

Chapter 17

Research

For an organization, institution, or government agency to be effective, it must constantly engage in research as a part of striving to do better. Research is needed in the urban water supply sector to provide awareness and understanding that in turn will give a basis for sound decision making. This chapter identifies topics that can be further investigated and researched, and it suggests some focal points for that research. In general, there is a need for balanced research that takes into account social, economic, and environmental considerations. It is important that the results of research be shared, which can be done by posting these results on the Internet.

A. Topics for Research

Intermittent Supply

The subject of intermittent water supply in developing countries requires research. We need to know the real cost of intermittent versus 24-hour water supply. What are the pumping costs? What are the storage costs? What are the treatment costs? What is the volume and value of water wasted every day? How accurately can water consumption be measured? What is the quality of the water delivered? What is the value of time wasted waiting for water? What is the anxiety factor? How many days in the year does water not come? What is the prevalence of bottled water for drinking? What solutions to this situation do the stakeholders envisage? What is the extent of good hygiene practiced in homes? This research should be done in at least 10 cities in five countries to get a good understanding of the situation.

Income Profiles

Every water utility involved with a city in Asia with a population of over 100,000 should evaluate the household income profile for people living in the potential service area. This should be done on a sample basis and reported with reference to location. It should then be aggregated for overall results. This provides an upper revenue limit based on affordability. Of course, this information must be analyzed in the context of alternative

water supplies and the tariff structure to determine willingness to pay.

Alternative Water Supplies

Willingness to pay for piped water depends more than anything else on what alternative water supplies are available to consumers. Research should carefully evaluate this factor to ensure that demand is not overestimated in new water supply schemes. A factor in the use of alternative water supplies is hygiene education, so this too should be evaluated (see Health Factors on page 126). What is the quality of alternative supplies and for what purpose are they used? Is there a need for education and awareness programs?

Effective Subsidies

What are the subsidies being provided by governments to different water users, including farmers, urban domestic consumers, industrial consumers, and rural domestic consumers? Are there apparent or real cross subsidies from (i) high-volume domestic consumers to low-volume domestic consumers, (ii) industrial consumers to domestic consumers, or (iii) urban consumers to rural consumers? Consider the block tariff structure—who benefits most from subsidies, the rich or the poor? How many people are not connected (in their homes) to piped water?

Price Elasticity of Demand

There is a need to look at per capita water consumption and the cost of water. Does a tariff increase result in a temporary or permanent reduction in the volume of water used? This is now easy to evaluate, if a computer sampling of accounts is used. To what extent is demand influenced by income, by tariff level, and by alternative source availability?

Service Levels and the Water Balance

In any major city there are gray areas relating to statistics on service levels and the water balance. If the NRW rate is 60%, what is the basis for assuming

that 10% is due to metering inaccuracies, 30% to illegal use, and 20% to leakage? If there is 30% illegal use, how much of that comes from illegal sales? How much results from illegal connections? If there are 10 million people in a city and only a million connections, how do those not connected get water? Do they use shared connections? Do they purchase from neighbors or vendors? Do they use groundwater? What is the volume of water used by each category, and what do they pay for it?

Small-Scale Water Providers

There needs to be more research on these entrepreneurs. All should be registered and officially recognized to understand how they fit into the overall water supply system. The sources of their water, the amount of water distributed, the method of distribution, the source cost, the consumer cost, and the quality of the water delivered need to be recorded. The results need to be compared for compatibility with the research (above) on service levels and the water balance. The profit element for SSWPs needs to be examined. Then the long-term role of SSWPs vis-à-vis government policies and formal piped water development plans needs to be assessed. This is big business, and it is important to know as much as possible about it.

Health Factors

There is a need for research into the extent of the knowledge and practice of hygiene, especially among the more informal settlements in Asian cities. What are the sources and quality of drinking water? Is it boiled or filtered? What is the practice concerning hand washing? What is the practice concerning sanitation? Since major improvements in hygiene practice can be made at little cost, this is an area where research can quickly lead to action. Research should be conducted on the stunting of child growth and its links to the quality and quantity of drinking water.

Pollution

Research is needed on big industries that pollute waterways. What is the nature and quantity of effluent produced? What pretreatment or treatment is done on-site? What type of treatment is required by law? Are industries properly zoned? What are the official government policies on zoning? What are the regulatory arrangements? What are the consequences of uncontrolled pollution? Who benefits? Who pays?

Groundwater Monitoring

As mentioned elsewhere in this book, groundwater has been overexploited in the past and continues to be overexploited now. There is a need to control extraction, to ensure that the resource remains sustainable and usable. Research is needed to establish the amount of the current extraction and compare it with the sustainable yield. Research must cover the incidence of falling groundwater levels, the incidence of saline intrusion in coastal environments, and ground subsidence.

The Urban Poor

There needs to be, for public review, an independent annual report on the water supply and sanitation situation of the urban poor. This should include poverty mapping of the city, water supply and sanitation service levels, and costs (both direct and indirect) to the urban poor. The annual progress in improving the plight of the poor should be highlighted. To what extent are government policies on water supply and sanitation services to the urban poor being implemented? Are modifications or improvements to those policies needed?

Private Sector Participation

After 10 years, the jury is still out on PSP in urban water supplies in Asia. There is a need to supply those governments considering PSP with independent and objective assessments of ongoing PSP activities in the sector. The research should identify (i) attempts that failed to get off the ground and why, (ii) problems with ongoing PSP contracts, (iii) success stories, and (iv) the prognosis. The research should take a look at how well the objectives of increased efficiency, more investment funds, and greater autonomy are being realized.

B. Focal Points for Research

It is fine to suggest lots of research, but who is going to do this, and how is it going to be funded? First, there is the need to determine focal points for research. In this regard, it must be determined if research will be done on a regional or national basis. At a regional level, institutions like ADB, Japan International Cooperation Agency, World Bank, UN-Habitat, World Health Organization, Economic and Social Commission for Asia and the Pacific, and the Asian Institute of Technology (Bangkok) can be focal points. At a national level, the

Marga Institute (Sri Lanka), the Ateneo Center for Social Policy and Public Affairs at the Ateneo de Manila University (Philippines), the National Institute of Public Finance and Policy (New Delhi, India), and PERPAMSI (the association of water utilities in Indonesia) are examples of potential focal points. Institutes aside, any university in Asia that wishes to undertake research on Asian urban water supply issues in connection with a thesis for a master's or doctorate level degree could be a potential focal point. The University of Tokyo has been working with ADB for several years on such topics. Where regional institutions like ADB are involved, it is more natural for the research assignment to be undertaken by selected consultants.

C. Funding Research

Whether it is conducted by World Bank, ADB, or any other institution involved in urban water supply development in Asia, there is a need for research and for funding that research. In this way all stakeholders will be more aware of facts, and important policy reform decisions based on these facts can be made. The two institutions mentioned have access to special water cooperation funds, which are heavily supported by the Dutch Government. The World Bank's Water and Sanitation Program is supported by bilateral development agencies. ADB has its own budget for advisory technical assistance. Most important of all, however, is that the participating government or governments request support for research on the topics mentioned above. There has to be an expressed need. There will also be strong competition for funds, so the justification must be strong and well presented.

Research in a Nutshell

- Research is a part of the very necessary effort to increase awareness and understanding among all stakeholders.
- Researchers should balance social, economic, and environmental considerations.
- Research should target income profiles, subsidies, service levels, SSWPs, intermittent supply, alternative supplies, health factors, price elasticity of demand, the urban poor, illegal use, illegal sales, corruption, pollution, groundwater, and PSP.
- Focal points are universities, institutes, and water associations.
- Funding could be sourced from ADB, World Bank, and bilateral development agencies.
- Results should be posted on the Internet.