In FY 2007, assistance was provided to 26 WUAs. This will ensure improved technical operations and maintenance of on-farm irrigation systems and increased crop productivity. The number of beneficiaries has exceeded 200,000. The program is assisting in the rehabilitation of additional local irrigation networks belonging to selected WUAs, and is training more than 2,000 individuals, including WUA members, rural agricultural workers, and farmers. The program is essential for developing sustainable on-farm water management, and for gaining economic benefits from increased crop productivity. The activity supports the creation and strengthening of sustainable producer groups that will become active participants of the developing agricultural market.

Water Users Association Support Program, Uzbekistan

The Water User Association Support Program implemented by Winrock International has been operational for three years and has achieved its objective of creating and strengthening Water User Associations (WUAs) so that farmers can operate, manage, and make investment decisions needed to improve on-farm irrigation systems. As a result, more land is irrigated, crop yields are increased, natural resources are not wasted, and farmers are experiencing economic benefits. In FY 2007, assistance was provided to seven more WUAs in addition to the 16 created in 2005–2006. This will ensure improved technical operations and maintenance of on-farm irrigation systems and increased crop productivity. The expected number of beneficiaries exceeds 170,000. The program is assisting in the rehabilitation of additional local irrigation networks belonging to selected WUAs, and is training more than 2,000 individuals, including WUA members, rural agricultural workers, and farmers. The program is essential for developing

sustainable on-farm water management, and for gaining economic benefits from increased crop productivity. The activity supports the creation and strengthening of sustainable producer groups that will become active participants of the developing agricultural market.

SECTION 5: DISASTER RISK REDUCTION (DRR) ACTIVITIES

Managing Disaster Risks to Prevent Loss of Life and Socioeconomic Impacts

Intensive wind storms (hurricanes, typhoons, and cyclones), floods, tsunamis and droughts often lead to the loss of many thousands of lives and to economic impacts measured in billions of dollars. Extreme weather, climate, and water events become disasters when the events converge with vulnerabilities. The Hyogo Framework for Action, an overall guiding framework for the International Strategy for Disaster Reduction, calls for the development and strengthening of institutions, mechanisms, and capacities to build resilience to hazards. Identifying, monitoring, understanding, and forecasting hydrometeorological hazards are critical first steps for the development of plans, strategies, and policies and for the implementation of risk-reduction measures. USAID/ Office of Foreign Disaster Assistance (OFDA) works closely with communities, national and local governments, international and regional organizations, and NGOs to identify, manage, and strengthen capacity at all levels in order to increase resilience to climate-, weather-, and water-induced disasters. Hydrometeorological DRR activities have strong linkages to the management of natural resources, such as water, thus building resilience to better enable countries and communities to prepare for and cope with serious events when they occur. USAID/OFDA supported almost \$6 million for hydrometeorological risk-reduction activities in FY 2007. Funding for DRR activities has declined each year since FY 2003.

Illustrative USAID Activity in Disaster Risk Reduction

USAID's Office of Foreign Disaster Assistance (OFDA) Hydrometeorological Disaster Risk Reduction Activities

Hydrometeorological hazards, such as floods, droughts, and hurricanes/cyclones account for the largest number of disasters and affect more people than any other type of natural hazards in the world. Extreme weather and climate events often have severe socioeconomic impacts, such as loss of lives and livelihoods, and scarcity of food, water, and energy, with adverse impacts on human health and the environment. Hydrometeorological risk-reduction activities are aimed at reducing vulnerability to hydrometeorological hazards through an integrated and multi-sectoral approach that addresses the needs of users while emphasizing locally sustainable and environmentally sensitive measures. In FY 2007, OFDA continued to support flood and drought early warning, preparedness, and mitigation activities, including: (1) implementation of flood forecasting in transboundary rivers in Asia (Mekong and Ganges-Brahmaputra-Meghna river basins); (2) drought monitoring,

climate prediction, and applications in Eastern Africa; (3) global flood hazard mapping; (4) dissemination of hydrometeorological information to end-users and populations in remote areas using Radio and Internet systems (RANET) in Africa and Asia-Pacific; (5) community-based flood and drought management activities in Asia and Africa; (6) development of hurricane wind-hazard maps in the Caribbean; and (7) providing technical assistance globally.

Examples of OFDA hydrometeorological DRR activities include:

- *Strengthening Hydrometeorological Early Warning Capacity.* In Asia and Africa, OFDA aims to strengthen the capacity of national hydrometeorological institutions in climate, weather, and hydrological forecasting, while focusing on applications of climate- and weather-related information on reducing loss of lives, mitigating socioeconomic impacts, and managing natural resources. Through trainings provided via the Greater Horn of Africa Flood Mitigation Initiative, the Sudanese Humanitarian Aid Committee developed and disseminated “flood watch” bulletins to humanitarian organizations providing relief in Sudan to lessen the impact of flooding, and provided lead time to organizations in their relief programs.
- *Dissemination of Hydrometeorological Information to People at Risk.* OFDA and the National Oceanic and Atmospheric Administration provide support for the Radio and interNET (RANET) program, which was developed to improve accessibility to and use of hydrometeorological information products and services to aid day-to-day resource decisions at the community level, while improving overall resiliency to natural hazards through information support. In Africa and Asia-Pacific, RANET enables populations in remote areas to access climate/weather and other relevant information, such as agriculture- and health-related information, to aid with day-to-day decisions in order to reduce vulnerability to these extremes. During the 2007–2008 floods in Mozambique, RANET was employed to provide lead time to lessen the impact of flooding, allowing the affected populations to preserve household assets and recover quickly. In addition, RANET is the only communication medium to disseminate tsunami alerts to emergency managers in the Indian Ocean basin and other basins, globally.
- *Preparing Communities to Take Action and Make Intelligent Decisions:* OFDA has supported technical assessments and fora for decision-makers and technical personnel from the Hindu Kush–Himalayan region to strengthen capacities on flash-flood management, promote collaboration, and develop regional approaches to flood management, flood early warning systems, and broader transboundary water issues.

USAID/Djibouti Capacity Building, Preparedness, and Planning: Flash Flood Early Warning System

The United States Geological Survey (USGS) is implementing a Flash Flood Early Warning System in Djibouti. In FY 2007, USGS is planning to conduct training for the system's managerial staff. The warning system comprises: (1) four combined stream flow-elevation and rainfall stations; (2) three radio repeater stations; (3) one combined radio repeater and rainfall station; (4) one combined base radio repeater and rainfall station (located at Arta); and (5) one base station to be located in Djibouti City. Three Djiboutians will be trained in the United States on how ALERT systems are used and how warnings are created and disseminated. There will also be on-the-job training in installation, use, and troubleshooting of base station software and hardware, and interpretation of outputs. The Djiboutians will be trained on the use of satellite-based rainfall estimates. The target population of this activity is the Djibouti City urban population. These activities are expected to result in the development of a reliable flash-flood warning system that will be managed by Djiboutian staff, to reduce Djibouti City's vulnerability to flash floods.

OFDA India and Pakistan Drought Risk Reduction

Catholic Relief Services (CRS) is implementing a three-year project that seeks to ensure that communities in Rajasthan, India, and Sindh, Pakistan, are drought-resilient. The project targets 7,200 people in Sindh and 60,000 people in Rajasthan. Through this program, drought-vulnerable communities are better able to harvest and store rainwater for increased domestic and agricultural use throughout the year; adopt water-efficient agricultural practices; utilize improved land-use techniques for agriculture and livestock; and engage with local governments and other actors to improve resilience to drought. The project began in June 2006 and will continue through September 2008. In FY 2007, USAID/OFDA provided \$200,000 to the project.

OFDA Madagascar Drought Risk Reduction

CRS's OFDA Madagascar grant will finance low-cost access to water in the Androy region of southern Madagascar for the purposes of increasing food security and improving household access to water. CRS estimates that about 28,500 of the most vulnerable individuals in the southern Androy region will receive some benefit from interventions to improve water usage, including increasing drinking water availability, expanding sanitation committees, and building latrines; 15,680 of these individuals will benefit from increased resiliency to drought by initiating drip irrigation and creating new water points.

OFDA Mozambique Drought Risk Reduction

International Relief and Development's (IRD) OFDA Mozambique grant will finance community-based approaches to help 28,500 beneficiaries mitigate drought consequences by increasing: (1) water availability for human consumption, coupled with hygiene promotion activities, in the districts of Funhalouro and Massinga; and (2) farm yields through runoff-water collection and improvements to water catchment management. To increase water availability, IRD will build roof rainwater collectors at 14 schools, benefiting 4,480 children, and will provide SPHERE standards in drinking water quality. IRD will increase water collection by funding the construction of bunds and installing rope pump systems benefiting 24,000 beneficiaries.

OFDA Swaziland Drought Risk Reduction

IRD's Swaziland grant will use community-based approaches to help 6,880 beneficiaries by: (1) increasing water availability for human consumption, coupled with hygiene promotion activities; and (2) increasing farm yields through runoff-water harvesting and conservation-tillage techniques. IRD will target the southern part of the Lubombo district and the eastern part of the Shiselweni district. IRD will construct 14 rooftop rainwater catchments and provide hygiene and sanitation training to 5,880 schoolchildren. IRD will also promote runoff-water harvesting with 200 farmer households (1,000 beneficiaries) over two crop periods, coupled with conservation-tillage techniques.

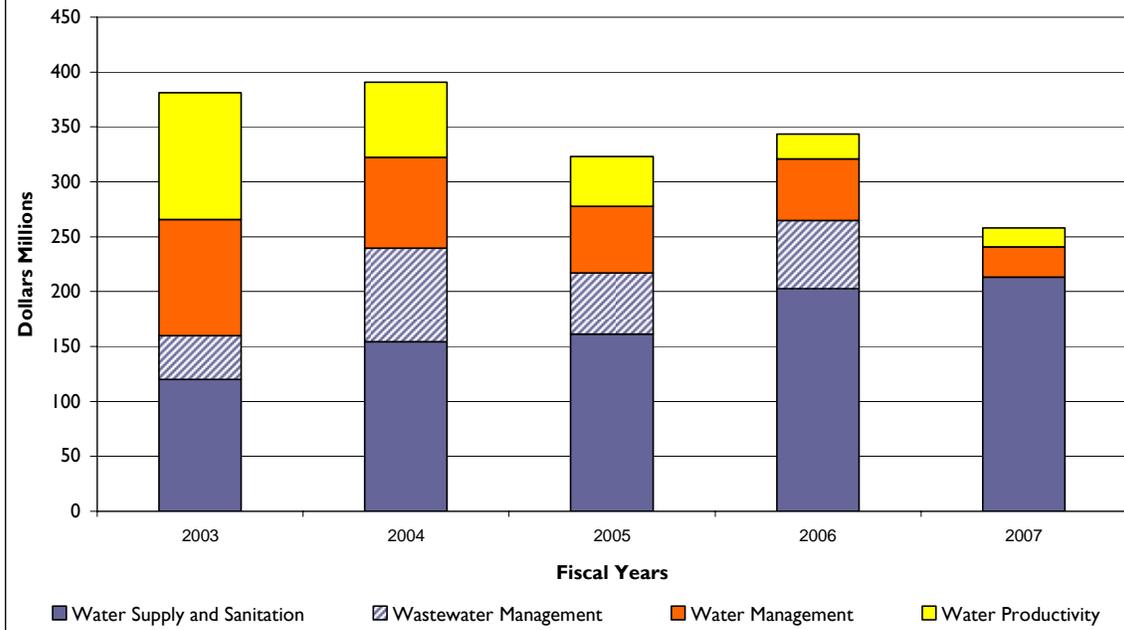
SECTION 6: OVERALL USAID WATER SECTOR FUNDING TRENDS; WATER SUPPLY and SANITATION: INCREASING; WATER MANAGEMENT, PRODUCTIVITY, and RISK REDUCTION: DECLINING; LARGE-SCALE WASTEWATER INFRASTRUCTURE: VARIABLE (as major projects come online and are completed)

Figures 2 and 3 show the five-year trends in USAID Water Sector Obligations from FY 2003 through FY 2007. While water supply and sanitation levels directed at “water supply projects and related activities” increased from 2005 to 2006 to 2007, to more than \$213 million, water resources management and water productivity funding declined each year from 2000, reaching their lowest levels in 2007. From FY 2003 to FY 2007, combined funding for water resources management, productivity, and DRR declined from approximately \$236 million to approximately \$50 million. Overall funding (including water supply and sanitation; large-scale wastewater infrastructure; water management, water productivity, water disaster risk reduction) for the Water Sector in USAID declined from more than \$400 million per year in 2003–2004, to more than \$300 million during 2005 and 2006, to a level of \$263 million by the end of 2007.

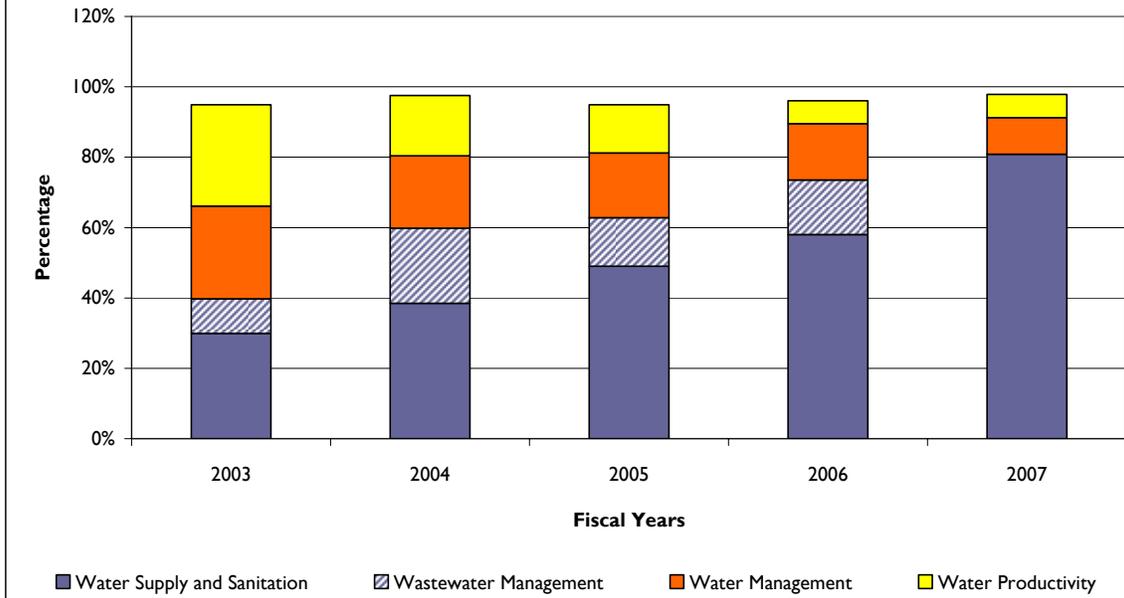
The decline in USAID funding for all water supply and sanitation (including wastewater infrastructure) between 2006 (\$265 million) and 2007 (\$213 million) was the result of the completion of large wastewater infrastructure projects in 2006 in Egypt and Jordan. Excluding wastewater, funding for water supply and sanitation increased from FY 2006 to 2007.

As the “water supply projects and related activities” Congressional directive increased between 2003 and 2005 from \$100 million to the 2006–2007 level of \$200 million, other Congressional directives in other sectors also increased. Water resources management, water productivity, and DRR activities declined during this time, and while no direct cause-and-effect relationship can be confirmed, activities not included under Congressional directives such as these appear to be receiving “downward pressures” on the increasingly smaller undirected portions of the Agency budget. Figure 3 shows this declining trend in this part of the overall water budget in terms of percentages. While water supply and sanitation rose as a percentage of all water sector obligations from 40 percent to over 80 percent between 2003 and 2007, water resources management and water productivity, taken together, dropped from more than 60 percent to less than 20 percent.

**Figure 2: USAID Estimated Water-related Obligations
Fiscal Years (FY) 2003 to 2007***



**Figure 3: USAID Obligations for Water by Theme
Fiscal Years (FY) 2003 to 2007*
(as a percentage of total funding for that FY)**

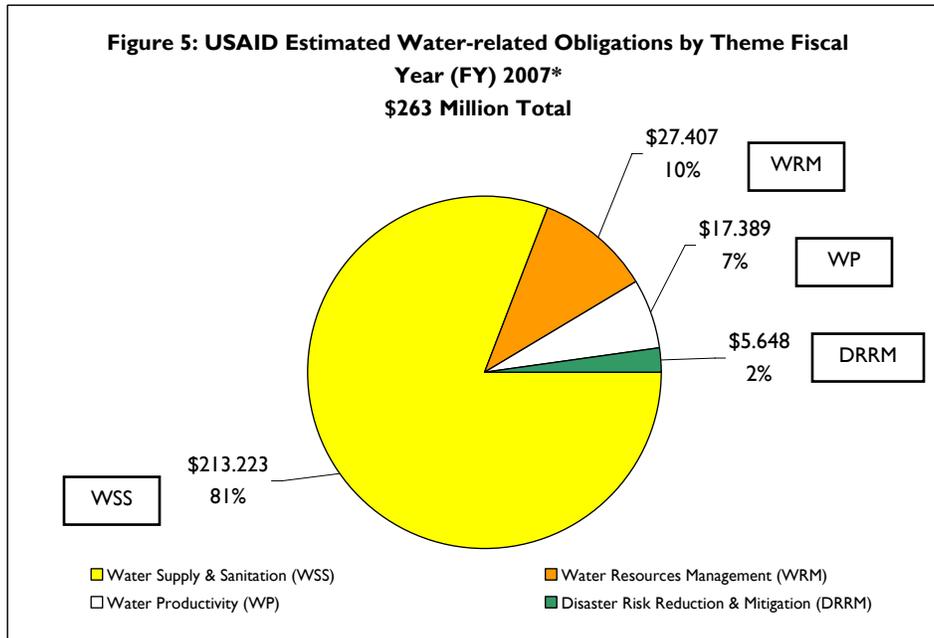
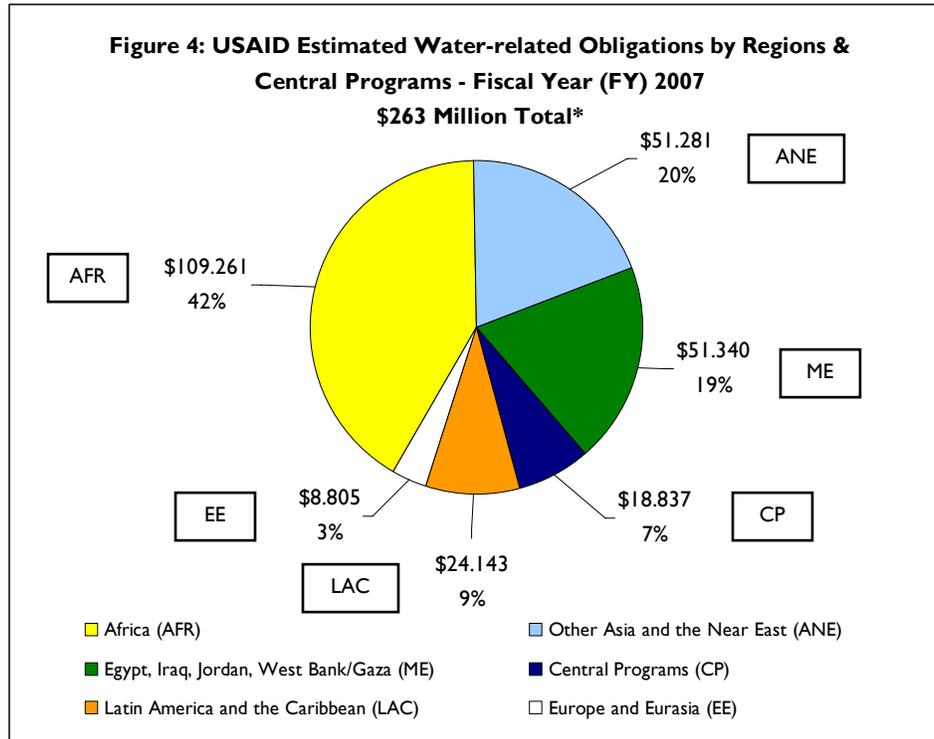


*FY 2007 budget data represent best estimates from USAID analysis of information as of November of 2007. Budget data displayed do not include Disaster Risk Reduction estimates or Supplementals.

SECTION 7: SUMMARY REGIONAL DISTRIBUTION of 2007 ESTIMATED ACTUAL WATER OBLIGATIONS

This Appendix contains Figure 4, showing the regional distribution of all USAID estimated actual water obligations in FY 2007 totaling \$263 million, and Figure 5, showing the distribution of these obligations by water activity categories. By FY 2007, Africa had risen to represent 42 percent of all USAID assistance obligations in the water sector worldwide. Tables 3 and 4 present the summary budget distributions for All Other Water Activities (Water Resources Management, Water Productivity, and Disaster Risk Reduction), and for the entire USAID Water Sector, respectively, in FY 2007.

SECTION 8: APPENDIX



* FY 2007 budget data represent best estimates from USAID analysis of information as of November of 2007.

*Table 3: Actual FY 2007 Obligations across Regions and Central Programs by Selected Sub-categories of Water-related Activities⁷
(Dollars in Millions)*

Water-related Activities Beyond Water Supply and Sanitation	Africa	Asia & the Near East	Egypt, Iraq, Lebanon, Jordan, & West Bank/Gaza ¹	Europe & Eurasia	Latin America & the Caribbean	Central Programs	Total
Water Resources Management ²	2.632	5.229	7.253	2.425	5.268	4.600	27.407
Water Productivity ³	2.608	0.530	1.000	2.713	8.477	2.061	17.389
Disaster Risk Reduction	0.150 ⁴	0.200				5.298	5.648
Grand Total	5.390	5.959	8.253	5.138	13.745	11.959	50.444

*Table 4: Actual FY 2007 Obligations across Regions and Central Programs by All Sub-categories of Water-related Activities
(Dollars in Millions)*

All Water-related Activities	Africa	Asia & the Near East	Egypt, Iraq, Lebanon, Jordan, & West Bank/Gaza ¹	Europe & Eurasia	Latin America & the Caribbean	Central Programs	Total
Water Supply and Sanitation	38.301	42.630	35.911	3.667	10.378	5.201	136.088
IDFA-funded Water Supply and Sanitation	65.570	2.692	7.176		0.020	1.677	77.135
Total Water Supply Projects & Related Activities	103.871	45.322	43.087	3.667	10.398	6.878	213.223
Water Resources Management ²	2.632	5.229	7.253	2.425	5.268	4.600	27.407
Water Productivity ³	2.608	0.530	1.000	2.713	8.477	2.061	17.389
Disaster Risk Reduction	0.150 ⁴	0.200				5.298	5.648
All Water Management Activities	5.390	5.959	8.253	5.138	13.745	11.959	50.444
Grand Total – All Water Funding Categories	109.261	51.281	51.340	8.805	24.143	18.837	263.667

¹ Excludes Egypt, Iraq, Jordan, Lebanon, and West Bank/Gaza

² Includes Water Resources Management under Framework Element for Natural Resources Management & Biodiversity, and Water Quality Management under Framework Element Clean Productive Environment

³ Includes Agricultural Sector Productivity under Framework Element Agricultural Sector Capacity

⁴ \$0.791 from the IDFA Water Supply and Sanitation amount reported in Table 4 was directed at water-related disaster risk reduction in Africa.

⁷ FY 2007 budget data represent best estimates from USAID analysis of information as of November of 2007.

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