

In pursuit of the millennium development goals in water and sanitation

Casey Brown^a and Arthur Holcombe^b

^a *Corresponding author. Division of Engineering and Applied Sciences, Harvard University, Pierce Hall 128, 29 Oxford St, Cambridge MA 02138, USA. Tel: 617 496 4653. Fax: 617 496 1457.*

E-mail: CaseyB@deas.harvard.edu

^b *United Nations Association of Greater Boston, One Milk Street, Boston MA 02109, USA*

Received 1 August 2003; accepted in revised form 26 November 2003

Abstract

In recognition of the United Nations designating 2003 as the “Year for Fresh Water” and the endorsement of the Millennium Development Goals (MDG) in water and sanitation, the United Nations Association of Greater Boston (UNA-GB) convened speakers to address strategies for meeting these goals. Water professionals from the public sector, private sector and non-governmental organizations shared their experiences and recommendations. Over the course of the discussions, three themes emerged that appear critical for implementing successful water initiatives. First, the water and sanitation financing gap requires mobilization of local capital through innovative financial tools. Second, public institutions that manage water must be focused and enabled to carry out their mandate effectively. Private sector collaboration can only succeed when coupled with strong public partners. Third, the MDG cannot be met with conventional technological approaches. Technology must be appropriate to the financial and technical context to which it is applied and must engender efficient use of water resources.

Keywords: Millennium Development Goals; Point of use technology; Water and sanitation; Water financing

1. Financial requisites

A broad range of estimates exist on the amount of financing required annually to achieve the UN Millennium goals of reducing by half the proportion of people without access to safe drinking water and sanitation by 2015. The estimates ranged from a low of about \$12 billion annually estimated by the Water Supply and Sanitation Collaborative Council to a high of \$180 billion annually by the Camdessus Commission above the current \$15 billion spent annually to achieve the water and sanitation goals. The wide range reflects in part a differing perspective on whether

investment should continue to focus on relatively capital intensive urban schemes targeting largely middle class water and sanitation requirements, or should shift to lower technology, more labor-intensive approaches better suited to the needs of relatively poor populations living in urban slums and poor rural areas.

Conference speakers acknowledged that major international donors would have to continue helping with the large costs of water storage infrastructure in many countries. However, the local public and private sectors would have to cover much of the costs of expanding water and sanitation services to poorer areas and populations. This would require greater encouragement to local banking and other financial institutions, such as pension providers and credit unions as well as private enterprises and venture capital companies, to mobilize local savings and provide equity financing and credit for investment in relatively small-scale water supply and sanitation infrastructure. Experience shows that such small-scale schemes tend to be relatively low cost and thus affordable by relatively large numbers of poor households who fall outside the services of the current urban water and sanitation systems. Decentralized, low cost water and sanitation development schemes tend to be as financially sustainable as other larger, more capital intensive schemes targeting higher income groups, especially when local government helps to subsidize the “soft” costs of training and other institutional support arrangements.

Capital mobilization for water and sanitation will require innovative financing schemes in countries with undeveloped capital markets. This can be accomplished by adapting the types of equity and debt financing institutions and instruments developed previously in relatively advanced capitalist countries. Notable in this respect was the success of the United States Agency for International Development (USAID) in providing guarantees to local private financial institutions and other enterprises willing to raise funds and risk providing loans for the financing of local infrastructure, including water and sanitation infrastructure. They estimated that 38 schemes providing guarantees to local private banking and other asset accumulation and management institutions had helped to generate local lending for infrastructure development potentially up to the local currency equivalent of \$600 million.

2. Institutional requisites

Local private sector provision of financing and technical services can only be effective when reinforced by a strong public sector institutional framework that provides legitimacy, acceptability and longer term public support and for water and sanitation development. This requires the presence of a public sector authority with well-trained staff, a focus on the core water and sanitation responsibilities and the independence to raise funds and otherwise to be enabled to carry out its core mandate effectively on a sustainable basis. Experience shows that focused and enabled public authorities tend to retain public support and an ability to carry out their mandates.

Critical also in effective public-private sector collaboration in promoting water and sanitation goals is a framework characterized by good governance, sound economic policies and accountable and transparent public and private sector entities. Several speakers described the importance of local customer awareness and participation in the planning and implementation of water and sanitation services. This can be achieved through establishment of mechanisms for consumer consultation and review, local water associations and other arrangements for ensuring public

awareness and support for the work of public and private sector institutions engaged in the provision of water and sanitation services.

3. Technical requisites

Providing safe drinking water and sanitation for populations lacking such services is often considered a matter of funding and not of technology. If funds are available, the thinking goes that existing technology can be implemented to provide the desired services. However, beyond the basic financial issues of conventional water technology are important technical questions. Those posed at the conference asked whether conventional water and sanitation technology is sustainable from the hydrological or financial point of view and whether conventional technology is appropriate for developing countries.

Presenters argued that conventional approaches are likely to require rethinking owing to the need for better water efficiency and reduced capital input. In many Asian cities, such as Calcutta, Jakarta, Manila and Hanoi, more than 50% of the supplied water is unaccounted for. The capital intensity of implementing centralized water systems hinders expansion into underserved urban areas, including slums and peri-urban communities. These areas constitute a large and growing percentage of the population that needs service, as urban growth continues to be most vigorous at the urban fringe where infrastructure does not yet exist. As a result, centralized systems requiring capital-intensive delivery networks may not be appropriate as cities continue to grow spatially at rates that match population growth. Implementation of such systems is even more costly in rural areas, where infrastructure is non-existent and populations are more widely distributed.

An effective alternative to status quo water infrastructure has gained momentum in many countries. So-called “point of use” methods such as the US Center for Disease Control and Prevention’s (CDCP) Safe Water System offer protection from waterborne disease for communities that do not have access to safe water and sanitation. The Safe Water System consists of hypochlorite solution sold to individual consumers by the bottle and plastic water vessels with spigots that minimize the risk of contamination by the water handlers, as well as water safety education. The World Water and Sanitation Collaborative Council employs a community-based approach focusing on water and sanitation “software,” i.e. people’s knowledge of waterborne risk prevention. These alternative approaches do not replace the requirement for effective water supply and sanitation systems, but do provide stopgap relief from the burden of waterborne disease. In particular the U.S. CDCP has found that the Safe Water System consistently reduces the occurrence of diarrhea by 25–85% in the countries in which it is applied. Part of the success of these systems is their reliance on the existing commercial structure instead of long-awaited water infrastructure.

Technical solutions to the competition for water resources are initially less clear. Economic theory contends that efficient pricing policies will ensure that water is allocated to the most productive use. In practice, water pricing succumbs to inaccurate metering, political opposition to raising water tariffs and imperfect knowledge of water supplies. In western countries, regulation intervenes to attempt to remedy these market failures. Litigation, market-based initiatives and regulation are all likely to play a role in developing mechanisms to administer water to competing uses. However, new approaches are needed to alleviate detrimental competition for water.

New sources of water are also required. One of the most important may be the world's oceans. Desalination is a proven technology that may play an increasingly important role as costs continue to decrease. Better management of freshwater resources is another approach for augmenting conventional water supplies. The reigning paradigm for collection and disposal of stormwater runoff wastes a valuable source of water and is counterproductive to responsible water resource management. Stormwater collection systems can be designed with pervious materials that facilitate recharging while also preventing puddling and land use plans can accommodate known recharge zones. Decentralized and on-site wastewater treatment systems can be employed that treat and discharge sewage locally, reducing collection system costs and adverse effects.

4. Conclusion

Historical lessons teach us that money alone is not sufficient to improve access to clean water and sanitation in meaningful and sustainable ways. The themes presented here have a particular pertinence, as they resided as an undercurrent in the varied voices of government funding agencies, private sector firms and grassroots in-the-field organizations represented at this conference. As described in this report, calls for new financing approaches, better collaboration between governments and the private sector and appropriate, water-efficient technology emerged from the experiences of those working in the water sector. These recommendations serve as important guidelines for successful implementation of new initiatives to meet the Millennium Development Goals. A strategy for meeting the Millennium Development Goals for water and sanitation should incorporate these lessons.

Acknowledgements

The authors would like to thank the presenters at the conference, from whose material their conclusions are drawn. They are Richard Jolly, Jonathan Margolis, Richard Fox, Peter Rogers, Russell de Lucia, John Wasielewski, Alan Hurdus, Malcolm Morris, Kazi Jalal, Eirah Gorre-Dale, Marcio Amazonas, Dyanne Hayes, Jim Shine, David Marks, Paul Barlow, Arthur Goldstein, Eric Mintz, Charles Harvey, Bob Zimmerman and Valerie Nelson.