

## TOWARDS A WATER SECURE FUTURE: THE ROLE OF USAID IN WATER RESOURCES MANAGEMENT

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### ABOUT THE U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT

The U.S. Agency for International Development (USAID) is an independent federal government agency operating under the foreign policy guidance of the Secretary of State. With less than one-half of 1 percent of the federal budget, USAID works around the world on agricultural and economic development, democracy, enhanced human capacity through education, control of population growth, improved human health conditions, environmental conservation, conflict prevention, and humanitarian response to natural or man-made disasters. The agency takes a decentralized, bottom-up approach in providing assistance to developing countries.

USAID is headquartered in Washington, DC, but its strength is its field offices, or Missions, located in more than 75 countries with activities in over 100. USAID works closely with a vast array of partners, from host country governments to grass-roots organizations, private voluntary organizations, universities, American businesses, United Nations organizations, other governments, bilateral and multilateral donors, and other U.S. government agencies. USAID has working relationships with more than 3,500 American companies and over 300 U.S.-based private voluntary organizations.

USAID's origins go back to the Marshall Plan reconstruction of Europe after World War II and the Truman Administration's Point Four Program. In 1961, President John F. Kennedy signed the Foreign Assistance Act into law and created USAID by executive order. Since that time, USAID has been the principal U.S. agency to extend assistance to countries recovering from disaster, trying to escape poverty, and engaging in democratic reforms. Water resources management is an important part of maintaining each of these objectives and has always played a key role in USAID assistance abroad.

### USAID's EVOLVING ROLE IN WATER RESOURCES MANAGEMENT

USAID's early involvement in water and water-related activities began in the 1960s with emphasis on irrigated agriculture, community water supply, and a handful of large dam construction projects. These early efforts were relatively capital and infrastructure intensive, and included, for example, investment in Egypt's Aswan Dam and Pakistan's Tarbela Dam. During the 1970s, the emphasis of USAID assistance shifted from dam construc-

tion towards community water supply and sanitation for health and increased assistance to water user associations and community organizations to improve service provision and civil society's role in the water sector. USAID responded to the International Drinking Water Decade in the 1980s with the implementation of the Water and Sanitation for Health (WASH) Program, which had as a major focus the improvement of child survival through clean drinking water supply, better hygiene, and enhanced wastewater treatment and sanitation.

USAID evolved in the 1980s, with some exceptions in the Middle East, away from infrastructure projects. Watershed management within forestry and/or agricultural contexts received increasing attention, as did industrial pollution prevention. In fact, environmental activities were seen as legitimate "development objectives" in and of themselves, and USAID began supporting coastal resources management in the mid-1980s for the first time.

The increased focus on integrated water resources management (IWRM) in recent years reflects the growing consensus that access to adequate supplies of clean freshwater is paramount to addressing the challenges in sustainable development faced by the global community. IWRM is a participatory planning and implementation process, based on sound science, which brings together stakeholders to determine how to meet society's long-term needs for water and coastal resources while maintaining essential ecological services and economic benefits.

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### TODAY: USAID'S APPROACH TO INTEGRATED WATER RESOURCES MANAGEMENT

As part of the U.S. government effort to provide international leadership in advancing a holistic approach to water resources management, USAID is working to actively promote the concept of integration through a "blue revolution." The agency actively promotes linkages across various sectors, e.g., agriculture/irrigation, public health/water supply and sanitation, urban development, economic development, habitat protection and biodiversity (see text boxes). Increasingly, USAID is drawing on the water-related expertise of and partnering with other U.S. Government (USG) agencies, academia, private sector, and community-based organizations. Internally USAID has addressed cross-sectoral integration through the creation of an interdisciplinary Water Team (contact Alan Hurdus <alhurdu@usaid.gov>) with members from various agency units: environment, economic growth and

agricultural development, humanitarian response, and regional bureaus.

Three central elements are at the core of the USAID Water Team's activities:

1. Provide *technical and managerial assistance* to USAID country missions and partners to incorporate IWRM approaches in field programs and policies.

2. Provide *education and outreach* opportunities to missions and partners by producing and distributing information on relevant USAID, USG, and other donor capabilities in IWRM.

3. Provide *international leadership and coordination* within USAID, and vis-à-vis other USG agencies and donors, through exchange of lessons learned, development of universal guidelines, and adoption of IWRM practices by the wider development community.

**USAID's PORTFOLIO OF WATER-RELATED PROGRAMS AND ACTIVITIES**

USAID presently supports water-related activities in about one-third of the countries defined as water-short (see Figure 1). [Water-short countries are those with average annual water resources less than or equal to 1,700 cubic meters per person. Water shortage is based on estimates of a country's renewable freshwater supplies and does not include fossil groundwater or spatial or temporal variations in available water resources. Once a country experiences extreme water scarcity (less than 1,000 cubic meters per person per year), it can expect chronic shortages of freshwater that threaten food production, hinder economic development, and damage ecosystems.] Of the 48 countries projected to be water-short in 2025, USAID currently implements substantial water programs in at least 15. The degree to which countries and regions will face future water scarcity depends

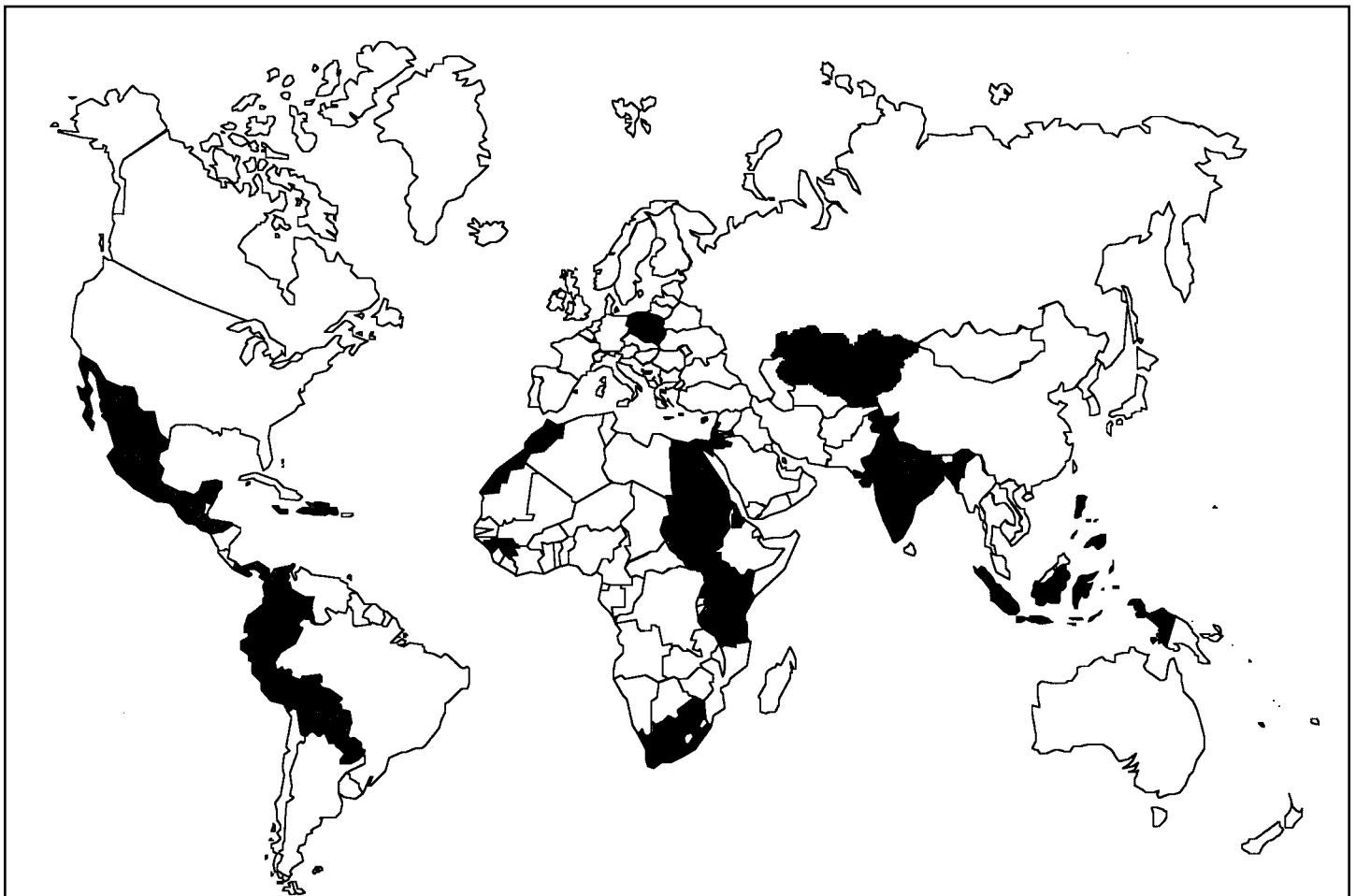


Figure 1. Geographic Distribution of Current USAID Water-Related Activities. The countries on the map that have documented water-related obligations in the "Results, Review, and Resource Request Reports" (R4 reports), part of the Agency's annual reporting system, are as follows: Eritrea, Ethiopia, Guinea, Kenya, South Africa, Tanzania, Uganda, Bangladesh, Egypt, India, Indonesia, Jordan, Lebanon, Morocco, Nepal, Philippines, Israel (representing the West Bank/Gaza Mission), CAR countries, Bosnia-Herzegovina, Cyprus, Kosovo, Poland, Bolivia, Colombia, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Jamaica, Panama, Paraguay, Mexico, Peru.

in large part on whether they face physical or economic water scarcity, and how equitably water is distributed among geographic areas and between the rich and the poor (Cosgrove and Rijsberman, 2000). While some countries may have sufficient water resources, they will need to finance significant storage, treatment, distribution, and other service infrastructure to avoid falling below the water shortage threshold.

Facing water shortage and water insecurity involve an integrated, multi-pronged approach with attention paid to the water resource base, its environmental underpinnings, human uses, impacts and outcomes in a range of sectors. While many current USAID water-related programs are sector-specific, IWRM elements are increasingly being integrated into these. Part of the new approach is to expand the scope of sector-specific activities. Historically, USAID has directed a considerable amount of resources towards various aspects of water management totaling at least \$11 billion over the last 30 years. Meanwhile, the World Water Council estimates that \$70-80 billion, excluding direct investment by industry, is invested each year to provide water services (Cosgrove and Rijsberman, 2000).

The following figures are based on USAID's current water-related investment portfolio, which is well over \$350 million annually. Figure 2 shows the distribution of water-related expenditures by major activity areas.

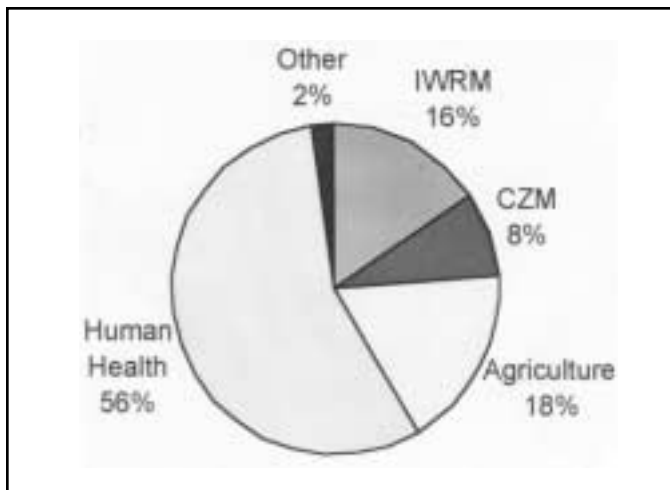


Figure 2. Distribution of USAID Expenditures for Water-Related Activities (FY 2000).

(Category definitions: Human Health – Drinking water supply, sanitation, wastewater treatment, and pollution prevention; Agriculture – Irrigation, water for livestock, and soil and water conservation; CZM – Coastal zone management and coral reef conservation; IWRM – Integrated Water Resources Management of ground water, surface water, and watersheds including water quality monitoring; equitable water access; planning and policy implementation; Other – Fisheries, aquaculture, aquatic biodiversity, aquatic ecotourism, disaster preparedness and drought/flood forecasting.)

The combination of the Middle East's strategic importance and the region's extreme water scarcity results in a large share of USAID's expenditures in water-related activities being directed to this region, as shown in Figure 3, which compares USAID water expenditures in Egypt, Jordan, and West Bank/Gaza with those in all other regions of the world combined.

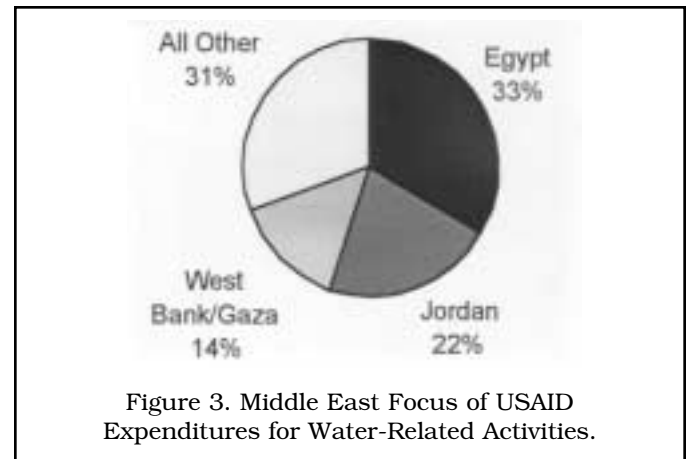


Figure 3. Middle East Focus of USAID Expenditures for Water-Related Activities.

**USAID HELPS THE GLOBAL COMMUNITY FIND SOLUTIONS TO WATER RESOURCES MANAGEMENT CHALLENGES**

The world human population has now passed 6 billion and is projected to increase to around 9 billion by 2050 (UNPD, 1998). Nearly all of the projected 3 billion or so people to be added over the next half century will be born in countries already experiencing water shortages (Brown, 2000a). To compound the pressure on available water resources, slightly less than one one-hundredth of 1 percent of the world's total supply of water is easily accessible freshwater; the world's water supply is for all practical purposes a finite resource. Various adaptive mechanisms have been put in place around the world to deal with water shortage, many with serious consequences of their own.

**Ground Water – Its Use and Abuse**

A significant proportion of global water supply exists as ground water. Ground water is a critical component of supply for cities, industries, and agriculture. And where it exists in accessible quantities, it is often preferred for its reliability in comparison to erratic surface supplies. Yet the depletion and pollution of ground water is identified by many professionals as the single greatest problem of water resources management for the coming century (Seckler *et al.*, 1999). Most solutions involve some combination of increased recharge rate, reduced pumping, increasing overall efficiency gains, and reducing or eliminating contaminant sources (Shah *et al.*, 2000). As with all other water resources management issues, however, active aquifer management must be undertaken through stakeholder participation and whole basin analysis based on projected demand. USAID is engaged in many activi-

ties around the world that will ultimately help protect ground water quality while ensuring reliable supplies. Many of USAID's IWRM programs in Morocco, Haiti, Jordan, and West Bank/Gaza include an aquifer management component. Specific attention to management of ground water resources is a relatively new area of emphasis for USAID, and it is anticipated that the agency will increasingly engage in ground water management activities over the next decade.

**Integrated Activities Help Jordan Manage Scarce Water Resources for Multiple Sectors**

Through integrated support from USAID's Improved Water Resources Management program, Jordan can help serve the needs of diverse stakeholders that rely on the country's extremely limited water resources. Water sector initiatives are strengthening public sector water institutions and key private-public partnerships, improving water use efficiency and the quality of treated wastewater so that it can be used for agricultural and industrial purposes, thereby increasing the quantity of fresh water available for human consumption in both rural and urban areas.

**World Food Security Threatened By Growing Water Demands**

Feeding the world's growing population will be severely challenged in coming decades by competition over increasingly limited water resources. On a global scale, irrigated agriculture accounts for just 17 percent of the total cropland area, yields 40 percent of agricultural output, and consumes nearly 70 percent of total developed water supply (Postel, 1998). Exactly how much water will be needed to meet projected food demand is not well understood, but studies suggest that at least 20 percent more irrigation water will be needed by 2025 (Postel, 1997). Meanwhile, aquaculture has become the fastest growing sector of the world food economy, and is now poised to overtake cattle ranching as a source of food by 2010 (Brown, 2000b). Aquaculture offers both benefits and constraints to the equation, producing "water efficient" fish while exacting a heavy toll on habitat and water quality, and increasing evaporative losses from freshwater ponds.

USAID works with other donors through the Consultative Group on International Agricultural Research promoting water-saving technologies and improvements in the construction, efficiency and delivery of irrigation systems. Millions of dollars were spent for the reconstruction of areas damaged by Hurricane Mitch throughout Latin America and the Caribbean, which included rebuilding many irrigation systems. Activities to protect agricultural production in general against future disasters are still underway in El Salvador, Guatemala, Nicaragua, and Honduras. USAID also supports activities in fisheries and aquaculture in countries such as Bangladesh, the Philippines, Kenya, and Colombia.

**The Importance of Water Resources Management to Human Health**

At any one time, around half of all people in developing countries suffer from one or more of the six main diseases associated with inadequate water supply and sanitation (United Kingdom Department for International Development, 1998). (The six diseases are diarrhea, ascariasis, dracunculiasis, hookworm, schistosomiasis, and trachoma, and are transmitted to or between humans in a variety of ways, most of which relate to a lack of quantity or quality of water.) Total mortality and morbidity (sickness) can only be estimated, but 3-4 million people die each year of waterborne diseases, including 2 million children from diarrhea alone (Cosgrove and Rijsberman, 2000). When water shortages and unsanitary living conditions are added to the effects of polluted water, these factors are responsible for more than 12 million deaths worldwide each year. Also of recent but growing concern is the incidence of drinking water contaminated with a variety of man-made chemicals and heavy metals. The water resources management goal for human health is to deliver water, sanitation, and improved hygiene practices (i.e., education) as a package to communities. Water-related activities aimed at safeguarding human health are the largest group of USAID's water-related expenditures on an annual basis. Projects included drinking water supply, sanitation, wastewater treatment, and industrial pollution prevention and control activities. The lion's share of these projects are in the Asia and the Near East region, primarily in Egypt, Jordan, and West Bank/Gaza, but programs in water supply and sanitation are part of the portfolio in many countries in which USAID works.

**Growing Urbanization Calls for New Approaches and Technologies**

Cities account for just 2 percent of the planet's surface area, yet by 2005 they will be home to half of the world's population (Hinkel, 1999). The concentration of people and the increasing rate of urbanization place cities squarely in the center of the global water management challenge. Cities today account for 60 percent of all water allocated for domestic human use. The challenge of urban water management is multi-faceted, but often centers on the fact that cities, especially the growing number of megacities, simply do not have large enough surface water sources and ground water recharge areas within feasible proximity to sustain growing water demand. Poor or nonexistent planning compounds the urban water management problem. Integrated planning and water resources management, together with the use of new technologies for water supply, treatment, conservation, and reuse, offer the most viable options for meeting these otherwise daunting challenges. The bulk of USAID assistance in urban environments, both in terms of expenditures and geographic scope, is manifested in water supply, sanitation, wastewater treatment, and industrial pollution prevention and control activities aimed at improving human health.

Coastal Zone Management and  
Coral Reef Conservation

Two-thirds of the world's population is found within 250 miles of a coast (Hinrichsen, 1998). Of the world's 15 largest cities, all but two are located on coasts. Coasts contain some of the planet's most biologically productive habitat, and in turn support a disproportionate amount of economic output per unit area. Yet as stewards of the earth's coastal zone, we undermine our own efforts with widespread habitat loss, overharvesting, destructive fishing, and failures to address land based sources of marine pollution. Half of the world's wetlands were destroyed in the 20th century, and 25 percent of coral reefs have now been lost. Coral reefs play a critical but often undervalued role in the sustainable development options for coastal residents throughout the world, yet are becoming increasingly vulnerable to a combination of direct human impact and the effects of global warming. By late 2000, 27 percent of the world's reefs had been "effectively lost," a 17 percent increase in just 8 years (Wilkinson, 2000).

Through the process of integrated coastal management, sustainable development in coastal areas can be effectively tackled at the ecosystem scale, with strong emphasis on water resources management. It is ultimately about forging the right balance between competing human uses of water and natural resources, while ensuring that environmental health and productivity are not compromised in the long term. Many of USAID's coastal activities are implemented through a cooperative agreement with the Coastal Resources Center at the University of Rhode Island (<http://www.crc.uri.edu/>). The USAID-URI partnership promotes improved processes of governance, participation, and stewardship toward the management of multi-sectoral activities within the coastal zone and surrounding watersheds in such countries as Tanzania, Mexico, Indonesia, Egypt, and Jamaica. USAID is a leader in promoting a major global effort aimed at coral reef conservation, the International Coral Reef Initiative.

Unprecedented Losses to Aquatic Biodiversity

The world's freshwater ecosystems – lakes, rivers, and wetlands – are showing signs of pollution and overexploitation, and freshwater biodiversity is suffering unprecedented loss as a result. Humans already use more than half of all available freshwater supplies for agriculture, industry, and domestic use. But that figure is growing, and it is estimated that by 2025 human use of the planet's total available freshwater may exceed 70 percent (Postel, 1998). Growing human demand often means less freshwater to sustain instream flows needed to support healthy biota. The core of any management efforts must emphasize recognizing and sustaining freshwater ecosystem values and services as the foundation for further effort at water resources management and sustainable development. USAID water resources and biodiversity specialists work on a variety of critically threatened aquatic wetlands and ecosystems around the world. USAID's approach to sustainable development and aquatic biodiversity is largely focused on the conservation of aquatic

habitats, thereby protecting all of the species residing within the ecosystem.

Disaster Preparedness and Global Climate Change

The gradual warming of the Earth's atmosphere suggests that we are entering a period of increased frequency and severity of climate-related disasters such as drought, flooding, and catastrophic storms. Record losses from weather-related disasters were incurred in 1998 when more than \$90 billion in economic losses were tallied from storms, floods, droughts, and fires worldwide, exceeding the \$55 billion in losses for the entire decade of the 1980s (Hinrichsen *et al.*, 1998). Forests and wetlands are needed to absorb and slow floodwaters, yet on a global scale these resources are disappearing at alarming rates. Climate change will potentially affect the geographic location of ecosystems, the structure and function of their biological communities, and thus, their ability to provide ecological goods and services. Semi-arid regions are in turn likely to become more vulnerable to drought and/or flood-drought cycles that will similarly necessitate stepped-up efforts at integrated water resources management at the river basin scale. Such change could have equally serious implications for future water supply. On the vulnerability and adaptation side of the global climate change challenge, water resources managers must begin work on many fronts to ensure that the economic and land-use policies and conditions are in place to guide appropriate private-sector investment and resource use patterns. USAID works jointly with the National Weather Service (NOAA) and the U.S. Geological Survey (USGS) to help countries establish monitoring systems to help forecast extreme events. These activities also included vulnerability assessments and the formulation of mitigation plans aimed at saving lives and money in the face of future drought and storm events. Important recent or ongoing examples of USAID support in this area include Central America, devastated by Hurricane Mitch, and Mozambique, hit hard by floods in two successive seasons.

**Upper Watershed Management Ensures Proper  
Functioning of the Panama Canal**

Numerous studies, including one conducted by USAID, have demonstrated the link between the environmental protection of the Panama Canal Watershed and the effective long-term operation of the Panama Canal. Efficient operation of the Panama Canal relies on the water from the 326,000-hectare watershed, as each ship passage requires 52 million gallons of fresh water. USAID promotes institutional strengthening, public education, and support for municipal governments in the areas of sustainable forest management practices in the upper watershed as well as water quality monitoring to help assure the availability of adequate volumes of water for canal operations by minimizing sedimentation and drainage of contaminants into the Canal.

**Women and the Poor : The Most to Lose  
and the Most to Gain From Effective  
Water Resources Management**

In many developing countries, men and women manage water resources very differently, based on cultural differences in gender roles, and therefore access to clean water and sanitation directly affects the well-being of girls and women. Time spent fetching water and caring for sick children is lost to more productive activities, and girls often stay out of school because of such duties. Girls' enrollment and attendance in school are negatively affected by poor sanitary conditions. When attention to gender is incorporated into development projects, the outcome should not be assumed to be projects specifically designed for women beneficiaries. Rather, the emphasis should be on ensuring that projects are not targeted towards activities predominantly affecting men; in these cases, gender analysis can ensure that women are not left out of the equation for the equitable allocation of water resources. USAID urges its program managers to be aware that their activities may have significant differential effects by social group and watch to ensure that neither women nor men are disproportionately affected. The integrated water resources management plans in Morocco and El Salvador serve as good examples of how attention to gender issues can enhance crosscutting linkages across a broad development portfolio.

**Morocco Adopts an IWRM Approach That Works**

The economy of Morocco depends heavily on agriculture, so plans for economic growth and modernization are hostage to rainfall patterns and the way water is managed in aggregate. On the human level, inadequate supplies of potable water and sanitation are major household burdens and cause disease. To alleviate this constraint to prosperity and social development, USAID/ Morocco has worked since 1995 to improve water resources management in the agricultural, urban and industrial sectors. Current activities include:

- (1) Support for the creation and institutional development of a basin agency to manage water resources in the Souss Mass River Basin in southern Morocco.
- (2) Improving watershed management through community-based erosion control programs, benefiting farmers and urban water users downstream.
- (3) Improving water quality by treating urban and industrial pollutants.
- (4) Providing water, sanitation, and municipal services in fast-growing towns and cities, benefiting the urban poor.
- (5) Training municipal officials in financial management and environmental planning, benefiting urban residents through better governance and service delivery.

**Transboundary Waters:  
A New Concern for Global Security?**

The global water management challenge is complicated by the fact that nearly half of the world's population lives within some 300 river basins shared by two or more countries. In the face of growing demand and increasing

water scarcity, dependence on shared river basins and aquifers suggests urgency in the need to forge international agreements on the management and allocation of these shared resources. Water ignores political boundaries, and even where a watercourse serves to delineate sovereign states, we must work to promote whole basin management based on ecosystem principles. Global security demands that we must hold basin management as a common goal for regional cooperation, ensuring that upriver riparians do not deprive downriver riparians of water access in terms of quantity or quality.

There are plenty of examples to illustrate how transboundary water resources can engender tension, yet also rally cooperation. India and Bangladesh have quarreled over allocation rights for the Ganges. The Jordan River basin plays a huge role in peace talks between Israel and the Palestinians. Egypt fears overuse of the Nile by upstream Sudan and Ethiopia. Turkey's damming and irrigation schemes on the Tigris and Euphrates are felt as threats by Syria and Iraq downstream. In fact, over 90 percent of Middle East water resources are transboundary, while Africa alone contains over 60 international rivers (Cosgrove and Rijsberman, 2000). Every major river is transboundary in Southern Africa, a region where at least four countries will face serious water shortages within 30 years (Cosgrove and Rijsberman, 2000).

There have been many important developments in recent years in the bilateral, regional, and international management of transboundary water resources. India has concluded significant agreements with neighboring states, including its signing of the Ganges Treaty with Bangladesh, followed by agreements with Nepal and Pakistan on the Mahakali and the Indus basins respectively (Salman and de Chazournes, 1998). However, the absence of a comprehensive set of international legal norms has complicated the task. In 1997 the U.N. General Assembly ratified the Convention on the Non-navigational Uses of International Watercourses, but the general legal principles it contains offer few practical guidelines for how to approach water allocation among riparians, the central issue in most water conflict (Wolf, 1999). Nevertheless, a growing body of experience suggests that cooperation, rather than conflict, is the norm, and that the building of trust and confidence among sovereignties is central to managing conflict.

Competing demand between sovereign states typically calls for the establishment of a watershed or basin commission tasked with planning and management authority and comprising multiple parties and stakeholders. While water quantity is often the major issue, it is often more politically astute to focus early attention on water quality and ecosystem management issues for which consensus may be easier. The commission should work to ensure that its members develop a common understanding of the basin's historical, present, and projected future hydrology, while recognizing that land and water resource management must go hand-in-hand. The goal is to develop a multi-sectoral, integrated planning system based on sound science, information sharing, transparency, and decision-making rules that are clear and explicitly understood by all parties (Cosgrove and Rijsberman, 2000).

**Central Asian Republics Collaborate on Aral Sea Basin Water Resources Management**

USAID works with the Central Asian Republics on the improvement of management capacity to address environmental issues in the Aral Sea Basin. Activities concentrate on the management of Aral Sea tributaries, global climate change, and the protection of the Caspian Sea environment from petroleum sector exploration. USAID provides assistance to establish water user associations and to improve water pricing and privatization of local water use rights, water quality, waste management guidelines, pollution fines systems, and multipurpose (power vs. irrigation) management of dams (including water sharing). Accomplishments over the past year include:

- (1) Establishment and training of an expert group on modeling for optimal water resource use decision-making in the Aral Sea basin.
- (2) Training of water officials to assess, calculate, and recover operation and maintenance costs for hydroelectric facilities.
- (3) Formation of an initial working group to assist in the development of water quality standards.
- (4) Assessments of the strength of Water User Associations and the state of legal and regulatory legislation in each Central Asian republic.

USAID is engaged in transboundary management of coastal areas and river basins in several regions around the world: the Central Asian Republics, Southern Africa, the Belize-Mexico border, Central America (Rio Lempa and the Gulf of Fonseca), and the Caucasus. Future effort is expected to grow in this area of water resources management for the agency as new projects are currently under planning and consideration. For example, a design team planned a transboundary water management activity in the Trans-Caucasus Region, including Georgia, Armenia, and Azerbaijan. The activity focuses on promoting cooperation and building capacity for water management in the Aras and the Kura River Basins. In addition to activities directed at specific regions around the world, USAID is a leader in representing transboundary issues at major international fora such as the World Water Forum with other donor countries and institutions.

**USAID Helps Raise Awareness and Commitment to Transboundary Water Resources Management at the 2nd World Water Forum**

The United States announced the launching of the multi-donor collaborative effort in transboundary water resources management, the Global Alliance for Water Security for the 21st Century, at the 2nd World Water Forum and Ministerial Conference in The Hague, The Netherlands, in March 2000. Hosted by the World Commission on Water for the 21st Century and the Dutch government, the conference brought together high ranking government officials, water professionals, the business community, NGOs and international organizations from more than 140 countries to discuss and reach consensus on the key elements of a World Water Vision and a Framework for Action. The 3rd World Water Forum is scheduled for 2003 in Japan.

FUTURE DIRECTIONS

Lessons from past experience and a recent analysis and evaluation of USAID's water portfolio reveal several principles that lead to greater effectiveness in water resources management:

1. An integrated, cross-sectoral, and participatory approach is the preferred strategy for successful water resources management in the long-term.
2. Sound science, including the determination of water budgets at the river basin scale, should be used as the basis for water resources management.
3. Water resources must be managed at the appropriate scale (either basin or subbasin) and level (international, national, provincial, or local) to ensure ecosystem integrity and international cooperation over shared resources.
4. Participatory planning and transparent decision-making should be instilled to enhance political will, self-reliance, and stewardship by relevant stakeholders.
5. Water should be treated as both an economic good and a basic human need, towards the goal of full cost recovery for water services with targeted subsidies for the poorest of the poor.
6. Countries should be encouraged to adopt the "users and polluters pay principle."
7. Water allocation mechanisms must increasingly encompass environmental as well as human use values.
8. Infrastructure and water service delivery should be demand-driven and service oriented, with every opportunity explored for public-private partnerships.

Global consensus has emerged that the integrated approaches promoted through IWRM offer the best hope for achieving greater effectiveness, efficiency, and sustainability in water resources management. The approach helps to protect the world's environment, foster economic growth and sustainable agricultural development, promote democratic participation in governance, and improve health.

USAID recognizes that water for multiple human and ecosystem requirements must be managed in an integrated manner. The prevailing sectoral focus needs to incorporate other approaches, including better governance, participatory planning and implementation, and private-public partnerships. While the challenge is great, so are the opportunities.

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