Global Water Futures

A Roadmap for Future U.S. Policy

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FOREWORD

JOHN J. HAMRE

What is now a global water challenge will soon become a global water crisis. According to the Organization for Economic Cooperation and Development, the number of persons in water-stressed countries is expected to increase to nearly four billion—almost half the world's projected population—by the year 2030. If oil is the key geopolitical resource of the year 2008, chances are that water will be as important if not more important in the not-so-distant future.

Water-related challenges are surfacing everywhere, including here in the United States. Across the world, rivers are running dry, water tables are falling, and communities are suffering from floods and droughts. In many regions, these types of predicaments take place chronically, with a devastating impact on long-term human and economic development.

Through its international water policy, the United States now has the opportunity to do well by doing good—to act as a forceful and farsighted leader as water-related pressures, together with the complex linkages between water, energy, and agriculture, on the one hand, and environmental degradation, on the other, continue to grow. In the process of addressing water-related humanitarian, human health, poverty-reduction, economic development, environmental, and stability and security challenges, the United States stands to further its own national interests. It can strengthen its leadership position in the world. It can champion its private organizations that are innovating in the area of freshwater. And it can reduce the emergence of weak or chaotic states that become platforms for asymmetric warfare.

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Simply put, water is fundamental to our lives—to our access to safe drinking water and sanitation; to agriculture and our capacity to feed the rising global population; to human health; to economic development and opportunity; to trade; to power generation; to environmental sustainability; and to stability and security. The lives of billions are already affected by how well—or how poorly—we use the water resources available to us. For all of these reasons and more, our capacity to manage freshwater is one of the most significant "strategic" challenges of our time.

The work of the CSIS Global Strategy Institute on these global water challenges is both highly relevant and timely. If the United States is to strengthen its efforts to elevate water as a key priority in its international engagement, it follows that the government must be organized in such a way that the key issue of water finds its voice in the policymaking process.

OVERVIEW

U.S. policies on the range of pressing international water-related issues—humanitarian relief, human health, economic development, environmental stewardship, and stability and security—are fragmented, underresourced, and insufficiently coordinated. In particular, both the U.S. government's current organizational structure and the resources it now commits to water-related policies are inadequate for meeting the global water challenge in its current form. And when it comes to addressing future trends involving water, the government's structure falls far short of what will be required to respond to the mounting complexities—and policy challenges—associated with the complex, dynamic interactions between water, agriculture, and energy. Continued demographic pressures and accelerating environmental degradation—especially global climate change—must also be factored into the organizational structure through which the U.S. government works to respond to these global challenges.

To examine ideas on how to reform the structure and procedures of government to address the global water crisis, a working group of individuals representing diverse institutions and perspectives was organized by the CSIS Global Strategy Institute (CSIS-GSI). From February 2007 to June 2008, the members of this working group met regularly to debate ideas and approaches. This report—an independent product generated by CSIS-GSI—was inspired by that exchange of views and builds on many of the valuable comments and reactions that were part of the working group's deliberations. The conclusions presented in this report are solely those of CSIS-GSI and do not represent a formal consensus of the working group.

Whatever kind of government reorganization does occur after the 2008 presidential election, it is clear that addressing the global water challenge will be critical to the advancement of U.S. diplomacy, defense, and development interests.

This report appears in the context of a fast-moving debate on the nature of U.S. global engagement and the mounting calls for a fundamental reorganization of the way the U.S. government conducts foreign assistance. As a result, the recommendations advanced here necessarily come at a time of potential systemic change in the structure of government as it relates to foreign assistance. Amid these uncertainties, one thing is clear: Whatever government reorganization does occur, whatever shifts materialize, and however the nation's international policy priorities change, for the country to succeed in all three dimensions of its statecraft—diplomacy, defense, and development—it must address the global water challenge. Therefore, a very compelling case can be made for an equally fundamental

The recommendations advanced here are aimed at reinforcing and expanding existing capacities and structures—and building on the momentum established through the Senator Paul Simon Water for the Poor Act of 2005.

reassessment of the priority assigned to the U.S. government's water-related policies and how these policies are coordinated.

A major reorganization of the U.S. government's foreign assistance effort—such as the creation of a new cabinet-level department—would offer the new administration the opportunity to address what will be a set of tremendously complex linkages between resource security in water, energy, and agriculture, among other issues. Under such a scenario, whatever structure emerged would necessarily require a major component—the equivalent of an Office of Under Secretary in a potential new Department of International Development—devoted to addressing the global water challenge and to pursuing the core elements of the Senator Paul Simon Water for the Poor Act of 2005 (WFPA). Such a major new component would not only reflect the significance of water for the pursuit of a wide range of U.S. national interests but also position the country to respond to a set of escalating water-related challenges in the future.

Yet, whether or not such a major overhaul of the U.S. foreign assistance structure takes place, some structural changes in the federal government are critical. In the context of the current organizational structure, CSIS-GSI recommends expanding the Office of the Under Secretary for Democracy and Global Affairs at the U.S. Department of State to include a new "Bureau for International Water Policy," which would provide a platform for responding to the diverse elements of the global freshwater challenge, including access to safe drinking water and sanitation, sustainable river basin and watershed management, infrastructure and increased productivity of water resources in the consumptive sectors, and adaptation to climate variability like floods and droughts. In addition, this new bureau should be tasked with elevating water as a broader, crosscutting element in U.S. foreign policy interests. Its specific responsibilities would include (1) leading in implementation of water resources programs overseas; (2) mobilizing resources in support of water-related goals both inside and outside government, including through a dedicated fund for international water programs; (3) providing outreach and communication to Congress and other important stakeholders; and (4) serving as a policy research and information clearinghouse.

The new Bureau for International Water Policy would be headed by an individual with ambassadorial rank who would be "double-hatted" organizationally as assistant secretary for the newly formed bureau as well as assistant administrator at the U.S. Agency for International Development (USAID), serving as the USAID administrator's top adviser on freshwater and health. The bureau's staff would possess disciplinary depth on freshwater issues and also be conversant with related disciplines throughout the U.S. government (collaborating regularly with colleagues in the Department of Energy, the Department of Agriculture, the U.S. Army Corps of Engineers, and others). The bureau would be tasked first and foremost with developing and coordinating the implementation of an integrated government strategy on freshwater.

This reorganization should be reinforced by a new bipartisan, high-level federal advisory committee for freshwater, the "Water Policy

Advisory Committee," which would consist of a small number of recognized and respected experts in the field, senior policymakers, and others, whose mandate would be to provide regular insight and suggestions to the secretary of state through the new Bureau for International Water Policy. The model for this Water Policy Advisory Committee would be the Defense Policy Board Advisory Committee at the U.S. Department of Defense.

A second new body—a "Water Advisory Council"—attached to the new Bureau for International Water Policy would promote regular, systematic interaction with private organizations (nongovernmental organizations, corporations, and other groups) through an institution modeled after USAID's Global Development Alliance. This Water Advisory Council would cast a wide net, engaging nongovernmental organizations, universities, private corporations, and other groups to provide insight on freshwater challenges around the globe and collaborate on the formulation and implementation of U.S. government water programs.

Both the proposed Water Policy Advisory Committee and the Water Advisory Council would complement the functions of the Bureau for International Water Policy by strengthening links to nongovernmental organizations and by creating a forum for systematically examining new public-private approaches to the international water challenge.

In addition, even with a revamped government structure, there would be little prospect for success without a politically durable commitment to provide long-term, significant financial resources for meeting the water challenge. The passage of the WFPA in 2005 and the decision in 2007 to appropriate $300 million for fiscal year 2008 were important commitments, but it remains to be seen whether such progress can be translated into a larger, multiyear commitment. The nation needs such a strategic approach—building on the significant bipartisanship that underpinned the WFPA process—which would be analogous to the remarkable commitment to meeting the global AIDS challenge through the President's Emergency Plan for AIDS Relief. Beyond that, building on the creative public-private sector efforts that have emerged, there is room for establishing a global water fund that could finance water-related projects outside the mainstream of traditional U.S. government support.

In the final analysis, however, the success of the people and organizations involved in these changes will be contingent on the political priority assigned to water and natural resources by the highest levels of government.

Another critical dimension for the success of U.S. engagement with the international water challenge is the level of interaction between the federal government's executive and legislative branches. The current level can and should be strengthened. Building on the WFPA, which originated in Congress, CSIS-GSI proposes more muscular oversight functions for Congress—including examination of water-related issues in the Senate Foreign Relations Committee and the House Committee on Foreign Affairs, on the one hand, and establishing a select congressional committee on the global water crisis, on the other.

All these recommendations—the creation of an Under Secretary's Office concerned with water in a potential new Department of International Development; the creation of a new bureau at the State Department with

consolidated functions on water issues; the expansion of functions on key water-related issues; the addition of a federal advisory committee and a public-private partnership to leverage resources and expertise on the water challenge both inside and outside government; the expansion of financial resources available for international water projects; and strengthening the links on water policy between the executive and legislative branches—depend on the level of political support in policy circles. Even more critical will be the willingness of the new president and the new cabinet's senior members to mount a campaign—with water at the center—to retool the nature of U.S. international engagement. Water can and should be the cornerstone of Washington's new commitment to the developing world.

Two things are essential. First, meeting the international water challenge must be understood as a way for the United States to pursue the full spectrum of its global interests—from humanitarian relief to economic development to health to postconflict resolution to the stabilization of distressed states to promoting U.S. companies and technologies.[1]

Second, especially as other resource dislocations loom large (such as the current instability in agricultural prices around the world) and as global warming and other symptoms of environmental degradation suggest even more profound resource challenges, U.S. international water policy should be informed by the complex linkages between water, on the one hand, and energy and agriculture, on the other. Water should be at the core of an authentically strategic federal approach to these challenges.

Together, these recommendations for both reforming and expanding the U.S. government's water-related policymaking process and organizational structures suggest how the government could begin to reflect the scale and scope of the global water challenge—present and future. But in the final analysis, whether the people and organizations involved in these changes can succeed will depend on the political priority that those at the highest levels of government assign to water and natural resources. If the United States undertakes a major global water initiative—building on the foundation of the WFPA—it could be a tremendously important avenue of smart engagement with the rest of the world that would enable the country to achieve positive outcomes while supporting a range of important national interests.[2]

What is now the global water challenge will soon become the global water crisis. The United States now has the opportunity to do well by doing good—to act with enlightened self-interest as a forceful, farsighted leader as water-related pressures continue to grow, along with the complex linkages between water and energy, agriculture, and environmental degradation.

Notes

1. Representative Howard Berman, chairman of the U.S. House of Representatives' Committee on Foreign Affairs, recently argued that "the foreign assistance reform debate in Washington has focused largely on the merits of creating a Cabinet-level Department of Development. That's certainly an important issue that we'll have to examine. But it's important to remember that there's a pressing need for reforms across the board, not just at the top of the organizational chart. In the next Administration, strengthening our development and diplomatic capacity must be a priority. Substance should prevail over structure. The next Administration and Congress will have to develop a consensus on what needs to be done to strengthen the non-military tools we use to further our national security goals. We can't let the discussion begin and end with how the boxes are arranged." Opening remarks at hearing on "Foreign Assistance Reform: Rebuilding U.S. Civilian Development and Diplomatic Capacity in the 21st Century," June 25, 2008.

2. See CSIS Commission on *Smart Power, A Smarter, More Secure America* (Washington, D.C.: CSIS, 2007), http://www.csis.org/media/csis/pubs/071106_csissmartpowerreport.pdf. The report calls for water-related action as follows: "Bring safe drinking water and sanitation to every person

in the world. . . . The next administration should launch a new U.S. development initiative to spur the integration of innovations in both development policy and technology, in cooperation with multilateral and community-based partners and private organizations. The costs of purifying water are falling due to emerging technologies, and the U.S. government could launch a concerted effort to bring these to areas of priority need. The U.S. government should expand its funding for both large-scale and small-scale community-based water and sanitation efforts in developing countries."

1 INTRODUCTION
BRINGING THE WATER CHALLENGE TO THE SURFACE

This report represents the latest phase in work on global water issues at CSIS. It builds on previous research that the CSIS Global Strategy Institute (CSIS-GSI) carried out with Sandia National Laboratories on a range of technology and policy variables associated with water, which culminated in September 2005 with their joint publication of a White Paper entitled "Addressing our Global Water Future."[1] Among other things, that paper advanced these conclusions:

> The United States is in critical need of a long-range, integrated strategy for international water. In order to develop such a strategy the U.S. government will need to carry out an inventory of existing international water-related policies and projects, identify a lead agency to coordinate the development of an integrated strategy, convene the many departments and agencies in the U.S. government with established interests and activities relating to water, undertake a global region-by-region review of resources and needs engaging regional experts, and consult with third-party groups—i.e., the private sector and the nongovernmental organization community—to get their feedback and input.
>
> As a foundation for the development of an integrated strategy for the United States, we must acknowledge that U.S. international water policy has implications that transcend traditional humanitarian and foreign assistance interests. Water is already a critical element in broader U.S. foreign policy and security interests. It will become all the more significant in the future, especially if the dislocations are allowed to become even more acute.

These points were at the core of a 17-month effort to generate concrete recommendations on how such an integrated strategy could be developed and what kind of institutional structures would be necessary to support more farsighted government policies. From February 2007 to June 2008, in the second phase of the CSIS-GSI Global Water Futures initiative, representatives of diverse organizations—government agencies, international organizations, private-sector groups, nongovernmental organizations, and academic institutions—met regularly in a working group to discuss and debate how U.S. policies related to the international water challenge can and should be changed. These meetings have been an integral part of an effort by CSIS-GSI to refine ideas on future U.S. policies on international water issues and have inspired many of the final recommendations offered in this report.

The perspectives shared by the individuals in this working group during their many meetings ran the gamut. Many participants approached the challenges of water from the standpoint of health and the critical need around the planet for safe drinking water and improved sanitation. Others focused on broader water management challenges and the issues associated with economic development and poverty alleviation. Still others approached the discussions from the standpoint of environmental sustainability and the linkages

> **"Water is a lifeblood of our lives—economically and in every other way. And if we can't get this one right, we're in real trouble."**
>
> **—Governor Jon M. Huntsman (R-UT), CSIS "Smart Power" Speaker Series, June 23, 2008**

with environmental degradation. Beyond that, participants raised issues involving population growth, security and stability, complex resource linkages (in particular with agriculture and energy), and the role of technology. Finally, to help inform the deliberations, representatives of various U.S. government agencies offered their viewpoints (most times as points of information) on the policy dimensions of the water challenge.

Such diversity of perspective came as no surprise. After all, water is by definition an "all-of-the-above" proposition because it is fundamental in so many ways. It was striking, however, how much of a consensus existed from the outset on four key points.

First, there was agreement that water was already an extremely critical resource and that it would become all the more critical in the future. The working group acknowledged how difficult it was simply to quantify the current costs associated with the various dimensions of the global water challenge—health, poverty, environment, stability and security, and so on. Quantifying these costs for the future becomes even more daunting—and important—when taking into account the many challenges that remain on the horizon. Water resources will be affected by continued demographic pressures, linkages to other resources (food and energy), and environmental degradation threats (such as global climate change).

Second, the prevailing view in the working group was that water is not adequately reflected in U.S. policy priorities. Water is an essential element across the spectrum of national interests—advancing health, reducing poverty, supporting economic development, promoting environmental stewardship, championing U.S. commercial interests, strengthening stability and security—and therefore should be a central consideration in the formulation and implementation of policies. But it is not. One group member after another noted that water is not receiving nearly enough attention in either policy development or implementation.

Third, the working group agreed that there is insufficient government coordination on water policies and practices. The more than 15 agencies of the U.S. government currently involved in U.S. international water projects are at best loosely synchronized in their planning and implementation (see appendix E). Because of this lack of coordination, across these agencies, there is only limited systematic monitoring and evaluation of ongoing projects, coordination across government functions, development of commonly defined metrics, and potential for pooled investment and programs.

Fourth, the members of the working group pointed to the pronounced need for an overarching strategy and a corresponding organizational structure that could bring such a strategy to fruition. This goes well beyond achieving better coordination, as desirable as that outcome would be, and thus implies the need to create an institutional expression of a deliberate, systemwide effort to integrate water more fully into the policymaking process and also to develop a strategy, informed by longer-range thinking, to guide the implementing of water-related policies.

Together, these four points represented a solid foundation for more than a year's worth of thinking by the members of the CSIS-GSI working group on how things might be improved. They represented a valuable com-

> **"Lack of access to water for meeting basic needs such as health, hygiene and food security undermines development and inflicts enormous hardship on more than a billion members of the human family. And its quality reveals everything, right or wrong, that we do in safeguarding the global environment."**
>
> **—United Nations,** ***World Water Development Report*****, 2004**

mon ground on which the members were able to exchange ideas. To be sure, no agreement could be reached in a number of areas. But the entire effort was nevertheless characterized by the members' sincere and dedicated effort to develop useful recommendations on how to reform policy. The organizers acknowledge with deep gratitude the valuable time and energy invested in the effort by these members, whose names and organizational affiliations are listed in appendix A.

An important factor influencing the working group's deliberations was the passage of the Senator Paul Simon Water for the Poor Act, which was signed into law by President George W. Bush on December 1, 2005. Among other things, the act calls for an increase in the percentage of drinking water and sanitation assistance directed to high-priority developing countries and for the Department of State to develop a strategy to provide affordable and equitable safe drinking water and sanitation.[2] In addition, as a "Sense of Congress" provision, the act calls on the United States to "greatly increase" the amount of its official development assistance allocated to water. This support failed to materialize, however, in the first fiscal year after passage of the legislation because of a continuing resolution. In December 2007, however, Congress passed a $555 billion omnibus spending bill, including $300 million in support of the act (of which $125 million is targeted for African countries). This created a new dynamic in the working group because it spotlighted immediate implementation issues under the legislation. The group was split between thinking through a shorter-term strategy to consolidate the hard-won gains under the act, on the one hand, and an effort to envision more sweeping changes that would lock in but ultimately transcend the act's terms. This report, then, reflects the working group's strong view that those recommendations that ultimately do emerge will have a phase-in nature based on the terms of the act.

This report appears in the context of a fast-moving debate on the nature of U.S. international engagement. In the lead-up to the November 2008 elections, there have been mounting calls for a fundamental reorganization of the way the U.S. government conducts foreign assistance. For example, various expert groups have advocated creating a cabinet-level Department of International Development to carry out development-related functions—presumably on a scale basis—that are currently distributed across several separate federal departments and agencies.[3] Other recent reports support less ambitious changes—the creation of new bureaus and offices within existing established structures to streamline various government operations. As a result, the points advanced in this report on U.S. water organization and policy necessarily come at a time of potential systemic change in the structure of government as it relates to foreign assistance.

The analysis and recommendations that follow were inspired by the working group's discussions but developed independently by CSIS-GSI. The group's members have had

the opportunity to review a preliminary draft of this report and to weigh in on its various observations and recommendations. Every effort has been made to take their feedback into account. However, the conclusions and recommendations presented here are solely those of CSIS-GSI. Though the report highlights points raised during the group's discussions, because of the Chatham House Rule followed by the group, no comments, concepts, or viewpoints are attributed to any member.

Notes

1. Center for Strategic and International Studies (CSIS) and Sandia National Laboratories, "Addressing our Global Water Future," September 2005, http://water.csis.org/050928_ogwf.pdf.

2. CSIS and the Woodrow Wilson International Center for Scholars cosponsored a town hall meeting on April 23, 2007, to discuss the implementation of the Paul Simon Water for the Poor Act. The speakers included Claudia McMurray and Daniel A. Reifsnyder. For more information, see http://www.wilsoncenter.org.

3. See, for example, United States Commission on Helping to Enhance the Livelihood of People around the Globe (HELP Commission), Report on Foreign Assistance Reform, "Beyond Assistance," chaired by Mary K. Bush, December 2007, http://www.helpcommission.gov/portals/0/Beyond%20Assistance_HELP_Commission_Report.pdf. The commission recommended inter alia that development be elevated to a status equal to defense and diplomacy (pp. 7, 66–67). See also Modernizing Foreign Assistance Network (also known as the Wye River Consensus Group), "New Day, New Way: U.S. Foreign Assistance for the 21st Century," June 1, 2008, http://www.cgdev.org/files/16210_file_New_Day_PROOF.pdf. The group calls for, among other things, the establishment of a "nimble and effective foreign assistance system . . . staffed with sufficient numbers of highly-skilled personnel who are coordinated across government" (p. 5). And further, see InterAction, "Why the U.S. Needs A Department for Global and Human Development," http://interaction.org/library/detail.php?id=6304; Center for American Progress, "In Search of Sustainable Security," http://www.americanprogress.org/issues/2008/06/sustainable_security.html; and Center for Global Development, "Modernizing Foreign Assistance for the 21st Century: An Agenda for the Next U.S. President," http://www.cgdev.org/content/publications/detail/15561/.

2 DIMENSIONS OF THE GLOBAL WATER PREDICAMENT

The world over, water is intricately linked to stability and security, human health, economic prosperity, and stewardship of the physical environment. Water is absolutely fundamental to our lives—to our access to safe drinking water and sanitation, to agriculture and our capacity to feed the rising global population, to economic development and opportunity, to environmental sustainability, and to the stability and security of the social and political environment around us. Throughout human history, the rise and fall of civilizations has greatly paralleled their investments in water. We now find ourselves at a crossroads where our understanding and actions regarding water management around the world are having a profound impact on the lives of billions of people. For all these reasons and more, our capacity to manage water is one of the most significant strategic challenges of our time.

The critical nature of water is well documented. Currently, an estimated 884 million people around the world lack access to safe drinking water, and 2.5 billion do not have access to improved sanitation.[1] But the impact of this global water challenge transcends these immediate symptoms of our global water predicament, as striking as they are. The indirect costs are also profound. Water scarcity, poor water quality, and a lack of access to clean drinking water all perpetuate cycles of poverty and contribute to political and social instability across the planet. In addition, there are the critical dimensions of environmental degradation and climate change, and related questions regarding the sustainability of current water practices.

The human health case: The human toll is staggering—1.8 million dead each year, most of whom are children, as a result of diarrheal diseases. (Photo credit: USAID, Dr. Endang.)

Data source: World Health Organization, "Water, Sanitation and Hygiene Links to Health Facts and Figures," 2004, http://www.who.int/water_sanitation_health/factsfigures2005.pdf.

The current, extremely serious global water challenge—which has already become a crisis in key areas of the world and could worsen in the absence of a sustained, intensified response from the United States and other countries—has five critical, interrelated dimensions, which together show the pressing need for an expanded and integrated international water policy for the advancement of the full range of U.S. national interests.

First, freshwater is necessary for public health. Waterborne diseases and water- and

The humanitarian case: According to the World Health Organization and UNICEF, an estimated 884 million people (13 percent of humanity) do not have access to clean drinking water. The number of persons without access to basic sanitation is believed to be 2.5 billion (38 percent of humanity). (Photo credit: Adam Valvasori.)

Data source: World Health Organization and UNICEF Joint Monitoring Program for Water Supply and Sanitation, *Progress on Drinking-Water and Sanitation: Special Focus on Sanitation* (New York and Geneva: World Health Organization and UNICEF, 2008), 2.

sanitation-related illnesses are responsible for filling more than half the world's hospital beds at any given time, and they ultimately cause more than 5 million deaths each year. This tragedy strikes children in particular. Each day diarrhea kills 4,900 children across the world, and diarrheal diseases account for 21 percent of all childhood deaths under the age of five years in developing countries.[2] Furthermore, access to clean water is essential in the fight against HIV/AIDS (in addition to many other communicable diseases) because it is necessary for taking antiretroviral medications and for reducing the exposure of patients to further infection. More generally, the World Health Organization estimates that inadequate water, sanitation, and hygiene are responsible for roughly half the malnutrition in the world.[3]

Second, water is essential to economic development. Water-related issues carry significant social and economic burdens. For example, a UN survey of 177 countries revealed that women lose an estimated 40 billion working hours each year to carrying water.[4] In India, waterborne diseases cost 73 million lost working days and $600 million in medical treatment and forgone production.[5] Inadequate sanitation services at schools, the responsibility of caring for relatives inflicted with waterborne diseases, and the daily duty of gathering water

The gender equality case: Women and girls suffer disproportionately. According to UNICEF, poor water and sanitation explain why more than half the girls in Sub-Saharan Africa drop out of primary school. (Photo credit: Marcus Fornell.)

Data source: UNICEF, "Women, Water and Hygiene Are Key to Change in Africa," 2005, http://www.unicef.org/media/media_28260.html.

The economic development and stability case: Access to freshwater and sanitation remove costly drags on society. On a global average, each dollar invested in water and sanitation generates returns of $8 in freed time, increased productivity, and reduced health costs. (Photo credit: ©iStockphoto.com/Sean_Warren/Sean Warren.)

Data source: Guy Hutton, Jamie Bartram, and Laurence Haller, *Economic and Health Effects of Increasing Coverage of Low-Cost Household Drinking-Water Supply and Sanitation Interventions to Countries Off-Track to Meet MDG Target 10* (Geneva: World Health Organization, 2007), http://www.who.int/water_sanitation_health/economic/mdg10_offtrack.pdf.

keep many children (especially young girls) out of school, thus maintaining barriers to education and continuing the cycle of poverty. UNICEF estimates that half the world's schools lack access to safe water and sanitation.[6] Therefore, water must be a central element of development programs if they are to be effective in low- and middle-income countries.

Third, water is crucial for economic stability. In addition to the economic costs implicit in the health effects of unsafe drinking water and sanitation, water also plays a critical role in economic development because agricultural and industrial sectors depend heavily on steady, reliable access to water.

Most of the world's population—about two-thirds—lives in areas that receive only one-quarter of the world's annual rainfall.[7] Furthermore, throughout much of the developing world, rain only falls during one wet season per year and runs off too quickly for efficient use. Many developing countries (like India) can therefore only utilize a small fraction of their potentially available freshwater resources.[8]

Infrastructure mitigates water variability and ensures quality to support agricultural and industrial output, maintain transportation networks, and minimize property damages from flooding during the rainy seasons. For example, in Ethiopia, where per capita water storage capacity is extremely low, variability in rainfall and the rise and fall of national gross domestic product are closely linked. For such underdeveloped countries, the lack of infrastructure and water insecurity not only directly hurt their economies but also indirectly ward off potential investors, both foreign and domestic.[9]

Fourth, river basin and watershed management has tremendous implications for the physical environment. Poor resource management is causing rivers, lakes, and wetlands to go dry in one region after another. The dimensions of this challenge are profound: Today, more than one-fifth of humanity relies on freshwater resources that are compromised by excess withdrawal or pollution, and as much as 25 percent of global water use is unsustainable.[10] Groundwater depletion is causing desertification and threatening long-term water availability, and sedimentation and pollution are irreversibly changing freshwater ecosystems. These environmental effects reach far beyond the resource itself. The United Nations Environment Program and the World Wildlife Fund estimate that between 1970 and 2000, freshwater species populations declined by a one-half.[11]

Human and economic development rely heavily on the natural "services" provided by

The environment case: According to UN estimates, half the developing world is exposed to polluted water that increases the incidence of disease. Groundwater depletion is causing desertification and threatening long-term water availability, and sedimentation and pollution are irreversibly changing freshwater ecosystems. (Photo credit: ©iStockphoto.com/Susan_Stewart/Susan Stewart.)

Data source: UNESCO World Water Assessment Program, *Water for People, Water for Life: The First United Nations World Water Development Report* (Barcelona: UNESCO and Berghahn Books, 2003), 11; http://www.unesco.org/water/wwap/wwdr/wwdr1.

a healthy ecosystem, such as the purification and delivery of fresh water, the decomposition of wastes, the generation of soils, the pollination of crops, and the production of wood and fiber. As poor water management continues to degrade ecosystems, more and more livelihoods are threatened and entire economies are undermined. The trade-off between the short-term gains from unsustainable water practices and the long-term, cascading consequences is all too often ignored.

Fifth, water is an integral tool for promoting geopolitical stability. As acute as the current predicament is, the forecasts suggest that the dimensions of the global water challenge may become even more pronounced. The number of people living in water-stressed countries could rise to more than 3.9 billion people[12]—almost half the world population—by 2030.[13] This growing scarcity of resources will likely generate new levels of tension at local, national, and even international levels.

With regard to domestic unrest, as water availability becomes ever more imbalanced, the governments of water-stressed countries must effectively and transparently mediate the concerns and demands of various constituencies—from urban to rural populations, from agriculture to industry, and from commercial to domestic sectors. If this mediation is not handled appropriately, subnational disputes and unrest linked to poor water quality and water scarcity could certainly arise, as they have already done so in numerous cases.[14]

Furthermore, 40 percent of the world's population lives in more than 260 international river basins of major social and economic importance, 13 of which are shared by five or more countries.[15] Interstate tensions have already escalated and could easily erupt again and intensify as increasing water scarcity raises the stakes. Such instability abroad could run contrary to U.S. interests or even pose a threat to the security of the United States. As the new U.S. National Maritime Strategy observes, "*Preventing wars is as important as winning wars*" (italics in the original).[16]

Freshwater management represents a remarkable tool for preventing and mitigating conflict. In a number of historical cases—the Mekong Committee, the Israel-Jordan secret "picnic table" negotiations, the Indus River Commission, and the ongoing Nile River negotiations—water has served to unify adversarial and even warring nations. Some scholars argue that institutions for shared water management are necessarily resilient, even when relations between neighboring riparian nations are stressed.[17] Therefore we should not only consider water as a potential strain on societies

The geopolitical case: More than 260 river basins across the world are shared by more than two countries. Forty percent of humanity is situated in these areas of potential water conflicts. (Photo credit: USAID, http://www.usaid.gov/press/photos.)

and an irritant for conflict; it is also a critical tool for reaching agreements during times of geopolitical tension.

For all these reasons, water is one of the most strategically important issues of our time—for developed and developing countries alike. The capacity of the international community to address the overarching challenge of water will mean the difference between security and instability, opportunity and poverty, health and disease, and environmental sustainability and degradation for regions around the globe.

Notes

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2. United Nations Development Program (UNDP), Human Development Report 2006: *Beyond Scarcity: Power, Poverty and the Global Water Crisis* (New York: Oxford University Press for UNDP, 2006), http://hdr.undp.org/en/reports/global/hdr2006/.

3. Lorna Fewtrell, Annette Prüss-Üstün, Robert Bos, Fiona Gore, and Jamie Bartram, *Water, Sanitation and Hygiene: Quantifying the Health Impact at National and Local Levels in Countries with Incomplete Water Supply and Sanitation Coverage* (Geneva: World Health Organization, 2007), 22.

4. Roberto Lenton, Albert M. Wright, and Kristen Lewis, *Health, Dignity, and Development: What Will it Take? UN Millennium Project Task Force on Water and Sanitation* (London: Earthscan, 2005).

5. UNDP, *Human Development Report 2006.*

6. UNICEF and International Water and Sanitation Centre, "Water, Sanitation and Hygiene Education for Schools," Roundtable Proceedings and Framework for Action, Oxford, January 24–26, 2005, http://esa.un.org/iys/docs/san_lib_docs/SSHE_OxfordRoundTable.pdf.

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8. Sandra Postel, *Last Oasis: Facing Water Scarcity* (New York: W. W. Norton, 1997), 17–191; cited by Johns Hopkins Bloomberg School of Public Health, "Solutions for a Water-Short World."

9. David Grey and Claudia Sadoff, "Water Resources, Growth and Development," working paper for discussion prepared by World Bank for Panel of Finance Ministers, UN Commission on Sustainable Development, April 18, 2005, http://www.un.org/esa/sustdev/csd/csd13/documents/worldbank_paper.pdf.

10. Jonathan Lash, "Band of Crisis: Regions of the World Where Poverty, Population and Water Scarcity Collide," *World View Magazine* 18, no. 4 (Winter 2005).

11. Jonathan Loh and Mathis Wackernagel, eds., *Living Planet Report 2004* (Gland, Switzerland: WWF–World Wide Fund for Nature, 2004), http://assets.panda.org/downloads/lpr2004.pdf.

12. A "water-stressed country" is defined as one with less than 1,700 square meters per person of water available on an annual basis.

13. Organization for Economic Cooperation and Development (OECD), *OECD Environmental*

Outlook to 2030 (Paris: OECD, 2008), http://www.oecd.org/document/20/0,3343,en_2649_34305_39676628_1_1_1_1,00.html.

14. For a chronology of water-related conflicts across the globe from 3000 BC to the present, see Pacific Institute, "Water and Conflict Chronology," http://worldwater.org/conflictchronology.pdf.

15. Aaron T. Wolf, Shira Yoffe, and Mark Giordano, "International Waters: Identifying Basins at Risk," *Water Policy* 5, no. 1 (2003): 29–60.

16. U.S. Marine Corps, U.S. Navy, and U.S. Coast Guard, "A Cooperative Strategy for 21st Century Seapower," October 2007, http://www.navy.mil/maritime/MaritimeStrategy.pdf.

17. Karin R. Bencala and Geoffrey D. Dabelko, "Water Wars: Obscuring Opportunities," *Journal of International Affairs* 61, no. 2 (Spring/Summer 2008): 21–33; Wolf, Yoffe, and Giordano, "International Waters."

3 THE NATURE OF THE POLICY CHALLENGE

This critical resource—water—presents significant challenges from the standpoint of formulating and implementing a farsighted U.S. policy. In particular, four challenges stand out. First, the global water predicament is of long standing. A lack of clean drinking water and the absence of adequate sanitation—and the devastating effects they engender, as poorly appreciated as they are—are by no means new or novel phenomena. They do not have the urgency implicit in, for example, outbreaks of infectious disease. As a result, water challenges have not captured the attention of policymakers in the same way as other more immediate issues that surface abruptly.

Second, though analysts can and do acknowledge that water is central to human health, economic development, and environmental sustainability, the significant implications of water for stability and security are not well appreciated. The challenge, then, is to incorporate the crosscutting nature of water in U.S. policies relating to conflict and stability as well as to economic development and humanitarian assistance.

Some military and civilian leaders, however, have acknowledged the value of water in their work. For example, when Vice Admiral William McRaven was heading the Special Forces operating in the Sahara Desert in 2007, he suggested that his men were much more likely to drill boreholes than to open fire.[1]

Third, the global water predicament is tremendously complex. There is a conspicuous absence of easy fixes and quick solutions, especially at the macro level. Addressing these water challenges means confronting complex issues involving diverse systems of governance, changing technologies, a shifting financial landscape, a range of government and nongovernmental actors, and competing social and political priorities. Other sectors need to see water as a necessary condition for meeting their particular goals rather than assuming that water will be readily available and properly managed. For example, on average, 30 percent of the UN Millennium Development Goals are linked to progress related to water.[2]

> **"Water, thou hast no taste, no color; no odor; canst not be defined, art relished while ever mysterious. Not necessary to life, but rather life itself, thou fillest us with a gratification that exceeds the delight of the senses."**
>
> **—Antoine de Saint-Exupéry, *Wind, Sand and Stars,* 1939**

Fourth, all too often water defies the compartmentalization that characterizes government organizational structures. Does water fall under the heading of national security, economic development, humanitarian response, human health, or environmental protection? The answer is "all of the above." By definition, this suggests complexities in coordinating

> **"The only way to solve a conflict, at any level of society, is to sit down, face to face, and talk about it."**
>
> **—Ambassador John W. McDonald, chairman, Institute for Multi-Track Diplomacy; and chairman, Global Water**

water policymaking across discrete functions of government.

When considered together, these challenges reflect real-world constraints that exist in the ways that the United States formulates and implements policies on water. In short, a water-centered set of policies could represent a remarkable opportunity for the United States to accelerate progress on a number of strategic priorities abroad. Instead, over recent decades, during administrations representing both sides of the political aisle, U.S. efforts have fallen considerably short.

Notes

1. "Africa and the 'War on Terror': Policing the Undergoverned Spaces," *The Economist,* June 14, 2007.

2. Ryutaro Hashimoto, "MDGs and Water," presentation at Third Meeting of the UN Secretary General's Advisory Board on Water and Sanitation, Rome, November 3–4, 2005, http://www.unsgab.org/docs/mdgs/mdgs-ref02.pdf.

4 THE STATE OF U.S. INTERNATIONAL WATER POLICY

For the reasons set out in the previous chapters of this report, there is a compelling case for the United States to integrate the global water challenge across the spectrum of its various national interests across the world: humanitarian relief; health; economic, commercial, and social development; environmental stewardship; resource management; and stability and security. In theory, such an integration of water into U.S. policies implies several necessary preconditions: the development of a coherent national strategy; organizational reform, so that water-related policies can be advocated at higher levels in the policymaking structure; the mobilization of the human and financial resources necessary to implement such a strategy; and strengthening the links between government and the private sector (corporations, nongovernmental organizations, and academia).

Moreover, such a far-reaching national strategy would place the water challenge into the broader context of growing global resource dislocation (water, food, and energy) and the mounting pressures on this resource triangle by continued population growth and environmental degradation—from global warming, in particular.

Despite the implicit value of water for achieving a range of U.S. foreign policy objectives, the federal government's efforts have consistently proven insufficient over the years. This chapter outlines six factors that help explain this phenomenon.

First, water does not receive the weight it deserves when it comes to defining U.S. interests in key parts of the world. Traditionally, water has been regarded mostly as a function of humanitarian relief and economic assistance efforts. To be sure, these functions have been extremely important. Several regions of the world—many with geopolitical significance—continue to be subject to drought/flood pressures with enormous consequences for social, political, and economic cohesion. Beyond that, the lack of access to clean drinking water and sanitation is a manifestation of the extreme poverty that persists structurally across diverse geographical regions. In addition, natural disasters such as the 2004 Indian Ocean tsunami underscore the importance of safe drinking water in the context of an immediate disaster relief effort. The May 2008 tragedy in Myanmar generated by tropical cyclone Nargis is a more recent example of the complexities—many involving water—associated with relief efforts.

> **"Clean water ranks high among the world's health problems. The statistics are staggering. They should alarm any person of conscience."**
>
> **—Senator William H. Frist, former U.S. Senate majority leader and CSIS trustee, November 20, 2004**

Nevertheless, there has been insufficient policy emphasis on the broader impact of

water on the nation's interests. Because water is so critical to humanitarian relief and economic development, the policies that concern water also need to be expressed in terms of stability and security. U.S. policymakers can no longer regard the challenge of international water exclusively through the lens of economic development and foreign assistance. Though there can be little doubt that there is a critical humanitarian dimension to the challenges of water access and quality—both present and future—U.S. policymakers must also recognize that growing water dislocations suggest the potential for instability and conflict. Therefore, Washington must also regard water as an element integral to promoting and realizing its broader national interests and foreign policy agenda.

In short, water has evolved into a strategic interest for the United States. It is a key factor not only in U.S. humanitarian policies and economic development strategies but also in U.S. security, political, economic, and commercial interests in vital regions around the globe.

U.S. leaders thus confront three overriding challenges. First, they must consider geopolitical realities and reformulate their vision of how water affects U.S. foreign policy. Second, they must retool the government's organizational structures and the processes by which it develops and implements international water policy to reflect the new, strategic nature of water. Third, they must work to strengthen cooperation with elements both inside and outside the U.S. government—including interagency expertise, foreign counterparts, international organizations, international development institutions, the private sector, and nongovernmental organizations—to develop solutions commensurate with the magnitude of the water challenges the world faces.

Second, the water-related efforts of the U.S. government are balkanized and insufficiently integrated. A small office in the Department of State—the Bureau of Oceans and International Environmental and Scientific Affairs, reporting to the under secretary for democracy and global affairs—is tasked with ensuring water-related cooperation and strategic coordination across the entire U.S. government.[1] Despite the dedicated efforts of that bureau's staff to achieve this cooperation, the reality is that too few persons with too little direct authority are tasked with trying to do too much.

> **"We don't have a clear strategy—a clear strategy as to how to proceed and begin to organize an effort to deal with the set of issues we confront. I don't think we have institutions in place . . . to bring about the kinds of changes with regard to water use and consumption that is needed."**
>
> **—Senator Jeff Bingaman (D-NM), CSIS-Sandia National Laboratories Global Water Futures Conference, March 2005**

Third, there is no overarching, comprehensive strategy to guide U.S. policymaking on water. Forecasts of the highest rates of population growth in regions and countries that are also water stressed reinforce the notion that water is a critical factor when it comes to thinking about U.S. national security interests. Although water-related wars have not yet flared between countries with shared water resources, there can be little doubt that mounting water pressures will translate into a growing potential for instability, especially in the Middle East, North Africa, and Sub-Saharan Africa. This suggests the need for an integration of U.S. policymak-

ing on water that goes well beyond the traditional emphasis on economic development and humanitarian assistance.

The Senator Paul Simon Water for the Poor Act (WFPA), among other things, mandated "the President, acting through the Secretary of State, [to] develop a strategy to further the United States foreign assistance objective to provide affordable and equitable access to safe water and sanitation in developing countries, as described in section 135 of the Foreign Assistance Act of 1961, as added by section 5(a) of this Act." And for good reason. Before the passage of the WFPA, no systematic strategy had been developed to build cooperative U.S. international water policy, either across all the various federal departments and agencies or with other donor countries.

In the 2008 WFPA report to Congress, the U.S. Agency for International Development (USAID) and the Department of State unveiled a joint strategic framework on water, titled "Addressing Water Challenges in the Developing World: A Framework for Action."[2] Although this is a welcome step forward, the framework admittedly "[does] not define the full scope of needed interventions to ensure that water resources are available to meet the entire range of human development needs, today and into the future."[3] Furthermore, achieving an integrated government approach to international freshwater challenges requires a broader interagency strategy, reaching beyond a framework focused on the State Department and USAID.

Fourth, broader U.S. expertise and experience have not yet been fully tapped. Both the U.S. public sector (including federal and state governments) and private sector have a wealth of untapped capacity, expertise, and experience in using water to create conditions for growth and social well-being. The long-term challenge is to deploy these tools to help struggling countries cope with their own water problems. The immediate challenge is to identify how such resources can be folded into the policy-making process and, consequently, the implementation of policy.

Fifth, the financial resources for water-related efforts are insufficient. According to the Organization for Economic Cooperation and Development (OECD), in 1999 and 2000 the commitments under U.S. official development assistance for water supply and sanitation amounted to less than 2 percent of total national assistance—the lowest proportion (with New Zealand) of any OECD member state.[4] Although the share of U.S. spending on water and sanitation jumped to 6 percent from 2004 to 2005, the OECD attributes this increase mostly to the U.S. reconstruction program in Iraq.[5] The harsh truth is that in recent years, the trajectory of overall U.S. spending on water (excluding Iraq and Afghanistan) has been going in the wrong direction. According to a 2005 report by the U.S. Government Accountability Office, total spending on freshwater programs abroad (excluding Iraq and Afghanistan) fell from $456 million in fiscal year (FY) 2000 to $378 million in FY 2004.[6]

However, with the FY 2008 $300 million appropriation for implementing the WFPA, and with new water and sanitation initiatives pledged from the Millennium Challenge Corporation, the United States might be moving onto a new trajectory. The nation needs to harness this momentum, make optimal use of the committed funds for water programs, and continue to increase its investments in water programs to achieve an event greater impact.

Beyond financial resources, U.S. personnel and water training programs also need to be strengthened. President George W. Bush has already called for a significant increase in USAID's Foreign Service officer (FSO) workforce through a "Development Leadership Initiative" that would hire an additional 300 FSOs above attrition in FY 2009.[7] The recruitment of new USAID junior officers has already begun, and as new FSOs join the workforce, it will be

critical to recruit water specialists for deployment to USAID missions in the field. Many of the key water policymakers in countries critical to U.S. interests have received training in water management in the United States and therefore know of the unparalleled history of how water fundamentally contributed to building this nation. Yet they also see that virtually none of that expertise has been liberated to help or assist their own efforts.

Sixth, funds appropriated for freshwater programs have not necessarily been allocated to global regions of greatest need. Over the years, the regional distribution of the U.S. government's water-related projects has been skewed. In FY 2006, USAID programs provided 9 million people with improved access to safe drinking water. Of these, almost 8 million lived in Asia and the Near East—a broadly defined region that includes both Afghanistan and Iraq—but only 297,000 lived in Sub-Saharan Africa.[8] Funding levels further illuminate this imbalance. From FY 2003 through FY 2005, just four economies in the Middle East—Egypt, Iraq, Jordan, and the West Bank/Gaza—received nearly the same amount of USAID funding as all of Sub-Saharan Africa and the rest of the Asia and Near East regions.[9] More recently, in FY 2007, of the reported $2.4 billion spent by the U.S. government on water programs overseas, more than half—$1.5 billion—was spent on water-related projects in Iraq alone.[10]

However, in the 2008 WFPA report to Congress, USAID and the State Department began to identify priority countries for drinking water and sanitation programs in key regions around the globe, outlining regional strategies for FY 2008.[11] This kind of approach is strongly encouraged by the CSIS Global Strategy Institute, and it is to be hoped that future financial resources will be allocated to meet these regional objectives. Nonetheless, the U.S. government still needs to provide specific and measurable goals, benchmarks, and timetables to implement the WFPA, in addition to appropriating the funding necessary to achieve such targets.

Notes

1. The names of the other bureaus reporting to the under secretary for democracy and global affairs are indicative of the broad portfolio pursued by its various offices. The Bureau of Oceans and International Environmental and Scientific Affairs has two counterpart bureaus: the Bureau for Democracy Human Rights and Labor and the Bureau for Population, Refugees, and Migration.
2. "Paul Simon Water for the Poor Act Congressional Report," June 2008, http://www.state.gov/g/oes/rls/rpts/105543.htm
3. Ibid.
4. OECD, "Measuring Aid for Water: Has the Downward Trend in Aid for Water Reversed…?" March 2006 report presented at the Fourth World Water Forum, Mexico City, http://www.oecd.org/dataoecd/53/4/36365514.pdf.
5. OECD, "Measuring Aid to the Water Sector," November 2007, http://www.oecd.org/dataoecd/20/61/40162562.pdf.
6. U.S. Government Accountability Office, "Freshwater Programs: Federal Agencies' Funding in the United States and Abroad," March 2005, http://www.gao.gov/new.items/d05253.pdf.
7. Reuters, "President's FY 2009 Budget Request Includes Increase for USAID Staffing Capacity," February 5, 2008, http://www.reuters.com/article/pressRelease/idUS195398+05-Feb-2008+PRN20080205.
8. "Senator Paul Simon Water for the Poor Act 2005: Report to Congress, June 2007," http://www.state.gov/g/oes/rls/rpts/85873.htm.
9. "Senator Paul Simon Water for the Poor Act of 2005: Report to Congress, June 2006," http://www.state.gov/g/oes/rls/rpts/67447.htm.
10. "Paul Simon Water for the Poor Act Congressional Report, June 2008," http://www.state.gov/documents/organization/105643.pdf.
11. Ibid.

5 RECOMMENDATIONS FOR CHANGE

The significant, interrelated resource dislocations on the horizon—with the global water challenge at the center—offer a strong rationale for the dramatic reorganization of the U.S. government's structure and policies. There would be strong precedent. For example, in recent years two entirely new government institutions have been created to respond to international issues not unlike the global water challenge. The first, responding to the urgent HIV/AIDS pandemic, is the President's Emergency Plan for AIDS Relief. With it has come a significant financial commitment from the administration (a five-year, $15 billion plan). The second is the Millennium Challenge Corporation, established in January 2004 to engage developing countries with the view that "aid is most effective when it reinforces sound political, economic, and social policies that promote poverty reduction through economic growth."[1] Both these organizations represent significant organizational responses to critical and urgent international challenges.

Toward an Integrated and Expanded International Water Policy

As policymakers and practitioners consider government reform and the potential creation of new institutions, a key layer of uncertainty arises from the current debate over a potential reorganization of the federal government's foreign assistance process into something like a Department of International Development.

"The United States has the technical capacity, knowledge, and wealth to help relieve water scarcity problems in countries and regions around the world. However, a lack of coordination and prioritization among all the different agencies involved in the decisionmaking and policy implementation processes has led to a largely ad hoc approach to global water issues. The United States should therefore develop a coherent, comprehensive water strategy for meeting global water challenges in order to maximize its impact and achieve broader U.S. foreign policy objectives."

—CSIS/Sandia Global Water Futures White Paper

Such a reorganization could help align the government's structure with looming challenges—not only in water but also in energy, agriculture, and environmental degradation. Under such a scenario, whatever structure emerged would necessarily require a major component (namely, the equivalent of an Office of Under Secretary) devoted to addressing the global water challenge and to pursuing the core elements of the Senator Paul Simon Water for the Poor Act (WFPA). Such a decision would not only reflect the significance of water for the pursuit of a wide range of pressing U.S. national interests but also position the country to respond to a set of escalating water-related challenges in the future. However, the creation of a new Department of International Development could also generate the kinds of organizational stress that have been evident in the Department of Homeland Security since it was established in 2003.

Regardless of whether a major overhaul of the structure for providing U.S. foreign assistance takes place, some changes in government are critical. In the current context, there are at least three good reasons to support the reform and expansion of existing institutions. The first is that the existing framework holds expertise and experience necessary to address the many serious challenges ahead. Second, the WFPA represents such a significant step with respect to U.S. water engagement with the rest of the world that to advocate for more sweeping change might jeopardize the hard-won progress achieved so far. Third, in light of the urgency of water-related challenges, a "reset" with respect to institutions and practices could engender significant costs, inefficiencies, and forgone opportunities.

Weighing all these factors, the CSIS Global Strategy Institute supports the strengthening, expansion, and reform of the existing organizational structure—but with several important caveats and structural shifts necessitated by global water and resource trends. The institute does not advocate these reforms for their own sake but rather to fill a strategic gap in the current federal organizational structure, facilitate the integration of related freshwater programs across more than fifteen U.S. government agencies, maximize synergies, eliminate redundancies, and strengthen the nation's overall approach to addressing the global water challenge. The key elements of the institute's eight proposed recommendations are as follows.

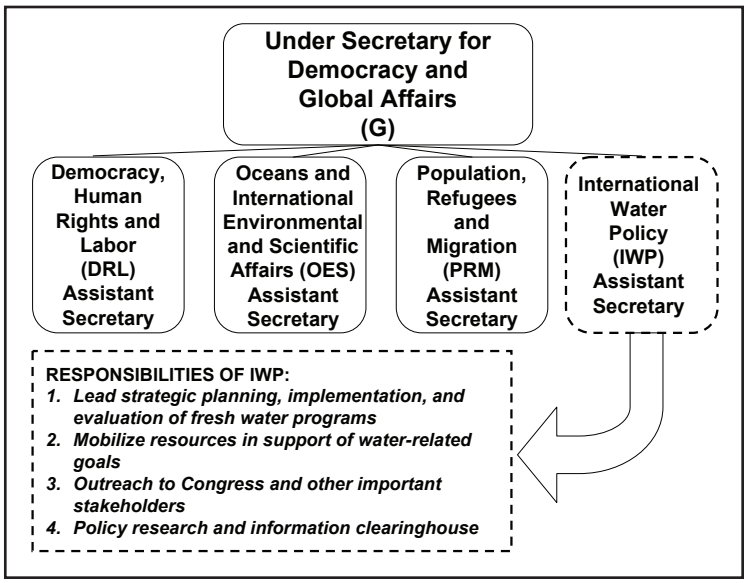
First recommendation: (a) In the event of a systematic reorganization of foreign assistance involving the establishment of a cabinet-level "Department of International Development," devote the equivalent of an Office of Under Secretary to water issues; or (b) in the current organizational context, expand the Office of the Under Secretary for Democracy and Global Affairs at the U.S. Department of State (see appendix B) to include a new (fourth) bureau called the "Bureau for International Water Policy." The newly formed bureau would be tasked with formulating and coordinating the implementation of an integrated government strategy on water. In that regard, it would be tasked with elevating water as a broader, crosscutting element in U.S. foreign policy interests.

The specific responsibilities of the new bureau and the assistant secretary for international water policy would include:

1. Leading in strategic planning, implementation, and evaluation of water resources programs, as follows:

    a. Integrate water into key strategic elements of U.S. foreign policy planning and assessments, working with the National Security Council, Department of State Office of Policy Planning, Department of Defense, the National Intelligence Council, and others;

    b. Identify, draw on, mobilize, and deploy



all levels of U.S. government and private-sector resources on global water issues;

c. Develop and continuously refine an integrated strategy for U.S. international water policy, including the global drinking water and sanitation strategy required by WFPA and a strategy for sustainable watershed / river basin management, as well as develop implementation plans;
d. Strengthen international bilateral/multilateral cooperation by working with ambassadors and country teams in high-priority regions to develop country-specific plans that speak to local water issues and include implementation elements;
e. Effect participatory and collaborative interagency coordination by staffing the bureau through details and exchanges with a range of government agencies, bringing together a cooperative mix of Foreign Service professionals gaining expertise on water-related issues with water experts from the Environmental Protection Agency, the U.S. Geological Survey, the Department of Agriculture, the Department of Defense, etc., as well as private-sector experts through staff exchanges through the Revised Intergovernmental Personnel Act;
f. Promote and provide guidance for fuller integration of water in regional security/stability assessments;
g. Vet and make available an inventory of national expertise, knowledge, and experience that could ultimately be deployed to activities in field;[2]
h. Define, identify, and monitor water-related activity throughout the government by creating and maintaining an information clearinghouse on water-related issues and activities relating to foreign policy (across agencies and from field offices); and
i. Evaluate the effectiveness of water-related programs in other countries.

2. Mobilizing resources in support of water-related goals:

   a. Collaborate with private-sector and nongovernmental organizations (NGOs) to deploy resources for water-related activities in the field; and
   b. Communicate with Congress to help significantly increase appropriations for water-related efforts.

3. Providing outreach and communication to Congress and other important stakeholders, as follows:

   a. Serve as a liaison to Congress to build and maintain support for global water programs on Capitol Hill and to act as the administration's water "point of contact" for Congress, thus growing accountability for programs;
   b. Liaise with UN specialized agencies, international financial institutions, other multilateral institutions, and other

country donors like the United Kingdom's Department for International Development and the Netherlands' Ministry of Water;

c. Collaborate with important stakeholders in sectors outside the traditional "water community" who have a vested interest in freshwater resources, such as experts and activists in international conservation, agriculture, development, climate change, and energy communities;
d. Serve as the chief spokesperson for the administration on global water issues, going so far as to head delegations to major international water meetings like the World Water Forum and the Stockholm World Water Week; and
e. Build existing and identify new public-private partnerships, to be sustained through established organizational models and to include representatives of prominent NGOs and corporations.

4. Serving as a policy research and information clearinghouse, as follows:

a. Develop and harmonize metrics to measure effectiveness (i.e., proposal development, implementation, and assessments);
b. Liaise with the National Academies of Science, the National Science Foundation, the Environmental Protection Agency's National Center for Environmental Research, and the various National Laboratories on existing "broadband" research and technological advances on long-range global water trends; and
c. Collaborate with the National Academies of Science, the National Science Foundation, and other grant-making bodies in the U.S. government to commission new research and provide scholarship support to universities and the independent sector to further inform the U.S. government strategy.

Second recommendation: To head the new bureau, assign an individual with ambassadorial rank who would be "double-hatted" organizationally as both the assistant secretary for international water policy at the State Department and as an assistant administrator at the U.S. Agency for International Development (USAID), serving as the USAID administrator's key water adviser. This recommendation seeks to address the traditional impediments to interaction between the structures and cultures of the State Department and USAID. The assistant secretary / assistant administrator would, by definition, be faced with the challenge of navigating both sides—as well as maintaining these agencies' authority, legitimacy, and effectiveness in dealings outside Foggy Bottom.

On one hand, while in the role of assistant secretary of state for international water policy, this individual would be responsible for overseeing government policy coordination, long-range planning, and other tasks outlined in the section above. On the other hand, while in the role of USAID assistant administrator, this individual would be responsible for overseeing the immediate implementation of the WFPA and advising the USAID administrator (or, after a reorganization as sketched above, the director of foreign assistance) on international water issues.

Third recommendation: Expand the financial resources and personnel available to the new bureau. Simple reprogramming of roles, responsibilities, and functions—and the funding resources supporting them—would defeat the purpose of the proposed changes. To be relevant and to discharge the responsibilities envisaged under these recommendations, the new bureau would need to be staffed with dedicated personnel possessing a sufficient

range of expertise across the entire spectrum of water-related issues. This would be a dramatic expansion from the current system of cobbling together staff time from various employees (with diverse priorities and responsibilities beyond freshwater security and health) in the State Department's Bureau of Oceans and International Environmental and Scientific Affairs.

In addition, in the spirit of the WFPA, a key priority of the new bureau would be to advocate for an increase in funding flows on international freshwater and sanitation programs to well beyond the $300 million under the most recent appropriations. This should all occur in the context of overall increased funding for (and accountability of) U.S. foreign assistance, rather than a zero-sum game of moving funds from one facet of foreign aid to another.

Fourth recommendation: Establish a "Water Policy Advisory Committee"—consisting of a small number of recognized and respected experts in the field, senior policymakers, and others—whose mandate would be to provide regular insight and suggestions to the newly formed bureau. This high-level, bipartisan federal advisory committee would thus reinforce the new bureau's role. Although more than 1,000 advisory committees exist today throughout the U.S. government, the model for the proposed Water Policy Advisory Committee is the Defense Policy Board Advisory Committee at the U.S. Department of Defense (see appendix C). This body would be fully transparent and regulated under the 1972 Federal Advisory Committee Act (Public Law 92-463).

Fifth recommendation: Establish a "Water Advisory Council" as a source of steady interface with NGOs, corporations, and the academic and scientific communities. This council, which would systematically engage the private and independent sectors, would be established as a public-private partnership body attached to the new bureau. The council would be modeled after USAID's Global Development Alliance (see appendix D), which has a history of marshalling best practices and resources from the private and independent sectors to address particular issues. The council would cast a wide net, engaging NGOs, universities, private corporations, and other groups to provide insight on freshwater challenges around the globe and collaborate on the formulation and implementation of U.S. government water programs.

Sixth recommendation: Create, grow, and deploy a standing fund for water-related projects. This fund would be formed either through congressional legislation to harness tax dollars and/or by leveraging private-sector funds through public-private partnerships in the Water Advisory Council mentioned above. Private corporations and philanthropic foundations are an enormous, underutilized resource for addressing the global water crisis. Companies are investing large amounts of money in freshwater programs, and the new bureau must act on these potential synergies and initiate more joint efforts.

Seventh recommendation: Work at both the public policy and grassroots levels to achieve the strongest possible support for a broader U.S. vision on water. All parties associated with the global water challenge—representing a wide range of interests and political affiliations—need to work together to highlight the critical nature of water for human welfare and to alert policymakers about the complexities that lie ahead. The strong bipartisan support for the WFPA laid a solid foundation for unified action, and this momentum should not be squandered.

The extent to which the recommendations proposed thus far can succeed will be contingent, of course, on the political priority assigned to water and natural resources by the highest levels of government. In this regard, a major global water initiative from the United States—building on the important foundation

of the WFPA—could represent a tremendously important avenue of smart engagement with the rest of the world.[3] It would enable the country to effect positive outcomes while at the same time supporting a range of important national interests.

Eighth recommendation: Build a coalition, on the foundation of the bipartisanship that marked the WFPA's passage, between the new bureau and Congress. A more constructive set of interactions in the pursuit of an integrated water strategy between the Department of State and the Congress is essential for the efficacy of these proposed reforms. This reinforced congressional oversight could take form in the following ways:

1. Require a report to Congress and schedule more frequent hearings on Capitol Hill—through the House Committee on Foreign Affairs, the Senate Committee on Foreign Relations, and the relevant appropriations committees—to assess progress on implementing the U.S. international water strategy (beyond what is already required by the WFPA).

2. Establish a "select committee" for the looming global water crisis, like the current House Select Committee on Energy Independence and Global Warming, to "investigate, study, make findings, and develop recommendations on policies, strategies, technologies and other innovations."[4]

3. Encourage information sharing and more frequent interaction between the congressional foreign affairs / foreign relations committees and the domestically focused House Committee on Natural Resources and the Senate Committee on Energy and Natural Resources.

The Bottom Line

In sum, the eight foregoing recommendations on the changing nature of the global water crisis and the state of U.S. international water policy suggest the pronounced need for:

- strengthening emphasis on water issues across the U.S. policymaking spectrum;
- expanding and formalizing strategy formulation, planning, and evaluation capability;
- increasing coordination across government agencies;
- mobilizing eminent individuals representing diverse backgrounds and areas of expertise to lend advice on emerging strategies, concepts, and approaches;
- creating a more anticipatory structure that takes into account the ever more complex linkages that can be anticipated between water and other strategic resources like agriculture and energy;
- increasing funding and personnel in the U.S. government for coping with the global water challenge; and
- building more systematic consultation with a wide range of private organizations.

These recommendations are meant to be flexible because they are being presented at a time when the entire system of U.S. foreign assistance is under serious scrutiny in Washington's foreign policy community. One thing is constant, however: From human health to economic development to geopolitical stability, water is and will continue to be a critical element for defense, development, and diplomacy.

Notes

1. See, for example, Millennium Challenge Corporation, *2007 Annual Report,* http://www.mcc.gov/press/releases/documents/release-042108-annualreport.php.

2. For example, see *Water Resources Development Act of 1996*, Public Law 104-303, 104th Congress (1996), Sec. 234, http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=104_cong_public_laws&docid=f:publ303.104.pdf.

3. See CSIS Commission on Smart Power, *A Smarter, More Secure America* (Washington, D.C.: CSIS, 2007), http://www.csis.org/media/csis/pubs/071106_csissmartpowerreport.pdf.

4. U.S. House of Representatives, Select Committee on Energy Independence and Global Warming, http://globalwarming.house.gov/home.

6 POSITIONING THE UNITED STATES FOR THE FUTURE

In the light of humanity's water predicament—both current and future—the United States needs to start playing a much more assertive role in meeting the global water challenge. This larger U.S. role can improve conditions across the world while promoting broader U.S. interests—an authentic "win-win" proposition.

One would think that water would be a central component in the conduct of U.S. foreign policy. Targeting water as an instrument of Washington's engagement with the rest of the world would enable the United States to address—simultaneously—the goals of carrying out humanitarian relief, strengthening health care, supporting other public health commitments (such as efforts to address HIV/AIDS), promoting economic development, advancing opportunities for girls and women, improving the capacity of countries to protect themselves against drought or floods, and providing opportunities for cooperation on activities with great meaning for those in other countries.

Furthermore, targeting water as a U.S. global policy priority would lead to important commercial opportunities for U.S.-domiciled corporations working in water-related technologies and processes. And targeting water would also yield other geopolitical dividends—including helping remove a serious obstacle to stability and security within states and reducing the possibility for conflict or tension between countries with shared water resources. Finally, water represents an avenue for the United States to demonstrate leadership in areas where it has great capacities and considerable respect throughout the world. Water policy offers a way for America to collaborate more closely with other countries, helping to win "the battle for hearts and minds" at a time when the United States' image abroad has eroded considerably.

> **"There is a water crisis today. But the crisis is not about having too little water to satisfy our needs. It is a crisis of managing water so badly that billions of people—and the environment—suffer badly."**
>
> —*World Water Vision Report,* 2000

To bring water to the policy surface, however, a crosscutting consensus must be found across economic development and security communities that water is critical to the full spectrum of U.S. interests. Achieving this consensus will require gaining a new equilibrium between traditional geopolitical interests and broader humanitarian interests. It will mean committing more scarce financial resources. It will mean addressing the critical need for a high-profile federal agency presence. Above all, however, it will require the political will to implement a farsighted strategy to meet the world's water challenge.

APPENDIX A

Members of the Working Group

Note: These individuals participated in working group discussions at the CSIS Global Strategy Institute, but the findings, conclusions, and recommendations in the foregoing report are those of the authors alone. The authors gratefully acknowledge the many important ideas and comments made by these individuals over the course of the working group's deliberations.

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APPENDIX B

U.S. Department of State, Office of the Under Secretary for Democracy and Global Affairs: Structure and Activities

The current structure of the U.S. State Department focuses water-related issues in the Bureau of Oceans and International Environmental and Scientific Affairs (OES), under the Office of the Under Secretary for Democracy and Global Affairs ("G"). This appendix provides a description of the wide range of issues addressed by the Office of the Under Secretary for Democracy and Global Affairs and provides context for the establishment of the proposed new Bureau for International Water Policy. This text is quoted from the Democracy and Global Affairs Web site, http://www.state.gov/g.

The Office of the Under Secretary for Democracy and Global Affairs, headed by Dr. Paula J. Dobriansky, coordinates U.S. foreign relations on a variety of global issues, including democracy, human rights, and labor; environment, oceans, health and science; population, refugees, and migration; women's issues; and trafficking in persons and avian and pandemic influenza.

Since her appointment in 2001, Under Secretary Dobriansky has also served concurrently as the Special Coordinator for Tibetan Issues. In this capacity, she is the U.S. government's point person on Tibet policy matters, including: support for dialogue between the Chinese and the Dalai Lama or his representatives; promotion of human rights in Tibet; and efforts to preserve Tibet's unique cultural, religious and linguistic identity.

Under Secretary Dobriansky also was appointed in February 2007 to serve as the Special Envoy on Northern Ireland with the rank of Ambassador. In this capacity she is actively involved in supporting the implementation of the Good Friday and St. Andrews Agreements.

The Bureau of Oceans and International Environmental and Scientific Affairs (OES), headed by Assistant Secretary Claudia McMurray, coordinates an extensive portfolio of issues related to science, health, the environment, and the world's oceans.

The Bureau of Democracy, Human Rights and Labor (DRL), headed by Acting Assistant Secretary Jonathan D. Farrar, leads the U.S. efforts to promote democracy, protect human rights and international religious freedom, and advance labor rights globally.

The Bureau of Population, Refugees, and Migration (PRM), headed by Acting Assistant Secretary Samuel M. Witten, is responsible for formulating and implementing policies on population, refugees, and migration, and for administering U.S. refugee assistance and admissions programs. The Bureau coordinates U.S. international policy within the U.S. Government and through bilateral and multilateral diplomacy. PRM also administers and monitors U.S. contributions to international and non-governmental organizations to assist and protect refugees abroad and oversee

admissions of refugees to the United States for permanent resettlement.

The Under Secretary for Democracy and Global Affairs established the Avian Influenza Action Group (G/AIAG), headed by Special Representative on Avian and Pandemic Influenza Amb. John Lange. The Avian Influenza Action Group coordinates U.S. international engagement—with international organizations, governments, non-governmental organizations and the private sector—to contain the spread of avian influenza in poultry and to mitigate the global socioeconomic and security consequences of a potentially catastrophic human influenza pandemic.

The Office of the Science and Technology Adviser (G/STAS), led by the Science and Technology Adviser to the Secretary Dr. Nina V. Fedoroff, provides S&T advice to the Department and USAID, works to enhance the S&T literacy and capacity of the Department of State, builds partnerships with the S&T community and strives to shape the global perspective on the emerging and "at the horizon" S&T developments.

The Office to Monitor and Combat Trafficking in Persons (G/TIP), headed by Amb. Mark Lagon, provides the tools to combat trafficking in persons and assists in the coordination of anti-trafficking efforts both worldwide and domestically.

The Office of the Senior Coordinator for International Women's Issues (G/IWI), led by Andrea Bottner, Senior Coordinator for International Women's Issues, serves as the Department's coordinating body for all foreign policy issues related to the political, economic, and social advancement of women in democracy worldwide. Recognizing that the full and equal participation of women in the political, economic, and social spheres of society is a key ingredient for democratic development, the mandate of this Office is to mobilize concrete support for greater women's empowerment, promote greater awareness of gender-based violence and discrimination, and to ensure that women's human rights are considered along with, not segregated from, other human rights in the development of U.S. foreign policy.

The Office of the Special Envoy for Human Rights in North Korea (G/SENK) is led by Special Envoy Jay Lefkowitz who was appointed by the President in August 2005. The office coordinates and promotes efforts to improve the respect for fundamental human rights of the people of North Korea.

APPENDIX C

Charter of the Defense Policy Board Advisory Committee, U.S. Department of Defense

This charter provides an example of the basis for a high-level federal advisory committee, to be emulated through the proposed Water Policy Advisory Committee, which would consist of a small number of recognized and respected experts in the field to provide regular insights and suggestions on water-related issues to the secretary of state through the proposed Bureau of International Water Policy.

A. Official Designation: The Committee shall be known as the Defense Policy Board Advisory Committee (hereafter referred to as the Committee).

B. Objectives and Scope of Activities: The Committee, under the provisions of the Federal Advisory Committee Act of 1972 (5 U.S.C., Appendix, as amended), shall provide the Secretary of Defense and the Deputy Secretary of Defense, through the Under Secretary of Defense for Policy, with independent, informed advice and opinion concerning matters of defense policy.

The Committee will focus on: (a) issues central to strategic Department of Defense (DoD) planning; (b) policy implications of U.S. force structure and force modernization and transformation on DoD's ability to execute U.S. defense strategy; (c) U.S. regional defense policies; and (d) any other research and analysis of topics raised by the Secretary of Defense, Deputy Secretary or Under Secretary of Defense for Policy.

The Under Secretary of Defense (Policy) may act upon the Committee's advice and recommendations.

C. Committee Membership: The Committee shall be comprised of no more than twenty- six members, who have distinguished backgrounds in national security affairs, and no more than four of the members shall be Federal officers or employees.

Committee members appointed by the Secretary of Defense, who are not full-time Federal officers or employees, shall serve as Special Government Employees under the authority of 5 U.S.C. § 3109. Members will be appointed to serve a term of two years, and their consultant appointments will be renewed annually. With the exception of travel and per diem for official travel, Committee members shall serve without compensation.

The Secretary of Defense shall select the Committee's Chairperson from the membership at large. In addition, the Under Secretary of Defense for Policy may appoint consultants to support the Board and Board task forces.

D. Committee Meetings: The Committee shall meet at the call of the Committee's

Designated Federal Officer, in consultation with the Chairperson and the Under Secretary of Defense for Policy. The estimated number of Committee meetings is four per year.

The Designated Federal Officer shall be a full-time or permanent part-time DoD employee, and shall be appointed in accordance with established DoD policies and procedures. In addition, the Designated Federal Officer shall attend all Committee and subcommittee meetings.

The Committee shall be authorized to establish subcommittees, as necessary and consistent with its mission, and these subcommittees or working groups shall operate under the provisions of the Federal Advisory Committee Act of 1972, the Sunshine in the Government Act of 1976 (5 U.S.C. § 552b, as amended), and other appropriate Federal regulations.

Such subcommittees or workgroups shall not work independently of the chartered Committee, and shall report all their recommendations and advice to the Committee for full deliberation and discussion. Subcommittees or workgroups have no authority to make decisions on behalf of the chartered Committee nor can they report directly to the Department of Defense or any Federal officers or employees who are not Committee Members.

E. Duration of the Committee: The need for this advisory function is on a continuing basis; however, it is subject to renewal every two years.

F. Agency Support: The Department of Defense, through the Office of the Under Secretary of Defense for Policy, shall provide support as deemed necessary for the performance of the Committee's functions, and shall ensure compliance with the requirements of Federal Advisory Committee Act of 1972.

G. Termination Date: The Committee shall terminate upon completion of its mission or two years from the date this charter is filed, whichever is sooner, unless the Secretary of Defense or designee extends it.

H. Operating Costs: It is estimated that the annual operating costs, to include travel costs and contract support, for this Committee is $710,000.00. The estimated annual personnel costs to the Department of Defense are 3.0 full-time equivalents.

I. Charter Filed: August 3, 2007

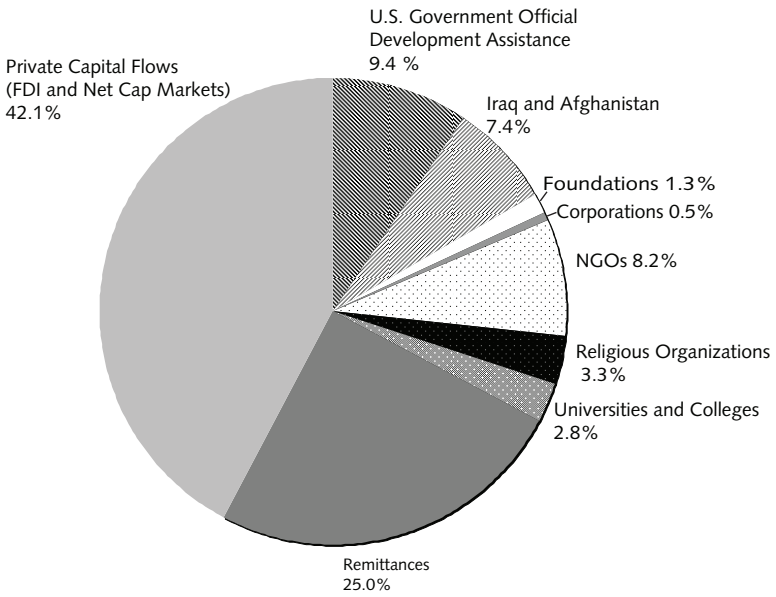
APPENDIX D

Description of the Global Development Alliance, U.S. Agency for International Development

The Global Development Alliance at the U.S. Agency for International Development (USAID) is an archetypal public-private partnership body of the U.S. government. The proposed Water Advisory Council would utilize the expertise and resources of the private sector, charitable foundations, universities, and others to address the global water challenge.

"The Global Development Alliance (GDA) is USAID's commitment to change the way we implement our assistance mandate. GDA mobilizes the ideas, efforts and resources of governments, businesses and civil society by forging public-private alliances to stimulate economic growth, develop businesses and workforces, address health and environmental issues, and expand access to education and technology." (Source: GDA Web site, http://www.usaid.gov/our_work/global_partnerships/gda/.)

"Alliances incorporate a breadth of USAID and partner resources to arrive at solutions



GDA resource flows.

USAID, June 2007

Source: http://www.usaid.gov/our_work/global_partnerships/gda/why.html.

only available through pooled efforts. The resources united are as diverse as the alliances themselves, including technology and intellectual property rights, market creation, best practices, policy influence, in-country networks, and expertise in development programs ranging from international trade to biodiversity protection. Together, the combination of complementary assets has encouraged innovative approaches, more effective problem solving and deeper impact. Importantly, public-private sector conversations almost always lead to a better understanding of the challenge." (Source: GDA Web site, http://www.usaid.gov/our_work/global_partnerships/gda/.)

"Potential partners include foundations, U.S. and non-U.S. NGOs, faith-based organizations, U.S. and non-U.S. private businesses, business and trade associations, international organizations, U.S. and non-U.S. colleges and universities, U.S. cities and states, other U.S. Government agencies, civic groups, other donor governments, host country governments, regional organizations, host country parastatals, philanthropic leaders including venture capitalists, public figures, advocacy groups, pension funds and employee-welfare plans, etc." (Source: USAID Global Development Alliance, "FY2008 Annual Program Statement," http://www.usaid.gov/our_work/global_partnerships/gda/resources/aps_2008.pdf.)

APPENDIX E

Summary of U.S. Government Agency Capabilities in the Water Sector

Numerous government agencies—as depicted in the table below, compiled by the U.S. State Department—possess capabilities to address the global water challenge. However, insufficient coordination and a dearth of funding prevent full deployment of these capacities.

AGENCY	MISSION	CAPABILITIES
FOREIGN AFFAIRS AGENCIES		
U.S. Department of State	As the lead institution for the conduct of diplomacy and the establishment of foreign policy, the Department of State works to increase access to safe water and sanitation services; promote the sustainable management of water resources; remove water as a source of tension between or among countries, and use water as a diplomatic tool to build confidence and promote cooperation among countries. The department also manages or coordinates a number of accounts that may support water-related assistance.	▪ Leadership on multilateral, regional, and bilateral processes and forums ▪ Raising the profile linking diplomacy and development on water and water-related issues ▪ Leadership and coordination of U.S. policy development on international water ▪ Representation of U.S. interests to foreign governments and international organizations

Appendix E (continued)

U.S. Agency for International Development (USAID)	USAID is the lead foreign affairs agency responsible for the U.S. government's development and humanitarian assistance program. As such, it develops strategies; plans and implements a wide range of program activities in targeted countries, in concert with host governments and the private and nongovernmental organization sectors; and carries out humanitarian assistance. In carrying out its mandate, it works with a host of other U.S. government agencies and the U.S. private sector.	▪ Repository and clearinghouse for technical information on water resources management ▪ In-country presence, perspective and long-term relationships to support the technical, managerial, and diplomatic aspects of the U.S. government's water resources efforts abroad ▪ Water resources strategy formulation by USAID missions ▪ Water-related project planning and implementation oversight, and management of third party implementers ▪ Facilitation of governance processes and policy development ▪ Facilitation of financing mechanisms for improved water resources management ▪ Provision of humanitarian assistance to address the immediate needs for water/sanitation, hygiene education, and emergency health for natural and human-caused disasters in addition to preparedness, prevention, and mitigation activities
Peace Corps	The Peace Corps sponsors volunteers in developing countries around the world to promote peace and friendship and sustainable development through direct assistance to communities. The agency strives to simultaneously help the people of interested countries in meeting their need for trained men and women; help promote a better understanding of Americans on the part of the peoples served; and help promote a better understanding of other peoples on the part of Americans.	▪ Technical support to water and sanitation, soil and water conservation, sustainable agriculture and forestry, and conservation that directly improve the quality of water resources management, especially in poorer communities. ▪ Leveraging of modest levels of resources to assist in water resources management ▪ Grassroots presence and perspective to support the U.S. government's water resources efforts abroad
Department of Defense (DOD)	DOD has a primary mission to ensure the military security of the United States throughout the world. Through its Office of the Undersecretary–Environmental Security, it has the responsibility to employ water resources expertise related to the successful implementation of military actions.	▪ Satellite imagery acquisition and interpretation for water resources assessment and forecasting and management ▪ Technical support to hydrology and well drilling ▪ Technical assistance in preventive health practices and land management and forestry ▪ Provision of heavy logistics

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Appendix E (continued)

Army Corps of Engineers	DOD's Army Corps of Engineers is engaged in planning (including decision support systems), design, construction, operation, and maintenance of projects for navigation, flood damage reduction and flood plain management, coastal storm damage reduction, hydropower, water supply, emergency operations, and environmental protection and restoration.	▪ Planning, design engineering, construction management, and operation/maintenance of water resource projects, especially large civil works, including hydropower projects, water supply projects, and navigation infrastructure (ports, harbors, and channels) ▪ Research and development related to water quantity and quality management ▪ Data collection, research and development related to coastal, ocean, and hydrologic engineering; science and engineering in cold regions; geological and soil characteristics; structural engineering; and topographic aspects of water resources management ▪ Improved planning methodologies to address economic, social, institutional, and environmental needs in water resources planning policy, including development of decisionmaking software ▪ Flood control and flood and storm damage reduction and mitigation, including floodplain planning, construction of flood protection projects, shore protection work, and disaster response ▪ Environmental restoration related to Army Corps of Engineers projects
Department of the Treasury	The Treasury Department is the lead agency responsible for U.S. participation in the international financial institutions. These include the multilateral development banks (MDBs), most of which finance substantial programs in support of water supply and sanitation. The also provide policy advice, capacity building, and sector analysis to help strengthen the operational and financial sustainability of water systems globally.	▪ Negotiation of MDB general capital increases and replenishment agreements ▪ Leadership in establishing MDB priorities and strategies ▪ Oversight of MDB implementation of operational policies, country strategies, and lending operations ▪ Liaison with relevant U.S. government agencies, the private sector, and non-governmental organizations ▪ Coordination with other international and regional institutions and initiatives, such the Group of Eight and the Asia-Pacific Economic Cooperation forum

Appendix E (continued)

DOMESTIC AGENCIES		
Department of Agriculture (USDA)		
Forest Service	The mission of the USDA Forest Service is to sustain the health, diversity, and productivity of the nation's forests and grasslands to meet the needs of present and future generations. U.S. Forest Service International Programs promotes sustainable forest management, and biodiversity conservation internationally.	▪ Research, technical expertise, and tools for land and water management, including: forest and grassland watershed management, fire planning, soil and water conservation, and hydrology ▪ Technical assistance and tools for the design of agriculture buffer areas ▪ Technical assistance for watershed assessments and watershed planning ▪ Partnership building for water resource planning and watershed management ▪ Technical assistance on road construction to protect watersheds ▪ Train and mobilize personnel domestically to respond and mitigate foreign disasters, including drought and floods ▪ Train and provide technical expertise to partners overseas in emergency preparedness, response, and disaster mitigation, including drought and floods
National Resource Conservation Service (NRCS)	The NRCS provides technical and financial assistance to help private landowners, agricultural producers, and others conserve their soil, water, and other natural resources. It provides technical assistance based on sound science and suited to a customer's specific needs. It also provides financial assistance for many conservation activities.	▪ Manage natural resource conservation programs that provide environmental, societal, financial, and technical benefits. ▪ Provide technical expertise in such areas as animal husbandry and clean water, ecological sciences, engineering, resource economics, and social sciences. ▪ Provide expertise in soil science and leadership for soil surveys and for the National Resources Inventory, which assesses natural resource conditions and trends in the United States. ▪ Provides technical expertise to foreign governments and participates in international scientific and technical exchanges.

continued next page

Appendix E (continued)

Foreign Agricultural Service (FAS)	The FAS works to improve foreign market access for U.S. products, build new markets, improve the competitive position of U.S. agriculture in the global marketplace, and provide food aid and technical assistance to foreign countries. The FAS goals for international development are to increase economic growth and reduce hunger through agricultural development, and to open agricultural markets and integrate developing countries into the global economy.	▪ International training, technical assistance, and other collaborative activities with developing and transitional countries to facilitate trade and promote food security ▪ Trade capacity-building programs to increase the benefits to developing nations participating in global agricultural markets
Agricultural Research Service (ARS)	As the principal in-house research arm of the USDA, ARS conducts research to develop and transfer solutions to agricultural problems of high national priority and provides information access and dissemination to ensure high-quality, safe food and other agricultural products; assess the nutritional needs of Americans; sustain a competitive agricultural economy; enhance the natural resource base and the environment; and provide economic opportunities to rural citizens, communities, and society as a whole.	▪ Design of on-farm and regional irrigation (drip, sprinkler, and surface) and drainage systems ▪ Integrated technologies for assessing effects of soil salinity on drainage waters were developed to improve water quality ▪ Design complete or modular water treatment plants to address both rural waste treatment plant needs and needs arising from confined animal operations ▪ Risk assessment analysis of the impact of utilizing wastewater and predicting the impact on environmental quality through the use of its extensive environmental modeling capabilities ▪ Capabilities and analytical expertise in identifying toxic chemicals and elements (i.e., boron, selenium) in wastewater streams ▪ Agricultural watershed management research to develop tools for managing watersheds by mitigating drought, forecasting water supplies, and making policy decisions ▪ Water quality protection and management ▪ Soil and water research ▪ Global change related research by studying changes in weather and the water cycle at farm, ranch, and regional scales

Appendix E (continued)

Department of Commerce		
International Trade Administration (ITA)	The ITA leads the Environmental Technologies Export Initiative of 1994, to enhance the competitiveness of U.S. environmental technology (envirotech) companies globally and to increase U.S. envirotech exports. The ITA leads the initiative in close cooperation with other key members of the Trade Promotion Coordinating Committee (e.g., Department of Energy, USAID, Environmental Protection Agency, Export/Import Bank, Trade Development Agency) and promotes the following objectives: (1) implements the president's national export strategy to strengthen trade advocacy, trade promotion, and the Trade Promotion Coordinating Committee; (2) more closely aligns trade objectives with U.S. foreign policy (3) enforces U.S. trade laws and agreements to promote free and fair trade, to expand trade, and to promote law enforcement and compliance monitoring; and (4) strengthens and institutionalizes trade advocacy efforts, placing a special emphasis on the "big emerging markets" without losing focus on mature markets.	▪ Advocacy by high-level U.S. government officials to promote U.S. firms ▪ Comprehensive information resources on all federal government export assistance programs and multilateral development bank programs and opportunities ▪ Commercial officer presence in U.S. embassies around the world to assist in promoting U.S. envirotech firms abroad ▪ Organization of U.S. business trade missions to potential markets around the world

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Appendix E (continued)

National Oceanic and Atmospheric Administration (NOAA)	NOAA has technical responsibility stretching from the surface of the sun to the bottom of the ocean. Most of the Agency's work is directed to understand and predict changes in the Earth's environment and conserve and manage coastal and marine resources to meet economic, social, and environmental needs.	▪ Weather and Climate Forecasts – rainfall, floods, droughts, storms and related hazards ▪ Climate Prediction - rainfall, floods, droughts, storms and related hazards, medium and long-term water availability, USGCRP water cycle initiative ▪ Information - data acquisition, storage and dissemination ▪ River and Flood Forecasting - river stage monitoring, hydrology and aquifer recharge ▪ Remote sensing - products which identify land cover, water presence/availability, snowpack and connection to runoff and reservoir level modeling, drought and desertification, and coastal and marine events related to water such as movement of harmful algal blooms ▪ Coastal and Estuarine Management - water quality, habitat, hazard mitigation, storms, ports (navigation issues such as dredging and siltation), closely related to watershed management, estuarine and coastal reserves, sanctuaries, and protected areas, coral reef ecosystem monitoring and management ▪ Land-based sources of marine degradation - the effects of land-based activities, primarily, on the near shore and coastal environments, such as sewage, agricultural runoff, runoff from roads etc, industrial production, harmful algal blooms, physical alteration, habitat destruction ▪ Habitat alteration - water related changes to coastal and marine ecosystems, including quality of introduced fresh water (pollution, temperature), and the quantity ▪ Aquaculture - water quality, impacts on environment, harmful algal blooms

Appendix E (continued)

Department of Energy	The Department of Energy mission includes national security, science and technology, energy security and environmental quality. The agency has made a long-term investment in water-related technical questions in recognition that water and energy are two major elements in sustainable development and are inextricably linked.	▪ Technical assistance in groundwater contamination, water monitoring, wastewater treatment and pollution prevention ▪ Hydrogeological and contaminant transport modeling ▪ Radioactive waste management ▪ Water and energy conservation technologies ▪ Tools for measurement, remote sensing, and monitoring water ▪ Modeling and high-performance computing capacity ▪ Renewable energy technologies for water pumping ▪ Atmospheric and ocean physics and global impacts research.
Department of Health and Human Services (HHS)		
Centers for Disease Control and Prevention (CDC)	The HHS/CDC is the sentinel organization for the health of people in the United States and throughout the world and strives to protect people's health and safety, provide reliable health information, and to improve health through strong partnerships. HHS/CDC accomplishes this mission by working with partners throughout the nation and the world to monitor health, detect and investigate health problems, conduct research to enhance prevention, develop and advocate sound public health policies, implement prevention strategies, promote healthy behaviors, foster safe and healthful environments, and provide leadership and training. Those functions are the backbone of the HHS/CDC mission. The steps needed to accomplish this mission are based on scientific excellence, requiring well-trained public health practitioners and leaders dedicated to high standards of quality and ethical practice.	▪ Measuring and monitoring public health effects from contaminated drinking water and recreational water ▪ Waterborne disease outbreak surveillance and investigations ▪ Support for local and state health departments delivering water-related programs ▪ Water security, bioterrorism and emergency response support to local, state and other federal agencies ▪ Epidemiologic investigations related to microbial, chemical and other contaminants in drinking water ▪ Development and evaluation of water treatment and monitoring technology ▪ Evaluation of waterborne disease prevention programs ▪ Instituting WHO Water Safety Plans in communities

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Department of the Interior		
National Park Service	The National Park Service preserves the unimpaired natural and cultural resources and values of the national park system for the enjoyment, education, and inspiration of this and future generations. The Park Service cooperates with partners to extend the benefits of natural and cultural resource conservation and outdoor recreation throughout this country and the world. The Service works in 378 areas covering more than 83 million acres in 49 States, the District of Columbia, American Samoa, Guam, Puerto Rico, Saipan, and the Virgin Islands.	▪ Planning, design, construction and maintenance of park facilities ▪ Land use planning and management ▪ Habitat protection and enhancement ▪ Cultural and historic preservation ▪ Environmental and cultural interpretation ▪ Archaeological, historical, and ecological research ▪ Law enforcement in park areas ▪ Volunteer coordination and public outreach
Bureau of Reclamation	The Bureau of Reclamation was originally founded to develop water resources in the arid and semiarid western states of the U.S., including maximizing water availability for irrigation and hydroelectric power generation. In recent decades, the Bureau has been making the transition from water development to water management, and is increasingly managing its projects to address an array of competing demands including irrigation, hydropower generation, municipal and industrial water supply, ecosystem-related needs, flood control and recreation. This has entailed greater emphasis on water reclamation and reuse, maintaining water quality, and encouraging water conservation.	▪ Cooperative conservation for the protection and enhancement of fish and wildlife habitat, addressing endangered species issues, and restoring migrating fish populations ▪ Dam safety programs and maintenance and modernization of structures ▪ Nonstructural operational improvements including revenue setting and water transfer arrangements (water marketing) ▪ Hydropower design, operation and maintenance ▪ Water resources research and technology transfer ▪ Building collaborative partnerships through community-based approaches to resolve challenges and conflicts in water management ▪ Multiple-purpose reservoir operations ▪ River basin management decision-support systems ▪ Drought modeling and mitigation training ▪ Water conservation, recycling and reuse ▪ Alternative dispute resolution ▪ Environmental impact assessment

Appendix E (continued)

Geological Survey (USGS)	The USGS provides reliable, impartial, timely information needed to understand the nation's water resources. USGS actively promotes the use of this information by decisionmakers to: (1) minimize the loss of life and property as a result of water-related natural hazards such as floods, droughts, and land movement; (2) effectively manage groundwater and surface water resources for domestic, agricultural, commercial, industrial, recreational, and ecological uses; (3) protect and enhance water resources for human health, aquatic health, and environmental quality; and (4) contribute to wise physical and economic development of the nation's resources for the benefit of present and future generations	▪ Basic hydrologic data collection (both quantity and quality) ▪ Assessment of water availability, water quality, and water-related hazards at scales ranging from single data-collection sites to regional and national levels ▪ Interpretive study and predictive model development to describe the potential consequences of water-related management actions (e.g., altered flow regimes caused by reservoir operations and diversions, groundwater withdrawals, exposure to agricultural chemicals, etc.) ▪ New methodologies for acquiring water resources information, including methods of data collection, quality assurance, data management, laboratory analysis, data analysis and simulation modeling ▪ State of the art hydrologic system management through computer models and GIS ▪ Research and data collection on surface water/ groundwater interactions ▪ Technology transfer, training, institutional strengthening
Fish and Wildlife Service	The U.S. Fish and Wildlife Service has a primary goal to conserve, protect and enhance fish and wildlife and their habitats for the continuing benefit of the American people. Among its key functions, the Service enforces federal wildlife laws, protects endangered species, manages migratory birds, restores nationally significant fisheries, conserves and restores wildlife habitat such as wetlands, and helps foreign governments with their international conservation efforts.	▪ Habitat restoration and protection for endangered and threatened species ▪ Restoration of fisheries ▪ Technical assistance in management of wildlife parks and reserves ▪ Legal and regulatory development for the protection of fish and wildlife and their habitats ▪ Implementation of international treaties, conventions and laws related to biodiversity, including CITES

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Environmental Protection Agency (EPA)	EPA is one of the primary government organizations responsible for the protection of human health and natural ecosystems. The Agency plays a major role in the regulation, protection and improvement of water resources and supplies of the United States.	▪ Legal, regulatory and standards development and enforcement ▪ Oversight of design, construction and maintenance of sewage treatment facilities ▪ Technical approaches for ensuring safe drinking water and improved water quality ▪ Techniques and approaches for preventing and reducing point and non-point pollution ▪ Water resources program development ▪ Capacity building for environmental professionals ▪ Community participation approaches in watershed protection and drinking water source improvement ▪ Partnership building with other units of governments and outside organizations
Federal Emergency Management Agency (FEMA)	The Federal Emergency Management Agency is an independent agency of the federal government, reporting to the President. FEMA's mission is to reduce loss of life and property and protect our nation's critical infrastructure from all types of hazards through a comprehensive, risk-based, emergency management program of mitigation, preparedness, response and recovery. FEMA provides support to prevent and reduce risk before disaster strikes, thereby lowering the amount of federal money spent on picking up the pieces.	▪ Disaster recovery services including resources and personnel to perform necessary functions, such as transporting food and potable water to the area, assisting with medical aid and temporary housing for those whose homes are uninhabitable, and providing generators for electric power to keep hospitals and other essential facilities in operation. ▪ Disaster planning, and development of mitigation programs ▪ Training of emergency managers and local officials, including planning and managing disaster 'exercises' ▪ Public outreach to better prepare for disasters ▪ Technical assistance to communities to promote safe and wise land-use planning in floodplains ▪ Management of federal flood insurance program

Appendix E (continued)

National Aeronautics and Space Administration (NASA)	NASA seeks to expand frontiers in air and space through exploration and innovation, serving America and benefiting the quality of life on Earth. Among its primary objectives are: (1) To advance and communicate scientific knowledge and understanding of the Earth, the solar system, and the universe and use the environment of space for research; (2) To explore, use, and enable the development of space for human enterprise; and (3) To research, develop, verify, and transfer advanced aeronautics, space, and related technologies	▪ Remote-sensing technology for multiple applications, including data collection from satellites, aircraft, balloons, and ground research ▪ Research and modeling on weather behavior, and the causes and patterns of natural disasters (floods, hurricanes, etc,) ▪ Long-term measurements for global change research ▪ Crop assessment and analysis to improve efficiency in the use of agricultural chemicals, reduce pollution and increase productivity ▪ Assessment of aquatic ecosystems including coastal marshes and estuaries
National Science Foundation (NSF)	The NSF is the nation's leader and steward of academic research in science and engineering. The Agency does not perform research internally, and instead provides funding to academic institutions and other non-federal organizations to conduct research in a wide variety of topics related to the hydro sciences. Most funding provided by NSF is researcher-driven and evaluated through a worldwide network of peer reviewers.	▪ Maintenance of a register of the current interests and qualifications of scientific and technical personnel and resources in the U.S. ▪ Close working relationships with the scientific and technical community in the U.S. and abroad ▪ Innovative, independent research in water resources topic areas including water contamination (anthropogenic and natural), causes and effects of desertification and extreme climate events, snow pack evaluation and studies, groundwater infiltration and recharge, complex geochemical and biogeochemical systems using isotopic tracers, and movement of water in karstic systems ▪ Research in other fields related to water resources management, including chemistry, physics, geological sciences, meteorology, biological sciences, computer science, engineering and the social sciences. ▪ Investigation into the social, cultural and economic aspects of water resources as they relate to decision, risk management, economics and law

Source: Adapted from a table that was originally produced by the Department of State and published as table A.1 of annex A in the "Senator Paul Simon Water for the Poor Act: 2006 Report to the Congress" (http://www.state.gov/documents/organization/67717.pdf).

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