USAID
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INVESTMENTS IN DRINKING WATER SUPPLY PROJECTS AND RELATED WATER RESOURCES ACTIVITIES

REPORT TO CONGRESS

FISCAL YEAR 2006

May 2007

Photo credit: ©Evelyn Hockstein/CARE
Caption: CARE Burundi photo of a boy among a group of students enjoying a special CARE-supported water fountain where children wash their hands and faces, and get a drink of water in the Tangara community that is being rehabilitated with the help of CARE.

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INTRODUCTION AND SUMMARY

In March 2006, the US Agency for International Development (USAID) provided Congressional staff with an early estimate of its expected obligations[1] for fiscal year (FY) 2006. This is the final report to Congress showing the actual obligations made during the fiscal year for "drinking water supply projects and related activities". The figures presented in this report are based upon actual obligations reported by USAID Operating Units around the world, but involve estimating amounts of larger development projects that were devoted to "drinking water." 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 preparedness.

During FY 2006 USAID improved access to water supply to more than 9.25 million people and almost 1.5 million people were provided 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 2006, USAID exceeded both the worldwide and the Africa directives, obligating $203 million worldwide for "drinking water supply projects and related activities", and obligating more than $81 million for drinking water activities in Africa.

[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.

2006 CONGRESSIONAL AND AGENCY BACKGROUND

Several events that took place over the past eighteen months significantly influenced USAID's current water actual obligations reporting process. At the end of FY 2005, USAID successfully completed a three-year (2003-2005) Presidential Water for the Poor Initiative, as reported in the FY 2005 Final Report to Congress. In FY 2006, Congress increased requirements for "drinking water supply projects and related activities" through the Foreign Assistance Appropriations Act (Public Law 109-102, Nov. 14, 2005) from $100 million[3] (the level set from 2003-2005) to $200 million. During the first quarter of FY 2006, the "Senator Paul Simon Water for the Poor (WfP) Act of 2005" (Public Law 109-121, Dec. 1, 2005) was passed and signed by President Bush on December 1, 2005. The Act requires the Secretary of State, in consultation with USAID and other US Government (USG) agencies, to develop a strategy "to provide affordable and equitable access to safe water and sanitation in developing countries" within the context of sound water management in order to ensure water security and sustainability with equity. On June 1, 2006, following the signing of the Water for the Poor (WfP) Act, the State Department developed and submitted in a Report to Congress - with USAID and other USG support - a comprehensive strategy for implementation of the Water for Poor Act. The programs reported here dealing with drinking water supply and related activities took place in the context of these Congressional actions, as well as reforms implementing a new Framework for Foreign Assistance in the Department of State and USAID.

OVERVIEW

Water is an essential component to human health, food security, economic growth, national and regional political security, and environmental sustainability. However, poor management of water resources, growing world population and increasing demand because of rising prosperity in some regions are causing serious water shortages. More than 1.2 billion people worldwide, and one in every four people in the developing world, currently lack access to a safe water supply; two in every five people have no access to improved sanitation;[4] and approximately 450 million people in more than 30 countries face serious shortages of freshwater.[5] By 2025, this number is expected to increase to 2.8 billion people in more than 48 countries; 40 of these countries will be either in the Middle East, North Africa, or in sub-Saharan Africa. Competition between some nations in the Middle East for scarce water resources is already emerging as an important issue in regional economic development and political stability. Globally, this competition is being driven by the growing demand for scarce local and regional water resources. This demand tripled

[3] Currency noted throughout this report is US dollars
[4] 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."
[5] See Appendix for improved drinking water and improved sanitation coverage globally.

during the past century alone and is doubling every twenty 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.

"DRINKING WATER SUPPLY PROJECTS AND RELATED ACTIVITIES" ACTUAL OBLIGATIONS AND RESULTS

The Foreign Operations, Export Financing, and Related Programs Appropriations Act, 2006 (Public Law 109-102, Nov. 14, 2005) states: "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."

"Drinking water supply projects and related activities" are defined 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."

During FY 2006, USAID obligated $203 million for drinking water supply projects and related activities. This amount included $86 million from the International Disaster and Famine Assistance (IDFA) account, and almost $117.5 million from all other accounts such as Development Assistance (DA), Economic Support Fund (ESF), and Child Survival and Health (CSH). USAID obligated $81.5 million for drinking water supply projects and related activities in Africa, of which almost $60 million came from the IDFA account. An additional $23.5 million for water supply from the Iraq Relief and Reconstruction Fund (IRRF) supplemental and funding for wastewater infrastructure (not included in the definition of "drinking water supply projects and related activities") brought the total for FY 2006 Water Supply, Sanitation and Wastewater Management (WSSWM) to $288.5 million.

Regional Distribution of FY 2006 Actual Obligations for "Drinking Water Supply Projects and Related Activities" and Programming Trends Between FY 2005 and FY 2006

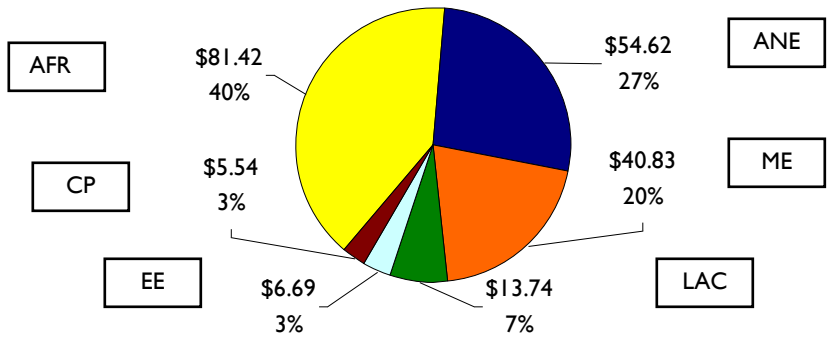
The Africa Region has reported the largest actual obligations during FY 2006 for drinking water supply projects and related activities, with 40 percent of the world total (see Figure 1). USAID obligated $161 million in FY 2005 for the drinking water directive; USAID obligated $203 million toward the drinking water directive in

FY 2006. While "disaster" funding dropped more than $10 million between FY 2005 and FY 2006, with no new funding USAID substantially increased the programming of Development Assistance (DA) account funding in Africa for drinking water supply projects and related activities and substantially increased allocations of Economic Support Fund (ESF) account obligations to drinking water in Egypt, Jordan, Lebanon and Indonesia. Funding for water management-related activities, however, dropped between FY 2005 and FY 2006 to its lowest level in more than seven years.

Water supply activities provide or improve availability of clean drinking water to urban and rural populations. They include water delivery systems, alleviation of contamination through both large-scale water treatment and small-scale or household point-of-use treatment, and source protection through well development, improvement or rehabilitation. Larger scale, basin-wide source water protection is captured within the broader water resources management category described below.

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, 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.

Figure 1: USAID Water Supply and Sanitation Actual Obligations by Region - Including IDFA Fiscal Year (FY) 2006
$203 (Dollars in Millions)



Africa (AFR) | Asia and the Near East (ANE) | Egypt, Iraq, Jordan, West Bank/Gaza (ME)
Latin America and the Caribbean (LAC) | Europe and Eurasia (EE) | Central Programs (CP)

DEVELOPMENT OF WELLS FOR WATER SUPPLY

Twelve countries reported data on well development activities during FY 2006 (Table 1). According to these data, a total of 1,145 wells were developed between October 1, 2005 and September 30, 2006. The average cost per well was $2,004 and includes boreholes, dug wells, developed springs, and improved technology traditional wells. In many instances, additional wells have been developed using leveraged partner funds and are not included in Table 1 on results of direct USAID funding; for example, the West Africa Water Initiative (see page 9) and PlayPumps (see page 11) together leveraged almost $100 million in funding from other organizations.

Table 1: Number and Location of Wells Developed and Cost per Well in FY 2006

Region	Country	Number of Wells
Africa	Ethiopia	405
	Kenya	77
	Mozambique	1
Asia & the Near East	Bangladesh	434
	Indonesia	135[6]
	Philippines	10
Europe & Eurasia	Moldova	32
	Turkmenistan	4
Latin America & the Caribbean	Ecuador	4
	Honduras	1
	Nicaragua	18
	Panama	2[7]
	Peru	22
Total Number of Wells		**1,145**
Average Cost per Well		**$2,004**

Table 2: People with Improved Access to Adequate Water Supply and Sanitation in FY 2006 from USAID Activities
(Number of People)

Region/Bureau	Improved access to adequate safe water supply	Improved access to adequate sanitation	TOTAL
Africa Region	298,566	104,699	403,265
Other Asia and the Near East*	861,882	409,273	1,271,155
Egypt, Jordan, and West Bank/Gaza	6,865,000	736,000	7,601,000
Europe and Eurasia	994,837	134,842	1,129,679
Latin America and the Caribbean	207,894	98,216	306,110
Grand Total	**9,228,179**	**1,483,030**	**10,711,209**

*Excludes Egypt Jordan, and West Bank/Gaza

[6] The country mission offered no funding data.
[7] The two wells funded in Panama were not included in the "average cost per well" because their cost ($66,631/well) would have distorted the overall average cost of wells.

Illustrative USAID Activities in Drinking Water Supply Projects and Related Activities

Humanitarian and Development Assistance in Water Supply and Sanitation for Post Conflict Recovery and Economic Development, Uganda[8]

The USG coordinates its water activities with the Office of Uganda's Prime Minister, numerous humanitarian implementing partners, and district disaster management committees at the local level to mitigate the impact the conflict in northern Uganda. USAID maintains regular dialogue with the Uganda Directorate of Water Development (DWD) within the Ministry of Water and Environment (MWE) on priorities and coordination of USAID-funded activities in water and sanitation. USAID also maintains dialogue with the principle policy analyst in the MWE and participates in the donor technical group in the water and sanitation sector (a coordination forum). This group increases oversight and accountability on government expenditures for water and sanitation infrastructure and management. The current annual expenditure for rural water supply under the District Water and Sanitation Conditional Grant that funds USAID's activity is approximately $18 million. However, in order to achieve a goal of 77 percent water coverage under the government's Poverty Eradication Action Plan by 2015, an annual expenditure of $30 million would be required.

Since 2004, USAID's Office of U.S. Foreign Disaster Assistance (OFDA) and the European Commission's Directorate General for Humanitarian Relief (ECHO) have been the key donors in funding critical water, sanitation and hygiene (WASH) interventions for internally displaced persons (IDPs) in northern Uganda. In FY 2006, approximately 47% of OFDA's total $12.1 million in humanitarian assistance was for water and sanitation projects, complemented by hygiene promotion activities. This emergency WASH support, implemented through international partners, included the drilling of boreholes with hand pumps, the construction of raised water tanks and tap stands operated by diesel generators or solar panels, and sanitation infrastructure including communal and household latrines. Additionally, USAID has supported assessments of water needs and coordination of activities involving the Uganda Department of Water Development, Ministry of Water and Environment, United Nations Children's Fund and other bilateral donors. This close collaboration has leveraged significant technical resources to create well-targeted interventions.

[8] Cable Excerpts taken from the Department of State cable: KAMPALA 001728, September 14, 2006 (edited)

The end of 2006 began a comparatively optimistic time for northern Ugandans as peace talks continued and IDPs began to return home. While ongoing management of camp infrastructure continued to be in line with OFDA's WASH programming, the core of its strategy turned towards transitional assistance, providing WASH services for IDPs in and closer to, their areas of origin, to facilitate their new beginnings.

Critical Humanitarian Assistance in Darfur, Relief-to-Development Assistance in South Sudan and the Three Areas

In 2006, USAID obligated over $37 million of IDFA funds for WASH programs in Sudan. Roughly 70% of this assistance was directed at life saving interventions that alleviated human suffering in the troubled Darfur region, while the balance was focused primarily in the South and Three Areas on transition and conflict mitigation programs.

Assistance in Darfur addressed critical WASH needs for roughly 3.6 million IDPs and host communities. To address this critical humanitarian emergency, non-governmental organization (NGO) implementing partners constructed large water systems – deep boreholes feeding large water storage tanks with numerous tap stands as access points – providing potable water to camp populations as high as 100,000 people. In these same camps, communal and household latrines were constructed and hygiene promotion focused on hand washing and personal hygiene, clean infrastructure maintenance, and water management including transport, storage, and usage.

The bulk of the $11.3 million of FY 2006 funds directed outside Darfur (an additional $8.3 million was obligated in FY 2005 but actual projects were completed in FY 2006) provided needed infrastructure to populations returning to southern Sudan. Here, support aimed to reduce potential conflict and assist returning and marginalized populations to resettle in areas that have been neglected or abandoned for more than 20 years. Projects included communal boreholes with hand pumps, raised water systems (with wells, pumps, tanks and tap stand access points), as well as latrines and hygiene promotion. The provision of essential services – such as safe water – is not only saving lives and reducing suffering, but it is also demonstrating a clear 'peace dividend' to groups that have been marginalized for far too long; and is designed to reduce the vulnerability of these groups to manipulation by outsiders. Additionally, USAID WASH assistance mitigates conflict by funding water for cattle reservoirs in areas where water scarcity has created tension between nomadic herders and settled farmers.

Safe Water Partnerships for Household Water Treatment, Safe Water Storage and Hygiene

Diarrheal disease is one of the leading causes of childhood mortality in developing countries. Household water treatment, along with safe water storage and hygiene behavior interventions (handwashing and others), can reduce the number of diarrheal disease episodes by 50 percent.

The Centers for Disease Control and Prevention (CDC) and USAID, with some support from the Department of State Economic Support Funds (ESF), are working together to expand the use of household water chlorination. This is a key to preventing childhood diarrhea. They have partnered with the social marketing non-governmental organization Population Services International (PSI) to market a small bottle of dilute chlorine (bleach) solution for purchase by families, schools and clinics, and used to treat water at the household or local institutional level. PSI produces complementary media and interpersonal communications messages for good hygiene.

During the past year, PSI sold an average of over 23,000 bottles per day of chlorine solution in 18 countries in Africa and Asia - enough to provide 12.5 million people with two liters of safe drinking water daily. The chlorine solution and the bottle packaging are produced locally and sold through existing distribution networks, creating jobs and profits throughout the manufacturing and distribution chains. In addition to regular household use, the water treatment product can be distributed quickly for emergency response and used by non-governmental organizations in their water and hygiene programs.

USAID and PSI also promote improved water quality at the point of use using the PuR® water treatment product developed by the US firm, Procter & Gamble. Like the chlorine solution, PuR® disinfects contaminated water, but also has a step that clarifies muddy water. It is appropriate for use in areas where drinking water is taken from muddy ponds or rivers and for emergency response.

All of these partners and many others are active in the International Network to Promote Household Water Treatment and Safe Storage, which has a Secretariat housed at the World Health Organization (WHO) to coordinate research, advocacy, and large-scale implementation of household water treatment methods.

USAID/The Coca Cola Company Global Development Alliance (GDA): Water and Development Alliance (WADA), Worldwide

USAID and The Coca Cola Company (TCCC) have been engaged in a global public-private partnership in the water sector since 2005. Together with the Global

Environment and Technology Foundation (GETF), the alliance works to address water resources and development needs in priority countries where both USAID and TCCC work.

Through this strategic partnership USAID is able to leverage significant private sector financing and human resources to address critical water needs around the world. The global alliance has directed more than $10 million of combined resources to water-related projects in 16 countries to date, funded through the central alliance as well as locally, and supplemented by millions of dollars of complementary activities of other partners. Of this amount, over $8 million of cash resources has been invested in water projects in 12 sub-Saharan African countries: Kenya, Uganda, Ethiopia, Angola, Mozambique, Tanzania, Nigeria, South Africa, Malawi, Mali and Ghana/Ivory Coast. Other country programs supported by the partnership are located in Egypt, Bolivia, Thailand, and Indonesia.

In cooperation with implementing partners, the TCCC/USAID Water and Development Alliance (WADA) is providing benefits to more than 300,000 people through increased access to safe water supply, improved livelihoods and productive water use, and sustainable management of water resources.

Mozambique Example: USAID/Mozambique has partnered with the WADA alliance to provide increased water access in the city of Chimoio. Rehabilitation of a water treatment plant, extension of service lines, and provision of additional water points will extend service to underserved populations of the urban area, while providing a sustainable and sufficient supply of water for Coca-Cola's local bottling operations. This project complements a larger infrastructure improvement project being implemented by the local parastatal utility, FIPAG, with support from numerous donors. The activity is a prime example of USAID's efforts to leverage additional resources and find synergies between the interests of a private sector partner and community development needs. Funding for the project comes from USAID/Washington, USAID/Mozambique, The Coca Cola Company/U.S., and the local Coca-Cola bottler in Mozambique.

Global Public-Private Partnership to Promote Handwashing Launched in Eight Countries

USAID has joined forces with the World Bank's Water and Sanitation Program, UNICEF, governments, other development agencies, and private industry in a partnership to promote handwashing with soap in order to reduce the incidence of diarrheal diseases. A recent review of all the available evidence suggests that handwashing with soap could reduce diarrhea incidence by 42 to 46 percent and save a million lives. Combining the expertise, facilities and resources of the soap industry

and governments, the initiative aims to both impact health and expand the soap markets in developing countries. Handwashing initiatives have been launched in Ghana, Peru, Senegal, Nepal, Colombia, Vietnam, Tanzania, and Kenya.

Campaign activities include:

- Behavioral research to determine consumers' handwashing practices;
- Communication programs with strong mass media coverage and direct consumer contact;
- Integration of handwashing programs and messages in the community activities of the public sector, NGOs, schools, municipal government, health centers and others; and,
- Monitoring and evaluation of handwashing behavior and most effective approaches for promoting handwashing at scale.

Among the initiative's key successes for FY 2006 are the leveraging of funds from new donors, including a $15 million grant from the Gates Foundation, building capacity for handwashing promotion through the project-sponsored University of Handwashing, a global web-based clearinghouse, and increased profile of handwashing amongst both the global public health and water communities.

PlayPumps Global Development Alliance (GDA)

On September 20, 2006, First Lady Laura Bush announced that USAID and the Office of the Global AIDS Coordinator (OGAC), which manages the US President's Emergency Plan for AIDS Relief (PEPFAR) in Africa, were forming a $60 million Public-Private Partnership with PlayPumps International of South Africa, the Case Foundation, and other partners to install 4,000 PlayPump water systems in ten Sub-Saharan Africa countries, providing the benefits of clean water to millions of people by 2010. USAID's and OGAC's contribution is $10 million through a cooperative agreement with PlayPumps International, which was signed in late September 2006.

Developed in 1997 by a socially responsible South African advertising company, Roundabout Outdoor (now PlayPumps International), "PlayPumps" are innovative, low-tech devices that serve as both children's merry-go-rounds and sources of rural water supply. The PlayPump water system consists of a merry-go-round water pump, a raised storage tank, an easy-to-use tap, and four billboards that carry social, health, and consumer product messages. PlayPumps generate a much larger volume of water than a traditional hand pump with considerably less effort.

Over 700 PlayPumps have been installed in South Africa. Expansion into Mozambique, Swaziland and Zambia was ongoing in 2006. The PlayPumps Global

Development Alliance target countries include Ethiopia, Kenya, Lesotho, Malawi, Mozambique, South Africa, Swaziland, Tanzania, Uganda, and Zambia. USG funding for the project will include $10 million over three years, including $6.5 million from USAID between FY 2006 and 2008, $2 million of which was obligated in FY 2006 and $3.5 million from OGAC (all in FY 2006). USG parallel funding has been proposed from the Africa Education Initiative and from the in-country activities of the PEPFAR.

USAID/OFDA, US Geological Survey, UN and NGO Progress Addressing Groundwater-derived Sustainable Water Supplies for Potable Water and Sanitation Needs in Three Darfur States, Sudan

Significant progress has been made in addressing basic potable water and sanitation needs in the three Darfur states since USAID's Office of Foreign Disaster Assistance (OFDA) first sent out Disaster Assistance and Response Teams in 2004. OFDA, NGOs, UN agencies and implementing partners have made considerable advances providing water/sanitation to the internally displaced persons and affected populations in the region. However, gaps remain while the need for potable water for affected populations increases.

Reliable hydrogeological studies, data and information are limited and groundwater sources have been developed without understanding characteristics of the underground aquifers. This has had significant impact on the ability to plan, organize, and implement a sustainable and effective potable water strategy for the region in response to the current humanitarian crisis and future development activities.

In 2005-2006, OFDA provided funding for a Darfur Groundwater Exploration Project to address the water supply sustainability issue. OFDA, US Geological Survey (USGS), a remote sensing/ hydrogeology firm, and UNESCO worked together to better understand aquifer potential in Darfur. The WATEX process,[9] based on new radar remote sensing technologies combined with optical remote sensing, geology, geomorphologic features and climatic data, revealed significant aquifers not visible from the surface which could provide sustainable water supplies for humanitarian assistance. Ground Penetrating Radar was used over various aquifers in Sudan to verify the results of the study. Potential water drilling site maps and a drilling manual have been produced and NGOs, UNESCO and UNICEF have been trained on the use of these products. UNICEF has been already begun using these maps to provide water to IDPs in Darfur.

[9] A specific groundwater exploration process used for identifying potential groundwater resources

Water Sector Reform, Montenegro

USAID has helped the Government of Montenegro Water Reform Working Group formulate a comprehensive water and sanitation reform plan. The plan involves: 1) commercialization of all water and sewerage utilities in towns larger than 15,000 permanent residents; 2) establishment of a water and sanitation revolving fund; and 3) establishing a national water sector economic regulatory agency. The implementation of the plan is critical in this country, which has very limited sewerage service and severe summertime water shortages along the coastal tourism areas. Given the new nation's dependence on tourism to provide jobs and economic opportunities, reform of the water and sanitation system is a key objective of the new government.

Water and Sewage Sector Reform, Armenia

After the fall of the Soviet Union, Armenia's water and sanitation services went into major decline. Services dropped to an unpredictable two to five hours a day outside Yerevan, and to seven hours a day in the capitol. All of the country's 22 wastewater treatment plants operated by six utilities stopped mechanical and chemical operation. USAID, working with World Bank and other groups, supported a set of management contracts, rehabilitation investments and corporate reforms to all six utilities in the country. The USAID Mission in Armenia has completed a series of activities that resulted in a dramatic improvement in water services available in most of the country's cities and towns. After six years of technical and capital support, three of the country's six water and sewage utilities have reached 100 percent operation and maintenance cost recovery, and major improvements in hours of service and chlorination of water provided to households have been achieved. Water supply in Yerevan increased from seven to eighteen hours per day. This allowed the water and sanitation system to restore quality water and sewerage services to the nation's 2.97 million residents. Citizens have received dramatic improvements in water supply. Although the sector is not financially sustainable yet, it is clear that the reforms are working, and citizens are receiving improved services.

Potosí Sewer System Project, Bolivia

In Bolivia, USAID collaborated with Potosi to construct its sewer system and improve local health conditions in its peri-urban areas. Potosí is one of Bolivia's poorest cities, with 56 percent of the population living in conditions of poverty and limited access to water and basic sanitation. The long-term objective of the project is to reduce water-borne and acute diarrheal diseases in children under five years of age while improving the health status and general living conditions of the local population. To date, more than 20 kilometers of new or improved sewer system have been installed, improving basic sanitation conditions for 6,500 families. The Potosí

Sewer System Project has been executed under USAID's Title II Food for Work Program with the backing of the local municipality.

The Philippine National Information Campaign on Sanitation

The League of Cities of the Philippines (LCP), USAID's Environmental Cooperation-Asia (ECO-Asia) Program, and the Rotary Club of Makati Forbes Park distributed information kits to all 117 LCP member cities during the First LCP National Convention of Philippine Cities in Manila. The information kits contain sample information materials printed in color, including posters, fliers and brochures that describe the effect of poor sanitation on water quality, health and quality of life, and encourage people to check and clear out their septic tanks. Each kit contains a CD with over 40 sample materials that the cities can use as templates by adding their own messages, logos and photos. Multi-sectoral teams in six Philippine cities developed the sample materials. The distribution of the information kits launched the Philippine National Information Campaign on Sanitation, developed following the USAID-supported Philippine Sanitation Summit in July 2006 to raise awareness of the issue and encourage action among stakeholders.

Water for All Project, India

In the state of Maharashtra, USAID worked with the Pune Municipal Commissioner and the Additional City Engineer for Water and Sewerage to finalize a work plan for an engineering and management upgrade of the water distribution system in order to provide continuous water service to a portion of the city. This pilot program aims to reintroduce metered water service in cities in order to support a system upgrade from currently intermittent supply to a continuous, pressurized service. The system upgrade will provide improved services to slum residents who currently rely on public standpipes. Management incentives will be introduced in the Municipal Water Supply and Sewerage Department to encourage efficient system operations and sustainability.

State Water and Sanitation Reform, India

USAID/India has begun a small program to support the reform of the water and sanitation sector in Orissa State, India. Orissa, with a population of 42 million, is one of the poorer states in India, with low use of improved water and sanitation services. USAID's Financial Institutions Reform and Expansion – Debt (FIRE-D) Project will assist the state in a reform initiative that follows best global practices for water utility reform. The initiative includes the corporatization of a state water and sanitation operating services company and development of operating contracts between the new public company and the state's three largest cities, covering both water and sanitation services.

Water Supply, Sanitation and Hygiene for the Urban and Rural Poor in Indonesia

One hundred thousand children under five years of age die from diarrhea-related causes every year in Indonesia. Most of these deaths are the result of contaminated water. Nearly a third of Indonesia's population lacks access to safe and affordable drinking water. This is compounded by the fact that upstream watersheds in many parts of the country are in dire condition, with poor land management and watershed degradation contributing to worsening water quantity and quality, floods, landslides, and droughts.

These are examples of problems that a contracted Watershed Management Team (WMT) working under the USAID/Indonesia Environmental Services Project and several NGOs (World Vision, Catholic Relief Services, CARE, Save the Children, Mercy Corps and others), are helping to overcome. The overall objective of the WMT is to stabilize and improve the supply of untreated water to urban and peri-urban population centers through the promotion of sustainable land use while, at the same time, conserving protected areas of high biodiversity.

The assistance to the Government of Indonesia's strategy for improving water and sanitation services focuses on: 1) access to safe water; 2) basic sanitation; 3) water and sanitation sector reform; and, 4) sustainable forms of financing for water and sanitation services. Critical aspects of safe water access activities include assisting service providers to optimize existing systems and expand coverage and production capacity. In sanitation, programs reduce reliance on dysfunctional septic tanks by introducing innovative community-based sanitation systems and wastewater gardens. Sector reform work addresses the challenge of decentralized provision of services. Because of limited public funds for water and sanitation improvement, USAID assists with innovative alternative financing.

USAID's work on water and sanitation programs increases the supply of clean piped water to lower income communities, and increases the commitment of local governments and communities to improve wastewater collection and treatment. Awareness campaigns provide communities with information on upper watershed management and health and hygiene. Resources continue to cover the "software" side of the water and sanitation industry, which is often neglected. This includes assistance to municipalities in sanitation planning, operator and management training, capacity building, sanitation training and, in some cases, demonstration projects to provide best practices to municipalities and communities. USAID is also working with businesses to produce and market "point-of-use" water treatment solutions and improve the quality and safety of drinking water at the household level.

Note: While wastewater treatment infrastructure projects are not directly included in the directive definition for drinking water supply projects and related activities, examples of such projects in Egypt and Jordan are described to show how USAID works to meet wastewater infrastructure needs (USAID/Egypt water, wastewater collection and wastewater treatment utility infrastructure projects are described together).

Water and Wastewater Infrastructure in Egypt

In 2006, the USAID Mission in Egypt concluded its long infrastructure program in water and wastewater, electricity and telecommunications. Since 1975, the programs of the USAID have contributed about $5.6 billion to improve Egypt's water and wastewater, electric power and telecommunications services. The infrastructure program helped the Government of Egypt construct facilities to expand utility services and coverage, help the utilities operate more efficiently, support legal and regulatory reform, and promote private sector participation in the financing and management.

Since the water and wastewater program began, USAID directed over $3 billion to water and wastewater infrastructure projects. Approximately 22 million people benefited from improved water and wastewater systems in Cairo, Alexandria, Aswan, Luxor, South Sinai, Daqahliya, Beni Suef, Fayoum and Minya Governorates and the three Suez Canal cities: Port Said, Ismalia and Suez. USAID support dramatically improved the capacity and quality of water and wastewater treatment in Egypt.

USAID assists in providing potable water to isolated villages and improving the reliability and sustainability of water and wastewater services through construction of water and wastewater systems in Aswan, Alexandria, South Sinai, Luxor, Beni Suef, Fayoum, Minya and Daqahliya governorates. These systems range from large-scale water and wastewater treatment facilities to smaller potable water supply (slow sand water filtration) plants, and include: 1) collection/treatment systems, force mains, pumping stations and sewage collection systems; 2) improving water utilities' customer service, cost recovery, revenue generation and full operational sustainability through technical assistance, equipment, construction of facilities and training; 3) developing the legal and regulatory framework for private sector participation, and facilitating the tariff-rate application process; 4) bringing affordable water distribution networks into villages and installing water connections and sanitation equipment in households, using contributions of labor by village communities and low cost credit; 5) spreading hygiene awareness in rural communities through a volunteer trainer network, to enhance the benefits of water and sanitation systems; and, 6) enhancing private sector participation in the water and wastewater sector by providing partial guarantees for commercial bank loans to private companies.

During FY 2006, several major USAID funded infrastructure projects were completed. Under the Alexandria Water component of the Egypt Utilities Management Grant Agreement, USAID funded contractors completed: 1) the rehabilitation of water transmission and distribution networks in the oldest districts of Alexandria (supply and installation of 112 kilometers of pipes); 2) improvement of water service in an informal low cost urban settlement (installation of 88 kilometers of pipes); and, 3) improvement of the treatment process in seven major water treatment plants. Under the same grant agreement, USAID funded several Fixed Amount Reimbursement Agreements for construction of water treatment facilities in five villages in the Minya Governorate in Middle Egypt. The total number of beneficiaries receiving improved water supply during FY 2006 was more than 5.7 million.

On wastewater projects, USAID funded the construction of five wastewater collection and treatment facilities under the Secondary Cities and Egypt Utilities Management Grant Agreements. During FY 2006, USAID-funded wastewater treatment facilities benefited more than 600,000 Egyptians living in Mansoura in the Nile Delta, and Beni-Suef and Fayoum in Middle Egypt.

USAID and The Coca Cola Company Bring Clean Water to Rural Egypt

More than 80,000 people in rural Egypt will have cleaner water and better sanitation thanks to a public-private partnership between USAID, The Coca Cola Company, Egypt's Ministry of Water and Irrigation, International Resources Group and UNESCO. The partnership will work with residents along branch canals in Gharbiya and Qena governorates to improve wastewater disposal and solid waste management.

Currently, fewer than two percent of Egypt's 5,000 villages have proper wastewater disposal facilities. No more than ten percent of villages in the lower income rural areas have municipal solid waste management, leading to growing contamination of Egypt's limited water resources. This $750,000 partnership will encourage greater civic participation in maintaining the canals and improving local water resources. By sharing the approaches with other rural communities, the partners plan to extend the program's reach beyond the initial villages.

As-Samra Wastewater Treatment Plant Project in Jordan

The USAID/Jordan As-Samra Wastewater Treatment Plant Project is focused on replacing the existing As-Samra wastewater treatment plant. The new plant will operate and be maintained according to a 25-year Build-Operate-Transfer agreement implemented through a public-private partnership. When complete, this plant will significantly improve the watershed by meeting Jordanian standards for effluent discharge. The plant will serve two million Jordanians, help improve the health of

the local population, and substantially increase water for agriculture in the Amman and Zarqa regions. The project is also constructing new wastewater treatment facilities, as well as modifying and expanding the Ain Ghazal pre-treatment facility. The purpose of these improvements is to replace the overloaded and inadequate existing waste stabilization pond treatment system. The facility will treat 267,000 cubic meters of wastewater per day when complete.

The As-Samra Wastewater Treatment Plant Project is innovative in a number of different ways. The project is the first public-private partnership in financing and management of a public infrastructure and the first public-private partnership for a wastewater treatment facility in the Middle East. This is also the first USAID-financed public-private infrastructure project worldwide. Based on the project's design and implementation to date, USAID anticipates that this activity will serve as a model for future investments.

Design-Build Water and Wastewater Improvements, Montenegro

In FY 2006, USAID funded the Design-Build Water and Wastewater Improvements Project to provide water and wastewater system improvements in three Montenegrin cities, Budva, Kotor, and Cetinje. Under this $8 million project, USAID funded the pipelines design and construction of a variety of infrastructure improvements, including water storage, repairing pipelines, and upgrading pump stations. The project enhanced water supply in all three cities and prevented wastewater overflows at beaches in Budva and to sensitive coastal ecosystems and historically significant areas in Kotor - a UNESCO World Heritage Site.

Table 3: Actual FY 2006 USAID Obligations for Drinking Water Supply Projects and Related Activities by Country and Region
(Dollars in Millions)

Region/Bureau	Country or Operating Unit	Water Supply	Sanitation	IDFA Water & Sanitation	Grand Total
Africa	Burundi	0.138	0.087		0.225
	Central African Republic			0.050	0.050
	Chad			0.539	0.539
	Congo Dr			0.976	0.976
	Eritrea			0.900	0.900
	Ethiopia	0.907	0.443	6.050	7.400
	Ghana	0.935	0.505		1.440
	Kenya	4.000		4.276	8.276
	Liberia			0.386	0.386
	Madagascar	0.420	0.377		0.797
	Mozambique	0.350		0.402	0.752
	Sao Tome & Principe			0.013	0.013
	Senegal			0.050	0.050
	Somalia	1.250	1.250	2.946	5.446
	Sudan			37.378	37.378
	Uganda	1.075	0.075	5.772	6.922
	Zambia	0.400	0.400		0.800
	RCSA	0.100			0.100
	WARP	1.715	1.714		3.429
	Africa Regional Bureau	4.420	1.119		5.539
	Africa Total	**15.710**	**5.970**	**59.738**	**81.418**
Other Asia and the Near East*	Afghanistan	0.444	0.443		0.887
	Bangladesh	0.850	0.750		1.600
	India	1.450	1.145		2.595
	Indonesia	4.784	2.634	0.998	8.416
	Lebanon	2.500	2.500	13.403	18.403
	Maldives	1.900	0.050		1.950
	Nepal			0.225	0.225
	Pakistan	5.550		7.120	12.670
	Philippines	1.707	0.610	0.018	2.335
	Sri Lanka			0.400	0.400
	RDM/A	2.105	1.133		3.238
	ANE Regional	0.400	0.400	1.100	1.900
	Other Asia and the Near East Total	**21.690**	**9.666**	**23.264**	**54.620**
Egypt, Iraq, and Jordan	Egypt	13.550			13.550
	Iraq[10]			0.780	0.780
	Jordan	26.500			26.500
	Egypt, Iraq, and Jordan Total	**40.050**	**0.000**	**0.780**	**40.830**

[10] Excludes $23.500 million from the Iraq Relief and Reconstruction Fund (IRRF) supplemental for drinking water supply

Table 3: Actual FY 2006 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
Europe and Eurasia	Armenia	1.148	2.516		3.664
	Azerbaijan	0.073			0.073
	Georgia	0.163			0.163
	Kosovo	0.412			0.412
	Kyrgyzstan	0.080	0.002		0.082
	Macedonia	0.330	0.110		0.440
	Moldova	0.416	0.075		0.491
	Romania	0.413	0.413	0.233	1.059
	Tajikistan	0.156	0.100		0.256
	Turkmenistan		0.050		0.050
	Europe and Eurasia Total	**3.191**	**3.266**	**0.233**	**6.690**
Latin America and the Caribbean	Bolivia	0.620	1.030		1.650
	Colombia	0.217	0.630		0.847
	Dominican Republic	0.151			0.151
	Ecuador	3.965	1.956		5.921
	El Salvador			0.100	0.100
	Guatemala	0.440	0.520	1.862	2.822
	Honduras	0.250			0.250
	Jamaica	0.035			0.035
	Mexico	0.150			0.150
	Nicaragua	0.103	0.034	0.067	0.204
	Paraguay	0.021	0.014		0.035
	Peru	0.766	0.761		1.527
	Suriname			0.045	0.045
	Latin America and the Caribbean Total	**6.718**	**4.945**	**2.074**	**13.737**
Central Programs	EGAT	0.198	0.198		0.396
	Global Development Alliances	0.455	0.454		0.909
	Global Health	3.140	1.090		4.230
	Central Programs Total	**3.793**	**1.742**	**0.000**	**5.535**
Total Directive – All Regions		**91.152**	**25.589**	**$86.089**	**202.830**
Grand Total – Including Supplementals & Wastewater Management					**288.554**

*Excludes Egypt, Iraq and Jordan

SUPPORTING WATER RESOURCES AND WATERSHED MANAGEMENT ACTIVITIES

Water resources and watershed management activities promote 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) and water quality protection and pollution

prevention 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 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; conduct 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. In FY 2006, USAID actual obligations for improved watershed, coastal zone, and freshwater ecosystem management from an integrated water resources management perspective came to almost $55.7 million in more than 25 countries.

Illustrative USAID Activities in Support of Water Resources and Watershed Management

Okavango Integrated River Basin Management (IRBM) Project, Botswana, Angola, and Namibia

Water scarcity in the Okavango River Basin, is driven by population growth and associated demands for domestic, farm, and industrial use. To address this scarcity, USAID consulted with the Permanent Okavango River Basin Water Commission (OKACOM) and river basin stakeholders, NGOs and other donors to design the IRBM. The OKACOM was created in September 1994 in response to a growing awareness of the need for action. The goal of IRBM is to improve the management of the Okavango River Basin, where water is shared by, Botswana, Angola, and Namibia. The IRBM project is also working to protect biodiversity in the region.

The IRBM project provides logistical support, training, equipment and technical assistance to institutions involved in the management and protection of river basin resources. Results include strengthened institutions providing more effective services in support of river basin planning, biodiversity protection and conflict mitigation. The activities in the Okavango River Basin will serve as a model for managing other river basins in the region where shared water, biodiversity and other natural resources are a concern.

South Caucasus Water Program involving Armenia, Azerbaijan, and Georgia

The South Caucasus Water Program increases regional cooperation in the management of shared water resources by protecting the environment and ecosystems, enhancing the trust and confidence among nations, achieving tangible

social and economic benefits to communities, and promoting democratization and decentralization of governance systems. USAID's implementing partner works directly with the Environmental Ministries of the Republic of Armenia, the Republic of Azerbaijan, and the Republic of Georgia.

Watershed degradation, increased demand for freshwater, inadequate treatment of wastewater, and climate change are contributing to new levels of concern for the water security of the South Caucasus region. Land drainage for agricultural purposes has destroyed significant wetland resources in all three countries. Pollution from industry, agriculture, mining, and urban/domestic waste are growing sources of environmental stress throughout the Kura-Aras Basin. The successful management of the shared water resources of the South Caucasus is critical to the social, economic, and ecological prosperity of Armenia, Azerbaijan, and Georgia—and an essential precursor to regional peace and cooperation. Technical cooperation among these nations is increasing synergies between a broader number of government units, including those responsible for pollution abatement, water, forestry, agriculture, and protected areas.

Panama Canal Watershed Management Project

USAID/Panama's Watershed Project began in 2006, and is applying state-of-the-art principles and approaches in biodiversity conservation, natural resources management, and integrated water resources management, using methodologies that stress local participation and involvement of disadvantaged groups to guide the implementation of USAID programs in the Panama Canal Watershed. The program focuses on reforming important policies, improving stewardship of biodiversity and natural resources, increasing community participation, and implementing concrete on-the-ground activities that generate information for making sound decisions and have the potential for catalyzing widespread improvements in land use in the Panama Canal Watershed, a major asset in the country. The program also focuses on eliminating unsustainable and illegal resource uses within and outside protected areas, and across a wide range of economic and social sectors. In the future, the program is expected to tackle issues ranging from uncontrolled settlement, forest clearing, illegal hunting, unsustainable livestock production and agricultural practices, and gold mining, by using a variety of approaches that demonstrate innovation, sustainability, and replicability.

Honduras *Manejo Integrado de Recursos Ambientales* (MIRA) Natural Resources Management Program

USAID's MIRA program was 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 Central American Free Trade Agreement (CAFTA). This program provides advice to Government of Honduras on matters related CAFTA environmental requirements. It also supports the growing tourism industry and its connection to protected areas. Activities include economic analyses, improved local policies, design of special funds for protected areas, and development of 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. The project will also help conserve biodiversity through the improved management of four protected areas.

Management and Conservation of Critical Watersheds in El Salvador

USAID began implementing a new project in 2006 to manage and conserve watersheds in El Salvador. The conservation and effective management of high value natural resources such as biodiversity, water, and forests in El Salvador is expected to stimulate economic growth, and expand job creation. USAID's program will establish sustainable management and conservation, including offshore resources, within two major watersheds: El Imposible/Barra de Santiago and Rio Grande de Sonsonate. The cornerstone for these interventions will be developed by determining land and water use, and biodiversity threats, and by establishing stakeholder groups that will form the base of all future management interventions. The program will carry out biodiversity inventory and threat analyses, land use assessments, and water balance studies. The legal boundaries of protected areas and local landowners will be established. Education and training efforts will be carried out to strengthen stakeholder groups and the local population. Working with local Salvadoran NGOs, results will increase the effective size of protected areas by 60,000 hectares (ha); raise awareness of biodiversity and natural resources in 75 percent of adult population in the target area; generate $10 million in sales of products or services that support activity goals; and place six sub-watersheds (115,000 ha) under sustainable management.

The Global Water for Sustainability (GLOWS) Program

The GLOWS program is a consortium financed by USAID working to increase social, economic, and environmental benefits to people of 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 program includes three key

elements: strengthening cooperative governance and strategic decision-making; supporting innovative and sustainable technical interventions; and, fostering global learning and local capacity building in IWRM.

Working at a river basin, watershed or aquifer scale, the GLOWS consortium provides expertise across the policy, governance, institutional, educational, and technical dimensions of IWRM. Approaches combine advanced analytical techniques, innovative mechanisms for sustainable resource management and biodiversity conservation, community-based programs in poverty alleviation, improved sanitation and potable water supply, and global networking of local NGOs to achieve IWRM objectives. On-the-ground activities are currently underway with transboundary watersheds in Kenya/Tanzania, and Ecuador/Peru, and and within India.

Sustainable Coastal Communities and Ecosystems (SUCCESS) Program

USAID's SUCCESS Program is a five-year initiative emphasizing a participatory, issue-driven and results-oriented process that integrates coastal management, fisheries, and aquaculture. The program's overarching goal is to help coastal communities improve both their quality of life (e.g., health, income, education) and their physical environment through good governance. The program's focal points are: 1) improved human wellbeing through healthy ecosystems and sustainable resource management in rural and peri-urban coastal environments; 2) ecosystem-based management and sustainable coastal fisheries; 3) ecosystem-based, low-impact aquaculture that generates sustainable enterprises and improves human wellbeing; and, 4) well-planned enterprises and management of natural resources conflict in urban areas. This global program focuses on achieving tangible, on-the-ground results, some of which are: increasing capacity through training; establishing regional learning networks; and applying science to management and good governance. Activities are currently being undertaken in Tanzania, Ecuador, Nicaragua, and Thailand.

Environmental Services Project (ESP), Indonesia

Through the Environmental Services Project (ESP), USG assistance links natural resources management and biodiversity conservation to improving raw water supplies for Indonesia's large population. USAID's work links watershed management and water service delivery to health. Assistance also responds to a Congressional directive to conserve the orangutan habitat. This assistance focuses on: 1) natural resources policy and governance to address illegal logging, and transparency in decision making that establishes responsible natural resource tenure; 2) sustainable natural resources management and production to achieve equitable economic growth; 3) biodiversity policy and governance that establishes policies, strengthen institutions

and build constituencies for more effective conservation management including orangutan protection; and, 4) biodiversity conservation to support management of protected areas and other areas of high conservation value such as orangutan habitat.

Through a Watershed Management Team, ESP is supplying integrated solutions to the country's water problems through: 1) developing watershed management plans; 2) land and forest rehabilitation; 3) managing the conservation of forests and protected areas; 4) encouraging policy support for watershed management; and, 5) the Ache watershed management and community-based coastal rehabilitation project. The Team is also contributing to the provision of sustainable water supply and sanitation for both rural and urban residents who lack access to adequate water supply and sanitation (see previous Section).

WATER PRODUCTIVITY

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.

USAID actual obligations totaled $22.4 million in 27 countries for water productivity improvement, including irrigation improvement and livestock water supply, improved water-related agricultural management practices, fisheries management, aquaculture, and hydropower development in FY 2006 (see Table 4).

Illustrative USAID Activities in Water Productivity

Amhara Micro-Enterprise Development, Agricultural Research, Extension, and Watershed Management (AMAREW) Project, Ethiopia

USAID's AMAREW project is implementing integrated watershed development activities that include construction of soil and water conservation structures (such as terraces and check dams), area closure, planting of trees, and construction of different small-scale water harvesting structures that channel rainwater runoff to a area where water can be retained. Early observations of the impact of these activities indicate an increase in the groundwater table. What's more, previously dry ponds now hold water for both human and livestock use.

- AMAREW Water Point Development for the Yeku Community. The Bambaw spring was developed in 2005 and has a sand filtering system, a separate water delivery point for humans and livestock, and a protected washing stand. The

spring provides clean potable water for over 200 households and meets the water needs of more than 600 livestock animals per day.

- Extensive physical and biological conservation works have been carried out in Yeku and Lenche Dima watersheds through food for work as well as free community labor mobilization. The physical conservation work includes extensive hillside terracing, check dams constructed using a variety of different materials and techniques. At the present time over 120 hectares of land are under closed area management. People from other surrounding areas are brought in to see the watershed improvement results on a regular basis at Yeku to show the positive economic and environmental effects of closed area management to other farmers, administration representatives, development agents, government officials, and NGOs. Forage production has enabled farmers to make additional money from the sale of forage seeds to the *woreda*[11] office of agriculture and NGOs.

- An area to be closed and managed was identified by the entire watershed community with the facilitation of the Community Watershed Management Organization (CWMO). Farmers have started to observe that natural regeneration in the closure sites has allowed the emergence of shrubs and grass species. The extensive physical conservation works constructed by the communities in the closed areas have essentially curtailed the excessive run-off from the surrounding hillsides, resulting in increased infiltration and improved ground water recharge. The Yeku stream flow has now been extended up to four months. User groups get an additional annual funding income of 400 *birr*/member by selling grass alone.

- With AMAREW Project support, the Sirinka Agricultural Research Center of the Amhara Regional Agricultural Research Institute (ARARI) developed a rope and washer pump, which is a promising technology to assist the regional water-harvesting program. The center carried out in Tehuledere *woreda* demonstration trials of the new pump technology on 21 households owning water harvesting structures and growing fruits and vegetables. More demonstration trials are also planned in other *woredas*. The growing popularity of this technology can be confirmed, as the *woreda* offices of agriculture and rural development is giving lots of purchase orders to local businesses to produce the pump in massive numbers. The Kalu *woreda*, for example, has ordered a total of 640 of such pumps for distribution.

- Water harvesting schemes implemented in the Amhara Region are intended to contribute to improving the food security and household income of the rural

[11] An administrative ward, or local government unit, in Ethiopia

population. The use of more efficient irrigation methods would help solve some of these problems, such as drip irrigation. This method is recognized for its efficiency and saving of labor. However, the high initial cost of imported equipment discourages smallholder farmers from investing in the system. With the initiation and support of the AMAREW Project, researchers at Sekota and Debre Berhan Agricultural Research Centers of ARARI have satisfactorily tested low-cost gravity drip irrigation. AMAREW staff and graduate students have successfully carried out a field experiment of low-cost gravity drip irrigation using locally available scrap materials and confirmed that it performs comparably to imported equipment. It is believed that the local people can easily reproduce the system components after receiving the necessary training.

Increasing Irrigated Agricultural Sector Productivity in Mali

In Mali, USAID is applying modern science and technology tools and adaptive research on sustainable land and water management technologies, to expand the sustainable productivity of commodities including rice, horticultural crops, and livestock. USAID supports the development of an improved seed production and distribution system, including the development of bio-safety and other seed policy related activities as well as farmer-based foundation seed production. USAID is intensifying its efforts to increase investments in water management and small-scale irrigation. Principal cooperators involved in USAID Mali's Increased Agricultural Sector Productivity Project include the Cooperative League of the USA, Michigan Sate University, Sheladia Associates Inc, Land O'Lakes, and the International Fertilizer Development Center.

During FY 2006, the project expanded a total of 1,789 hectares of area under irrigation in target zones, and 11 of the project's intervention sites moved from the planning to the implementation stage. The northern regions of Gao and Timbuktu have benefited from an expansion of 73 hectares of new land under irrigation. Also, In addition to new irrigated areas that were brought under production, efforts to improve agronomic production on already irrigated perimeters were applied to 2,660 hectares during FY 2006. Improvements in production were largely due to extension efforts in integrated soil fertility management and integrated cropping systems adoption by small producers' groups in target zones. A total of 1,502 small producers, including 510 women participated in technology demonstration training. The training involved the use of treadle pumps for small gardening activities, integrated soil fertility management, improved production techniques and the use of improved seed varieties. During the same period a total of 182 small irrigation pumps were distributed to farmers for their use in income generating activities, particularly for women's groups.

The Fisheries for Improved Sustainable Harvest (FISH) Project, Philippines

USAID's FISH Project is a seven-year (2003-2010) technical assistance project to improve food security and ecosystem health in the Philippines. Philippine seas supply food for the whole country and livelihood for millions of people. These resources are in crisis as seen in the declining fish catch, size and species composition around the country. Seemingly impossible just 20 years ago, protein deficiency among fishing communities is now increasing at an alarming rate.

Fisheries play a key role in the social and economic life of the Philippines, providing employment, essential nutrition and even tourism opportunities for a rapidly expanding, predominantly coastal population. Yet this valuable resource is threatened by over-fishing, as well as destructive and illegal fishing practices. As a result, catches of small subsistence fishermen have dropped significantly and some experts warn of a possible crash of selected fish stocks in as little as ten years.

The FISH project is an innovative initiative that will take a holistic, ecosystem-based approach to fisheries management and biodiversity conservation. The goal is to conserve biological diversity in at least four important marine ecosystems in the Philippines, as measured by an increase in fish stocks and the maintenance of environmental services of vital coastal resources. The project aims to accomplish this goal by improving the management of fish stocks and key environmental resources such as coral reefs and mangroves.

The FISH project works in partnership with the Philippine Department of Agriculture's Bureau of Fisheries and Aquatic Resources, other national government agencies, local government units and non-governmental and other assisting organizations. The project builds on the accomplishments and lessons learned from the USAID-funded Coastal Resources Management Project.

Collaborative Research Support Programs (CRSP) in Aquaculture and Fisheries

The goal of USAID's Aquaculture CRSP is to enhance the development and sustainability of aquaculture production systems and improve food supplies and human nutrition on a long-term basis. The Aquaculture CRSP brings together 19 U.S. universities and institutions in 24 host countries to address global constraints to the development of sustainable aquaculture systems. This is accomplished through research, training and capacity building activities. This CRSP is scheduled to end in FY 2007.

In September 2006, after an open competition process, USAID selected Oregon State University to serve as the Management Entity for the Aquaculture and Fisheries CRSP. The goal of this new CRSP is to develop more comprehensive, sustainable, ecologically and socially compatible, as well as economically viable aquaculture and innovative fisheries management systems in developing countries and contribute to poverty alleviation and food security. Sub-awards for the work under the core program will be made based on an open peer-reviewed competition process. The University of Michigan, Purdue University, North Carolina State University, University of Arizona, University of Hawaii at Hilo, and University of Connecticut at Avery Point have been selected to serve as the lead universities for the initial group of projects under the new Aquaculture and Fisheries CRSP. These universities and their U.S. and host-country partners will implement a wide range of aquaculture-related research, training, outreach and capacity building activities in Kenya, Tanzania, Ghana, Nicaragua, Guyana, Mexico, Philippines, Indonesia, Vietnam, China, Cambodia and Nepal.

Table 4: Actual USAID Obligations in FY 2006 for Supporting Watershed Management and Water Productivity by Country and Region
(Dollars in Millions)

Region/Bureau	Country or Operating Unit	Watershed Management & IWRM	Water Productivity	Total
Africa	Burundi	$0.012	$0.100	$0.112
	Ethiopia	0.215	2.357	2.572
	Malawi		0.662	0.662
	Mali		1.500	1.500
	Uganda	0.300	0.500	0.800
	RCSA	2.000		2.000
	Africa Regional Bureau	1.700		1.700
	Africa Total	**4.227**	**5.119**	**9.346**
Other Asia and the Near East*	Bangladesh	0.834	0.629	1.463
	India	1.100	0.586	1.686
	Indonesia	3.949		3.949
	Lebanon	8.100		8.100
	Pakistan		0.220	0.220
	Philippines	3.471	0.300	3.771
	Other Asia and the Near East Total	**17.454**	**1.735**	**19.189**
Egypt and Jordan	Egypt	6.700		6.700
	Jordan	11.000	2.400	13.400
	Egypt and Jordan Total	**17.700**	**2.400**	**20.100**
Europe and Eurasia	Armenia		0.200	0.200
	Croatia		0.100	0.100
	Kazakhstan		0.200	0.200
	Georgia	0.459	0.700	1.159
	Kyrgyzstan		0.756	0.756
	Macedonia		0.040	0.040
	Moldova		0.076	0.076
	Romania	0.450		0.450
	Tajikistan	0.028	1.156	1.184
	Turkmenistan		0.220	0.220
	Uzbekistan		0.030	0.030
	Europe and Eurasia Total	**0.937**	**3.478**	**4.415**
Latin America and the Caribbean	Bolivia	2.210	0.320	2.530
	Dominican Republic	0.232		0.232
	Ecuador	0.341	0.201	0.542
	El Salvador	1.212	0.173	1.385
	Haiti		4.000	4.000
	Honduras	2.500	0.630	3.130
	Jamaica	0.615	0.450	1.065
	Mexico	2.100		2.100
	Nicaragua		0.010	0.010
	Panama	2.279		2.279
	Paraguay	0.080		0.080
	Central America Regional	1.705		1.705
	Latin America and the Caribbean Total	**13.274**	**5.784**	**19.058**
Central Programs	EGAT/Agriculture		3.870	3.870
	Central Programs Total	**2.200**	**3.870**	**6.070**
Grand Total		**$55.792**	**$22.386**	**$77.178**

*Excludes Egypt and Jordan

DISASTER PREPAREDNESS

Managing Disaster Risks to Prevent Loss of Life and Destruction

Large storms (hurricanes, typhoons, and cyclones), floods, tsunamis and droughts often result in the loss of many thousands of lives and many billions of dollars. Global climate change may well increase the variability and unpredictability of weather patterns and extreme events. Planning, sound development, monitoring and preparedness can mitigate losses.

Disaster Preparedness activities are designed to help manage risks from natural disaster events such as storms, floods, and drought. Activities promote the hydrometeorological monitoring in and along vulnerable river basins and coastlines; interventions help communities use the data to predict or avoid destruction and loss of life from extremes in water availability. USAID invested $6 million for hydrometeorological monitoring and forecasting as well as drought and flood vulnerability assessments in FY 2006.

Illustrative USAID Activity in Disaster Preparedness

USAID Office of Foreign Disaster Assistance (OFDA) Disaster Preparedness and Hydrometerorological Forecasting

Hydrometeorological disasters such as floods, droughts, cyclones, typhoons and hurricanes account for the largest number of natural disasters in the world and affect more people than any other type of natural disaster. OFDA's goal in implementing hydrometeorological programs is to reduce vulnerability to the adverse impacts of climate, weather and water induced disasters. In FY 2006, OFDA continued to support flood and drought preparedness and mitigation, dissemination of hydrometeorological information to vulnerable populations, strengthening local capacities in hydrometeorological mitigation, and the provision of technical assistance. The hydrometeorological hazard mitigation and preparedness activities included: implementation of flood forecasting in transboundary rivers in Asia (Mekong and Ganges-Brahmaputra-Meghna river basins); flood forecasting and drought monitoring in East Africa; a new initiative on global flood hazard mapping; dissemination of hydrometeorological information to end-users and populations in remote areas with utilization of an inexpensive meteorological data transmission system (RANET) in Africa and Asia/Pacific; community-based flood and drought management in Asia and Africa; and technical assistance, globally.

Climate Forecasting Systems (CFS) Component of the Disaster Management Project, India

The CFS Component of the larger India Disaster Management Project aims to improve early warning for floods, cyclones and extreme weather events in India. The National Oceanic and Atmospheric Administration (NOAA) and the US Geological Survey (USGS) are collaborating with several key Indian institutions such as the India Meteorological Department (IMD), the National Center for Medium Range Weather Forecasting (NCMRWF), the Central Water Commission (CWC) and the Indian Institute of Technology (IIT Delhi). There are five sub-projects: tropical cyclone forecast and warning; local severe storms (including flash floods); extreme temperatures; flood forecasting; and, forecast communications. Principal Investigators from India and the US are working together to implement the activities.

In 2006, and so far in 2007 (utilizing primarily prior-year funds), the project has carried out short-term training in India and longer-term training in the US to enhance the capacity of Indian scientists. Nineteen scientists from Government of India institutions traveled to the US in 2006 for training of up to four months on forecast modeling, data assimilation and computer applications. In May 2006, a two-week training was conducted in Bhubaneswar, Orissa, by a project contractor for staff of the Indian Central Water Commission (CWC) on flood management for the Mahanadi River Basin.

The USG Indian Ocean Tsunami Warning System (IOTWS) Program

In response to the December 2004 tsunami in South Asia and utilizing Supplemental Appropriations, USAID launched the United States Government's Indian Ocean Tsunami Warning System (IOTWS) program. Through this effort, scientists and experts from the United States share their technical expertise, provide guidance, and help build early warning system in the Indian Ocean region so that governments and communities will be able to detect and prepare for tsunamis and related coastal hazards. The US program involves several other agencies with specialized expertise USAID, NOAA, US Department of Agriculture/Forest Service (USDA/FS), and US Trade and Development Agency (USTDA). The USAID Regional Development Mission for Asia (RDM/A) in Bangkok manages the program with the coordination support of a contractor that serves as the Program Integrator—a consortium of technical organizations including the Asian Disaster Preparedness Center (ADPC).

To assure effectiveness, a warning system must ensure continuity from the initial stage of detecting a tsunami, to issuing warning messages to authorities and the public, and ensuring that communities at risk are properly prepared. In cases where tsunamis originate close to the shore, the warning time could be as little as 15 to 30 minutes. Because the Indian Ocean region faces multiple natural hazards, the US

program is “multi-hazard” and is designed to help countries simultaneously detect and issue warnings for earthquakes, tidal waves, sea swells, floods and cyclones.

In addition to providing support for regional-level warning system components, USAID’s work includes targeted technical support to Indonesia, Sri Lanka, India, Thailand, and the Maldives—the countries most severely affected by the December 2004 tsunami disaster.

Working in partnership with the international community, national governments, and others, the US IOTWS Program is addressing hazard detection, prediction, warning, communication, and preparedness at all critical levels. Major activities include:

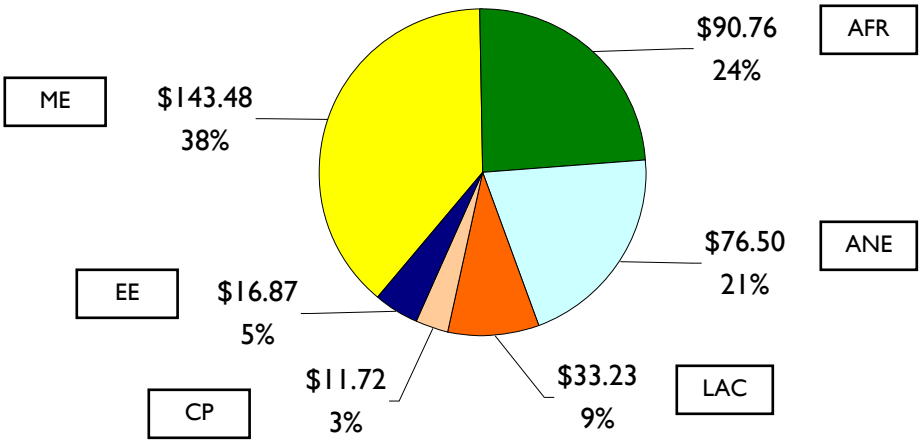
- Regional support through the Intergovernmental Oceanographic Commission and support the design and development of regional observation and communications systems, tsunami warning center capacity building, warning formulation standards and protocols, and data-sharing strategies;
- National support for disaster management organizations, planning, policy and regulations, communications and notification systems, and hazard mapping and modeling;
- Local support for tsunami-resilient communities program and coastal hazards mitigations; and, crosscutting support for region-wide training, educational exchanges, and knowledge-sharing information systems on tsunami and related disaster warning systems.

Table 5: Actual FY 2006 USAID Water Obligations for Disaster Preparedness by Country, Region, and Reporting Category
(Dollars in Millions)

Region/Bureau	Country or Operating Unit	Forecasting & Monitoring	Vulnerability Assessment	Total
Europe & Eurasia	Kyrgyzstan	0.200		0.200
	Romania	0.100		0.100
	E & E Total	**0.300**		**0.300**
Latin America & the Caribbean	Honduras	0.100	0.124	0.224
	Jamaica		0.050	0.050
	LAC Total	**0.100**	**0.174**	**0.274**
Central Programs	IDFA	2.413	2.855	5.268
	Central Programs Total	**2.413**	**2.855**	**5.268**
Grand Total		**2.813**	**3.029**	**5.842**

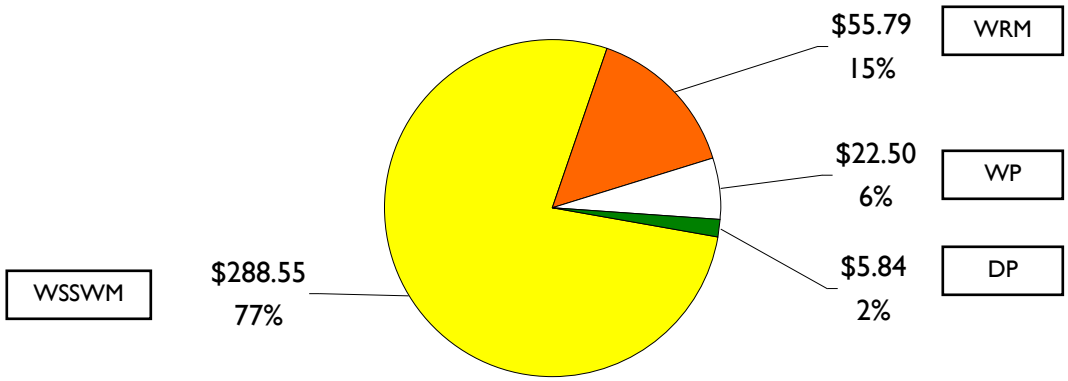
APPENDIX

Figure 2: USAID Water-related Actual Obligations
Fiscal Year (FY) 2006
$372.5 (Dollars in Millions)



Egypt, Iraq, Jordan, West Bank/Gaza (ME) | Africa (AFR) | Asia and the Near East (ANE)
Latin America and the Caribbean (LAC) | Europe and Eurasia (EE) | Central Programs (CP)

Figure 3: USAID Water-related Actual Obligations by Theme
Fiscal Year (FY) 2006
$372.5 (Dollars in Millions)

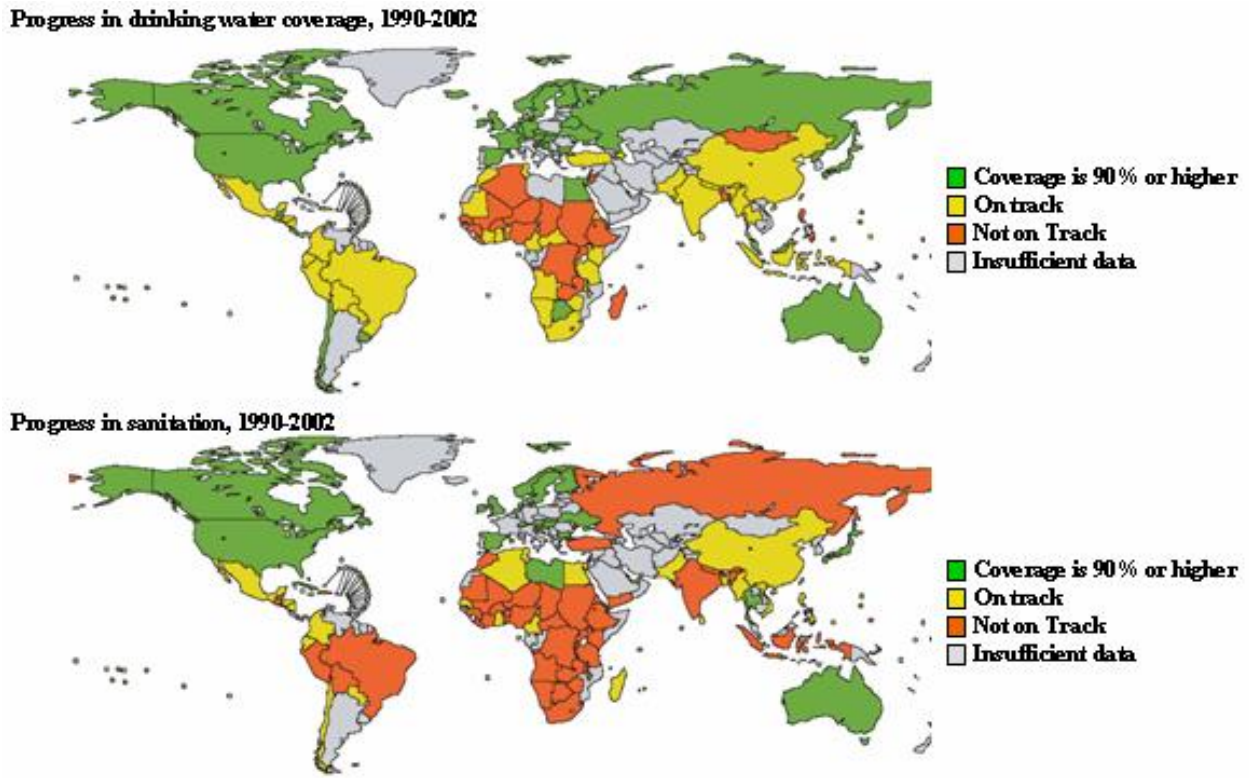


Water Supply, Sanitation, and Wastewater Management (WSSWM) | Water Resources Management (WRM)
Water Productivity (WP) | Disaster Preparedness (DP)

Table 6: Actual FY 2006 USAID Actual Obligations across Six Regions by Sub-Categories of Water-related Activities
(Dollars in Millions)

Activities	Africa	Asia & the Near East*	Egypt, Iraq, & Jordan	Europe & Eurasia	Latin America & the Caribbean	Central Programs	Total
Water Supply and Sanitation	$21.680	$31.356	$40.050	$6.457	$11.663	$5.535	$117.491
IDFA-funded Water Supply & Sanitation	59.738	23.264	0.780	0.233	2.074		86.089
Water Resources Management	4.227	17.454	17.700	0.937	13.274	2.200	55.792
Water Productivity	5.119	1.735	2.400	3.478	5.784	3.870	22.386
Disaster Preparedness				0.300	0.274	5.268	5.842
Water Supply Projects & Related Activities (including IDFA-funded Water & Sanitation Activities)	81.418	54.620	40.830	6.690	13.737	5.535	202.830
All Water Supply and Sanitation - Including Supplementals & Wastewater Management	**81.418**	**57.311**	**123.380**	**7.008**	**13.902**	**5.535**	**288.554**
Grand Total – All Water Funding Categories	**$90.764**	**$76.500**	**$143.480**	**$11.723**	**$33.234**	**$16.873**	**$372.574**

* Excludes Egypt, Iraq, and Jordan



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