

A message from the project directors...

This White Paper is an outgrowth of a joint effort between our respective organizations, the Center for Strategic and International Studies (CSIS) Global Strategy Institute and the Sandia National Laboratories Water Initiative, to explore the international dimensions of water—water access, water quality and human health, sanitation, linkages between water and economic development, and the implications of trends in water for international stability and security.

The rationale for this effort is, we are convinced, highly compelling. Water is already a critical challenge for billions of people across the planet, and the most recent projections suggest that in the future billions more will have their lives, their health and their livelihoods negatively affected by lack of water and poor sanitation. The level of international attention to the issue is growing and growing quickly—and for good reason. Nevertheless, the level of urgency regarding the constellation of water-related issues is significantly less pronounced than the magnitude of the challenges we face.

We launched our effort in the summer of 2004 with the idea of undertaking a survey on the current state of thinking on international water issues. Progressively, as we reviewed the massive amounts of literature on the various dimensions of international water issues, it became clear to us that merely surveying the field would be tantamount to “reinventing the wheel.” Progressively, it became clear to us that it would be preferable to more sharply focus our efforts in ways that might generate results above and beyond simply reviewing the state of existing knowledge.

Part of the rationale for this shift in thinking was the reality of the looming U.S. presidential elections—and the hope, regardless of the outcome of the presidential race, that a review of international policy challenges might be helpful to whatever political leaders were tasked with overseeing international water issues. Another factor that contributed to our shift in thinking was the “disconnect” that we perceived to exist between two complex and highly dynamic areas that animate our actions in the area of water (as well as in other domains): policy and technology. In the end, we were also swayed by the competencies of our respective organizations. CSIS has a longstanding record of developing bipartisan strategies and the policies necessary to implement them. Sandia National Laboratories has an impressive track record in developing and deploying various technologies—in the case of water, from desalination to modeling to water quality issues.

For these reasons, we chose to narrow our focus—to examining the areas of (1) how the United States formulates its policy toward international water challenges, and (2) the impact of technology. Both these areas, of course, are closely related. On the one hand, policy can and should be conditioned by an understanding of available technologies and an informed view of what new technologies, and what capacities, are on the horizon. That is clearly a challenge in light of the constant changes and innovations that we see on the technological landscape. On the other hand, our approach to technology can and should be shaped in part by public policy priorities and the range of constraints within which decisions regarding water are taken. But as we continued to examine both these areas, we came to see that such linkages were not always as evident—or as robust—as one might expect.

In the area of U.S. policies relating to water, for example, it was clear to us from the outset that U.S. national efforts are largely unconnected, tactical rather than strategic, skewed with respect to projects and recipient countries, and only marginally linked with the counterpart programs of other major donor countries (i.e., Japan and Europe). More fundamentally, we have been struck time and time again by how unclear the basic rationale is for defining water as a U.S. national interest. Is it a national security concern? Yes, it most certainly is—especially when one scans the many potential water-conflict areas around the world. Is it a foreign policy interest of the United States? Clearly, shared management of more than 260 basins across the world suggests both the potential for conflict and the possibility of cooperation, both of which have significant foreign policy implications for the United States. Is water a U.S. international economic interest? Decidedly so—especially when the competitiveness and technology endowment of many U.S. companies in the field are taken into account. Is it in the realm of U.S. foreign assistance and humanitarian interests? Of course. The dilemma, we believe, is that water falls under in the category of “all of the above.”

The upshot is that water does not fit neatly into one or the other organizational “boxes” of U.S. national interests. The practical result of this overarching importance of water is identifying what U.S. government agency can and should have “ownership” of the issue. The Department of State has the lead in coordinating water policy. Currently USAID has the lion’s share of spending in the area of water, but its activities necessarily are limited to foreign assistance and economic development issues within the scope of its mandate. And a multitude of other departments and agencies in the U.S. Government—from the U.S. Geological Survey to the Department of Commerce, from the Department of Agriculture to the Overseas Private Investment Corporation (OPIC)—also have interests and roles.

All this raises the need for an overarching strategy. The reality, however, is that the United States does not have an integrated national strategy for engaging on international water issues. It needs one—especially as the dimensions of the international water crisis continue to grow.

Another complicating factor is the nature of the international water challenge. As opposed to the sudden onset—and the tremendous urgency—of the agonizing HIV/AIDS pandemic two decades ago, the challenge of water has manifested itself in much more subtle ways. Although high-profile droughts serve occasionally to spotlight the effects of the systematic lack of water, the aggregate effects—sickness, lack of hygiene, lack of sanitation, and lack of economic opportunity all take time to manifest themselves. As a result, water is often overshadowed by other “more immediate” human health and development priorities such as HIV/AIDS. For example, the tragic events in the Indian Ocean in December 2004 and more recent devastation caused by the hurricanes along the Gulf Coast, served, among other things, to highlight once again how critical water access and quality are immediately after a major disaster.

In the area of technology, policy can and should be more fully informed by the impact of existing and on-the-horizon technologies on both the supply and demand sides of the world water equation. On the supply side, the introduction of new technologies and improvements in existing technologies are changing the constraints that in the past have defined both opportunity and cost. More specifically, new innovations, higher efficiencies, and integrated approaches are changing the dynamics of water supply. Furthermore, we need to reassess the applicability of the full range of technologies already at our disposal. While highly sophisticated desalination operations might be the “right” answer for some regions or circumstances, other regions might be able to apply “low tech” approaches with far more significant results. This implies a more complex differentiated strategy to meet the range of supply-related challenges. It also implies more forward-looking thinking about the impact of technologies—high to low—on the horizon.

The same observation applies to the demand side of the global water equation. The objective is to deploy both existing and new technologies and methodologies to reduce the amount of water we use in our lives—including conservation, improving efficiencies over the life-cycles of infrastructures and projects, and shifting water-related practices (i.e., agricultural techniques) to stem the surge in anticipated future demand for water across the world. Progress can be achieved through broader use of existing technological tools, on the one hand, and through innovation of existing approaches and practices, on the other. A specific example of this point is the extent to which demand-side gains could be achieved if major non-efficient agricultural areas of the world were to adapt the practices currently in use in Taiwan, Israel, and Japan—which currently have irrigation efficiencies of between 50-60 percent. Another closely related factor is the degree to which we can integrate our management of this scarce resource. That suggests new thinking in the ways in which we deal with water from capture to use to sanitation and sewerage to environmental costs. Finally, there is our capacity to monitor supply and demand trends—and our capacity to adjust and refine our approaches to water in a timely manner. Data gathering, information sharing and dissemination of analysis can all be carried out on ever greater scales and at ever greater speeds.

In both these areas—U.S. policy and technology—it has become increasingly clear to us that there is an important opportunity for innovation in the broadest sense of the expression. There is an important opportunity to innovate in the area of U.S. policy by exploring further the multifaceted role of water in U.S. national interests, by suggesting the contours of a broader national strategy, by assessing

the level of investment—both at the international and national levels--necessary to achieve explicit targets and benchmarks, and by weighing the rate of return of technologies—both present and future—on national, regional and international plans and programs on water.

In technology, the corresponding case for innovation is straight-forward. It begins with technological innovation itself—our capacity to modify through scientific discovery and innovation both the supply and demand sides of the world water equation. But it goes well beyond that, as significant as it is. Innovation in technology also implies innovation in bringing to bear the stock of existing technologies in ever more efficient ways. That, in turn, implies new thinking with respect to applications of technology—especially with respect to the development and deployment of technologies on the basis of a greater rate of social return.

This White Paper addresses many of these issues. The goal in writing this document is to define briefly where things stand and then frame some of the issues that might help us identify areas of future innovation. With it, we hope to promote discussion among those individuals and organizations focused on the issue of water—as well as among others who should be. To that end, our respective organizations cosponsored two workshops—the first focusing on innovation in U.S. water policy, in February 2005, and the second on innovation in technology, in March 2005. Both these events brought together expertise from a number of domains and perspectives for the purpose of defining how to proceed.

We would like to thank our respective teams for all their hard work in writing this White Paper. They showed commendable perseverance through numerous revisions, edits, and expressions of opinion by us and by others. On the CSIS side, Laura Keating showed extraordinary commitment to developing, revising and refining draft after draft after draft. We also owe Laura a huge debt of gratitude for all her efforts to make possible the Roundtables. Sam Brannen contributed significantly to the development of the final section, on potential areas of innovation in U.S. policy. On the Sandia side, we are especially indebted to Howard Passel. In addition, we wish to acknowledge with gratitude the significant contributions of Ray Finley and Vince Tidwell.

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