



WATER for ALL



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# Water Supply and Sanitation Issues in Asia

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# Water Supply and Sanitation Issues in Asia

Arthur McIntosh

## Introduction

There are many factors preventing people in developing countries in Asia, especially the poor, from getting sustainable access to good water supply and sanitation services. The issues involved have been pinpointed and elaborated by specialist sector consultants working in the region, Asian Development Bank (ADB) staff working in the region, and people active in the water sector in the developing countries.

Water and sanitation issues are seldom general across countries. Many are country or location specific. Many are highly influenced by the political environment, which, of course, varies greatly from country to country. But countries can learn from each other, share good experiences, and work together to solve common problems. Indeed, this is a function of the *Asian Water Development Outlook (AWDO) 2007*.

## Major Issues

In the past, it was always assumed that the resource—water—was available in sufficient quality and quantity for drinking and household use, and that issues related to delivery of water were the main concerns, such as expanding distribution systems to keep up with demand. Now, huge rivers whose flow was taken for granted, no longer always reach the sea.

Groundwater supplies have been over-exploited. Industry competes with agriculture for a share of what was once perceived as an unlimited resource and water that is returned to waterways for downstream use in major population areas, the cities, may be contaminated with industrial and agricultural chemicals. Pollution in the cities themselves, especially open defecation and open sewers in some Asian Cities, creates further health and environmental hazards. Where water supplies are intermittent, contamination is common and can make the supplied water unfit for household use.

Adequacy of clean water, a basic human need, has become the critical factor. The problems that have become most urgent, therefore, concern the resource:

- water quality and pollution,
- water conservation, and
- water and demand-side management.

While resource matters are now of primary concern, the purpose of solving the related water problems is to provide clean water to those who have none, in particular the urban poor. Thus, the parallel issue to water availability is connecting the urban poor to piped water.

Finally, the open defecation problem, especially in South Asia, concerns the health and dignity of a great many people, especially

females, not to mention the environmental aspect. Although associated with water pollution, it is large enough an issue to require special and urgent attention.

Solutions to the problems in these three major issues—water resource quality, conservation, and management; open defecation; and connecting urban poor to piped water—are discussed below.

## Water Resources

### Water Quality and Pollution

#### Quality concerns

A major water issue in developing countries is drinking water quality—the poor quality of water that results from intermittent water supplies. This affects the rich and poor alike. It affects the rich because they store water in overhead tanks that need regular cleaning, otherwise the water gets further contaminated. It affects the poor because of contaminated water sucked into the pipes under vacuum conditions, wherever there are leaks. For these reasons it is important that most of the monitoring of water quality should be at the tap of the user. Where 24-hour water cannot be provided at present, a good solution is for the utility to provide bottled water at a price the poor can afford.

When the issue of bottled water is discussed, there are two main points that need to be evaluated. The first is the source and quality of the water. People want to know they can rely on the water quality at all times. The second is the distance from the bottled water source to the customer, because this more than anything else dictates the cost to the consumer. On the quality at source, the water utility will normally produce good water from its treatment plant, but due to intermittent supply this water will probably be contaminated wherever it is distributed. Bottled water suppliers will invariably use this water as their source. They clearly need to provide additional treatment to the water and many (in the water stations of Manila) do just that.

However, there is an opportunity for the water utility to also provide bottled water without further treatment. To do this, it needs to have a dedicated untapped 24-hour bulk supply line that preferably circles the city. Then it will be possible to have water stations fed from this pipeline

that will bottle and sell this water to the public. As shown earlier, water can be transported best by pipe both for quality and cost reasons. An intermediate or interim option is for providing good quality water from the water utility to utility owned water stations by tanker for bottling and selling. There is also no reason why the utility cannot sell this water in areas predominantly occupied by the poor at a discount rate to make it affordable to all.

An issue that will arise is that the water utility will undercut the unregulated private sector, which is already taking advantage of the demand for good quality drinking water. Where those connected with the utility are already benefiting from the private sector bottled water business, there will be resistance to cooperate. One solution is to let all operate together, and closely monitor the quality of water produced by both.

#### Pollution concerns

Sources for water supply in cities exhibit a pattern of overexploitation of groundwater moving to surface water, then as cities expand and pollution grows, moving to surface water sources further and further from the city. What is needed is to control pollution at source; then there will be no need to go further afield for good water. Expediency is probably what is forcing these options, because cleaning up pollution is not a quick fix. More than anything it has to overcome political influence.

Several countries have started to address the water quality problem by implementing large-scale programs and action plans to rehabilitate degraded streams and depleted aquifers. These programs are typically given legislative or statutory authority, such as that provided by Thailand's National Water Quality Act, the Philippines Water Quality Code, India's Environmental Protection Act, the PRC's Water Law, and the Republic of Korea's Water Quality Preservation Act. Success stories with respect to rehabilitation and protection of water quality of rivers come from those countries where policies promote a multisectoral and multidisciplinary approach to the management of water resources.

The major sources of pollution can be classified into municipal, industrial, and agricultural. Municipal water pollution consists of wastewater from homes and commercial establishments. For many years, the main goal of treating municipal wastewater was simply to reduce its content of suspended solids, oxygen-demanding materials, dissolved inorganic compounds, and harmful





bacteria. In recent years, however, more stress has been placed on improving the means of disposal of solid residues from the municipal treatment processes.

Since the Second World War, water quality has been heavily affected worldwide by industrial and agricultural chemicals. Eutrophication of surface waters from human and agricultural wastes and nitrification of groundwater from agricultural practices have greatly affected large parts of the world. Acidification of surface water by air pollution is a recent phenomenon and threatens aquatic life in many areas. In developed countries, these general types of pollution have occurred sequentially with the result that most developed countries have successfully dealt with major surface water pollution. In contrast, newly industrialized countries such as the PRC, India, and Thailand are now facing all these issues simultaneously. Awareness and education will most assuredly continue to be the two most important ways to prevent water pollution.

In March 2005, officials in Beijing warned that 70% of the PRC's rivers and lakes were polluted.<sup>1</sup> It is a sign that the PRC is struggling to deal with the impact of its rapid economic development. The country's waterways are dying and its rivers are running black from industrial effluent and untreated sewage. In the nation's cities, groundwater is the main source of drinking water, but 95% of the samples tested are polluted, some with sewage. In Harbin, a major city of 3.8 million people, the water supply sourced from the adjacent Songhua River had to be shut down for five days, after toxins spewed into a nearby river following a chemical plant explosion.

The PRC is one of 13 water-deficient countries in the world, with per capita water availability of 2,100 cubic meters in 2005. By comparison, the USA has 10,000 cubic meters available per capita. The PRC's problem is exacerbated by its uneven population distribution; 45% live in the northeastern part of the country, where only 15% of the available water is located. Also, as the PRC Minister of Water Resources noted, there is low efficiency in the use of its water for economic purposes. The amount of water used to produce a ton of steel in the PRC ranges from 23 to 56 cubic meters, whereas in highly industrialized countries, such as the USA and Japan, the average is less than 6 cubic meters. Tougher regulation and harsher punishment for officials who continue to ignore the problem have helped. Thus, wastewater treatment is

becoming extremely important to the PRC's plan for better water and analysts expect the number of wastewater treatment plants to increase dramatically during the next five years.

India is rich in water resources, being endowed with a network of rivers and blessed with snow cover in the Himalayan Range that can meet a variety of water requirements of the country. However, with the rapid increase in population and the increasing demands of irrigation and human and industrial consumption, the available water resources in many parts of the country are being depleted and water quality has deteriorated. Indian rivers are polluted by the discharge of untreated sewage and industrial effluents. The Central Pollution Control Board has established a network of 870 monitoring stations on rivers, lakes, and groundwater sources across the country.<sup>2</sup> Water samples are analyzed for 28 physiochemical and bacteriological parameters as well as, for selected samples, nine trace metals and 15 pesticides. The monitoring is done on a monthly or quarterly basis in surface waters and six monthly for groundwater. The water quality data are reported in the Water Quality Statistics Yearbook. The results indicate that organic pollution is predominant and almost all the surface water sources are contaminated to some extent by coliform bacteria that make them unfit for human consumption unless disinfected.

Southeast Asian cities are confronted with a range of environmental challenges with few success stories. State-driven and top-down solutions, which include cleaning and beautifying waterways and relocating the urban poor have proven very expensive, unsustainable, and have invited conflict. Partnerships between local governments, communities, and NGOs can do better in controlling urban pollution.<sup>3</sup>

The proceedings of a regional workshop run by the Food and Agriculture Organization of the United Nations (FAO) in Bangkok in 1999 on Water Quality Management and Control of Water Pollution, noted that water quality management is first and foremost a problem of policy. Many countries fail to recognize the national significance of water quality, the cost of degraded water to the national economy and to the agricultural sector, and the loss of environmental benefits from water pollution. Attention needs to be given to (1) exploiting the potential of treated wastewater and excreta as valuable resources, (2) dealing with salinity problems, (3) addressing low water-use efficiency, (4) introducing institutional and legal reforms, (5)

making data programs respond to policy matters, (6) greater accountability of the private sector in terms of management practices and (vii) the need for extensive capacity building throughout the sector.

It is interesting to note that as far back as 1970, following the Clean Water Act in the USA, the Government provided US\$50 billion to build wastewater treatment facilities.

### Pollution Transparency

A surface water policy on pollution should be clearly stated by the government and be brought to the public eye at least once a year. All major river systems, especially those above water supply intakes and downstream of cities, should be regularly monitored for pollution. These results should be analyzed and a report prepared for the public (meaning it should not be too technical for a layman to understand). Government should be required to respond with either an endorsement or modification of its policy as well as a budgeted action plan to ensure its implementation.

## Recommendations

- (1) Treat pollution at source; point sources are easier to monitor.
- (2) Legislation is important, but policy and action are more important.
- (3) Multisectoral and multidisciplinary approaches are needed.
- (4) Address the disposal of solid residues from municipal treatment.
- (5) Monitoring water quality is important for transparency and policy changes.
- (6) Invest in wastewater treatment as being done now in the PRC.
- (7) Look for local government/community/NGO partnerships.
- (8) Donors can help with capacity building.
- (9) Awareness and education are cost-effective ways of dealing with pollution.
- (10) Don't be afraid to subsidize with grants.

## Water Conservation

The first and urgent step toward conserving water resources is a national Department of Water Conservation. It is time for all nations to set up such a government department now, and not wait until a water crisis is on the nation, either nationally or locally. The first requirement is transparency about what is known and its

analysis. More than likely this will reveal shortcomings in knowledge that need to be addressed in order for decision makers to act on holistic solutions.

With regard to transparency about water use, the public have a right to know details of the following water uses:

- Irrigation: Who uses the water? What do they produce?
- The government subsidy for irrigation
- Irrigation methods: water use versus productivity
- Irrigation versus water supply; the comparative usage
- How much piped water losses?
- How much used by households?
- How much used by non-domestic users?
- What steps taken to control non-domestic water use?
- Average tariff for domestic use
- Average tariff for non-domestic use
- The government subsidy for water supply

With regard to domestic water consumption, the following questions are pertinent:

- Who is using all the domestic water?
- Can we measure the average consumption as well as the top decile average consumption and the bottom decile average consumption?
- Does the tariff structure seem to be working to control water wastage, as well as allow minimal use at a low tariff?
- Is there price elasticity of demand?
- Can we publish who is using all the water?
- Can we adjust the tariff structure to better achieve our objectives?

In Australia, water councils are panicking over drought and coming water crises and have attempted to control water use in the home by giving households a four-minute timing device to limit showers to that duration. This is misdirected management. A local authority should have the power to control water use through the tariff at the meter, not inside the home. The irony is that these councils read the water meter only once every six months; they have no idea what the water use is on a month by month basis. In this day of high technology, there is no excuse for not knowing water use on a monthly basis for every household and publishing the names of culprits of excessive use.

Some other water conservation solutions are the following:

## Rainwater and Stormwater, an Untapped Resource

In more and more cities, local authorities are legislating to require new buildings to incorporate rainwater harvesting facilities. At the same time, it may be appropriate to give the owners of existing buildings a time frame of say five years to comply in likewise fashion. International “Waterwatch” organizations can usefully monitor the cities in each country that are following these new water ethic principles.

Recently, Singapore demonstrated how it is possible to use the streets of a city as a water supply catchment. Stormwater runoff is indeed an untapped water resource that in times of water scarcity becomes more and more important. For this reason, countries and cities that insist on combining sewage with stormwater might need to take a second look at the long-term implications of such a policy.

## Involving the Private Sector; Incentives for Water Conservation

There are many things to do with water supply in which the private sector can perform better than the public sector on average. Some examples include training and development of professional staff, construction of new facilities with minimal bureaucracy and so with greater expediency, and funding of infrastructure (like build-operate-transfer treatment plants). However, when it comes to water conservation, how do we reconcile a private sector objective (the more we sell the higher our profit) with reducing excessive consumption? It would seem that the client local or central government would have to offer the water company special incentives to keep water use down below a certain figure. The tariff structure (over which governments have some control) can help the private sector encourage water conservation. Also we should remember that while the average water consumption in a situation looks reasonable, the average for the top or bottom decile may be highly inequitable.

## Groundwater Use

Government needs a clear policy on the use of groundwater, especially in urban areas. It cannot develop that policy unless it has good data from the field on groundwater levels. All those who extract groundwater other than by hand pump, or through a dug well, should have a license to do so and their extraction volume should be metered. The government needs to have a comprehensive set of monitoring wells from which data on

groundwater levels and groundwater quality can be ascertained. An annual groundwater monitoring report should be prepared and published for public consumption. It should include comment from groundwater users and the public. Each year, the government should reflect the results of the monitoring, either in an endorsement or modification of their existing groundwater-use policy. Further, governments should announce a budgeted action plan tied to ensuring the implementation of that policy.

## Reverence for Water

Water has held a prominent place in all religions. It is the essence of life. We should encourage the passing on to younger generations of the reverence for water that was once learned but is now forgotten. It is time for researchers to produce a book for children and another for adults that is easy to read, but has real meaning to our everyday lives and our use of and reverence for water.

## Water and Demand-side Management

Two basic elements of water supply management are recovery of costs<sup>4</sup> and controlling demand such that it does not exceed supply. Both aspects can be largely managed through tariffs.

As with all aspects of water supply development, the appropriate tariff starts with the policy objective. Certainly in the large cities of Asia (population over one million), most of which are experiencing rapid economic growth, cost recovery for water supplies should be attainable within reasonable limits. Smaller cities and towns and villages must be capable of meeting all operation and maintenance costs from consumer tariffs. Clearly the water supply will not be sustainable in the long term if this cannot be achieved. Thus, governments have good guidelines for policy already. They need to articulate this policy clearly and let the regulatory body (be it a commission, a one person regulator, or even a self-appointed NGO) monitor the implementation of that policy and report regularly to the public.

It is the reluctance of elected officials to increase tariffs that has, more than any other single factor, constrained water supply development in terms of quality of service and coverage. Also, it is their reluctance to consider funding development directly from tariffs that has, as a matter of policy, further constrained develop-

ment. The main reasons given are first that the utility is not operating efficiently, even though it is obvious that the utility needs enough revenue to operate, maintain, and expand the system. Second, the poor cannot afford to pay the tariff; yet, there are few documented cases in the developing world where the poor cannot afford the tariff. The main reason for this is that on a volumetric consumption tariff they have options to use smaller or larger amounts. We know the poor can afford to pay a tariff also because many already pay very high unit rates for water from vendors. Third, “there is an election this year.” Such an excuse is invalid because there are always local elections, state elections, national elections, presidential elections, etc. Political circumstances should not be a factor.

## Impact of Low Tariffs

Low tariffs affect especially the urban poor, because there are inadequate funds to extend services to them. But there are many other impacts that, taken together, build a sound case for increasing water tariffs appreciably. Effects of the current low tariff situation are:

### Low tariff encourages corruption

- Low tariffs are perpetuated by corruption; if the official tariff is very low and the utility charges the consumer double, there will be no great outcry.
- Low tariffs are perpetuated by vested interests also tied informally to the utility, such as water vending

### Low tariff puts sustainability of investments at risk

- It means there is inadequate money for expansion of water supplies, especially from conversion of public taps to direct connections to help the poor.
- It means maintenance of assets is sadly neglected and assets depreciate rapidly.
- It discourages investment from external donors, such as the World Bank or ADB.
- It perpetuates long-term dependence, which interferes with sustainability of investments.
- It disempowers the consumer—he who pays the piper calls the tune.

### Low tariff jeopardizes operations

- It means corners are cut in pumping hours and lack of use of chlorine for disinfection.

- It cannot support well-paid professional staff, so operation and maintenance are poor.
- It lowers the morale of staff in the water utility. The author has witnessed this first hand several times in Sri Lanka.
- It means finances are inadequate to address the water losses in the system.
- It lowers collection efficiency because the transport cost of paying the bill is sometimes of the same order of magnitude as the water bill itself.
- It discourages private sector participation in operations.

### Low tariff subverts official policy

- It subverts official policies of full cost recovery, thus undermining all policy.
- It perpetuates lack of autonomy of the water utility because government must always come to the rescue.
- It perpetuates government subsidies that are not transparent.

### Low tariff hurts the poor

- It prevents the poor from getting connected to piped water through a surcharge on the water bill of existing piped water consumers.
- It perpetuates the inequitable subsidy to the rich, not the poor.
- It ignores objectives. One objective should be connecting the urban poor to piped water. The other should be uninterrupted piped supply to the home.

### Low tariff is an inefficient use of resources

- It discourages economic growth through stimulating demand (as in Macau, China, in the 1980s).
- It fails to manage demand and encourage conservation of water. There is no price elasticity of demand.

In general, it is lack of awareness by politicians that leads to ill-informed decision making to perpetuate low tariffs. Donors can certainly help much more in this regard, as can consultants employed to prepare related projects.

Examples of success include the Philippines, where water utilities are able to secure sufficient tariff increases to cover their true costs. In Viet Nam in 2004, the Government issued a Directive requiring all water supply companies to set tariffs based on the full and accurate inclusion of all operation and maintenance costs, depreciation,



debt payment, and return on investment. This directive also mandates tariff pricing to cover new investments and sets an important precedent for the region.

The Phnom Penh Water Supply Authority transformed its lagging operations and achieved cost recovery during 1993–2003. Service coverage increased by 25–80%, efficiency of staff and water supply availability rose, water losses were greatly reduced, and collection efficiency rebounded from 48% to 99%. Financially the utility went from being heavily subsidized to achieving full cost recovery. This turn around was due to a combination of both external and internal factors and strategic interventions. Critical external factors included support from the government, donors, and the unconnected citizens in revising the tariff structure. Internal factors consisted of a fundamental change in the utility's culture to treat personnel equally, major management reorganization, and increased emphasis on staff training and decentralized decision making.

## Connecting the Urban Poor to Piped Water

Although everyone has access to water whether urban poor or not, whether close or distant, whether good quality or bad, whether legal or illegal. The issue is the quality of service. The level of water service for at least half the urban poor in Asia is not adequate due to (1) the quality of water, (2) the quantity of water they can access, (3) the reliability of supply, (4) the availability of water and (5) the cost of water.

The biggest problem is the public faucet, when combined with an intermittent supply. A public tap may be distant from the household. The water may come for only an hour a day and that hour may be at 2am in the morning. There are too many households fighting for a share of that water, and the reality is there is not enough for all. The stress on the woman of the household to find that water every day can be extreme. Although the public faucet is free, more and more poor people all over Asia consciously turn down free water from a public tap to seek billed water from a house connection. The benefits of connection are illustrated in Box 1.

According to 2002 Data from the World Health Organization and United Nations Children's Fund, connectivity to piped water is not a major problem in the PRC, Central

### Box 1: Benefits to the Poor of Attaining a Connection to Piped Water

- Raised social status in community
- Less stress from the threat of eviction
- 10% increase in economic status due to lower costs in obtaining water
- Better health from using more water
- Better health through release from the burden of carting water
- More control over surplus money (conserving water use can mean savings)
- More convenience and time for women
- Incentive to upgrade housing
- Incentive to build flush toilet for better sanitation
- Removal of stress at public tap
- More human energy available for productivity
- More schooling for children (not fetching water)
- An official water bill represents proof of residence and identity
- More convenience in use of water for washing and bathing
- Less tension among neighbors

Asian Republics, Republic of Korea, Malaysia, Singapore, and Thailand. However India, Indonesia, Nepal, Pakistan, Philippines, Sri Lanka, and Viet Nam appear to have a problem.

There are five main obstacles to the poor getting a connection. The first is availability of water resources. The second is lack of personnel in a utility who are dedicated to serving the urban poor, with their special problems. The third obstacle is that in many cities, proof of land tenure is required before a connection is given. This does not recognize urban poor who live in slums and informal settlements. The fourth obstacle is the cost of the new connection which is often way out of the reach of the urban poor to pay upfront as demanded. Fifth is the procedure for obtaining a new connection, which is fraught with bureaucracy.

## Overcoming the Water Resources Obstacle

When people go from a public tap or water vendor supply to a house connection, there is a noticeable change in water consumption. The household consumption increases from around 5m<sup>3</sup> per month to at least 20m<sup>3</sup> per month. (On the Manggahan Floodway in Manila this was closer to 30m<sup>3</sup> per month). If this improvement is sought for half the urban population, water production must be increased by 54% (assuming the same losses). Governments need to start

planning for more water production immediately. New networks will need to be designed to take increased hydraulic loading and to achieve the uninterrupted water supply objective.

## Overcoming the Dedicated Unit and Simplified Procedure Obstacle

Every utility should have a unit dedicated to serving the urban poor with piped water. It should be a one-stop shop where the poor can find out when they will be connected, what the procedures are, and what they need to do. Preferably the unit will be led by a fully qualified sociologist. Engineers attached to the unit should be sensitized to the needs of the urban poor, through both formal and informal (on-site) training. Most importantly, this unit should bring transparency to the situation in the city, regarding services to the poor. An annual report for public consumption should be prepared by this unit, showing monthly progress in connecting the urban poor. Mapping should be carried out under a consulting assignment, to identify all the slums and other pockets of poor in the city and their level of service. A clear program for connecting the poor should be published in the newspapers, every quarter, to let the people know what is

Salma Sadikha (the lady in white), champion of the urban poor in Bangalore, shown with representatives of an NGO and local beneficiaries



happening. Through this unit, the procedures for connecting the poor can be greatly simplified. Best of all, slums can be dealt with as a whole, and not as so many individual connections, each going through the same complicated steps. An example of such a unit is in Bangalore, where a new policy and incentives have increased connections significantly in slums. Salma Sadikha, a senior staff member in the Bangalore Water Supply and Sewerage Board, working with the assistance of AusAID in Bangalore, was the champion of this cause. The national Government of India is now asking all utilities receiving their funding to establish such a unit.

## Overcoming the Tenure Obstacle

All people in a city have a right to be connected to piped water. The Bonn Charter Principles express this right. It should not matter that a poor person is residing on land, the ownership of which is not clear. In India, especially in connection with slums, they have dealt with this matter in two ways: (1) the municipality has issued a “10 year no objection” certificate, which means the household cannot be evicted over the next ten years, and a piped water connection can be made to them; and (2) the municipality (as in Bangalore) requires “proof of occupancy.” This latter condition is clearly tied to their rights to vote in elections. In Dhaka, NGOs have acted as intermediaries between slum communities and the utility to provide piped water.<sup>5</sup>

## Financing Connections

In general, Asian water connection fees are very high and tariffs are very low. It is not uncommon for the connection fee to be as high as US\$200 and the tariff to be as low as US\$0.05/m<sup>3</sup>. High connection fees benefit “moonlighting” utility staff installing illegal connections, and they may leverage bribes from customers who want a new connection, to pay extra for expediting the process, otherwise it could take months. The private water company that wants to make a good profit may include the cost of distribution in the connection fee.

There is extraordinary variation in monthly water bills in cities in the Asia and Pacific region. Likewise, connection fees vary enormously from less than \$10 (in Dhaka and some cities in

India) up to \$166 in Manila. A new indicator of performance is proposed here: the ratio of connection fee divided by monthly tariff. When the ratio exceeds 100 the government is subsidizing the tariff (to help the rich) and ignoring the high connection fee (to penalize the poor). If some cities can keep the connection fee low, then why cannot others?

Beneficiaries of a low tariff include those in government who want continued income from this source by denying the utility autonomy to manage. Utility staff may be able to over-bill the consumer and pocket the difference without complaint from the consumer, who would certainly object if the tariff were already high. These vested interests are working to maintain the status quo of high connection fee and low tariffs. The reverse—low connection fee and a much higher tariff—is needed. What can we do to make this happen?

The starting point must be government policy that clearly states these objectives and a credible organization to monitor the implementation of government policy. It is most important to monitor (1) the rate of connection of the urban poor to piped water in all developing countries, and (2) the unserved urban poor, knowing where they are, how many they are, and what are their service levels now.

There are several ways in which connections may be financed; some options may help the poor while others continue to burden the poor. The objective must be to give the urban poor not only a connection to piped water as quickly as possible, but also economic relief as quickly as possible. The options are:

#### **Upfront Payment of Connection Fee**

This is often beyond the capacity of poor users and the actual cost, as mentioned above, is subject to corrupt practices.

#### **Payment of Connection Fee by Installments over 24–36 Months**

This option means continued economic hardship over the repayment duration. This burden, together with the monthly consumption tariff, may lead to default. The utility may need to find more revenue initially, to fund the connections from a tariff increase, but that is a legitimate reason for a tariff increase. However, this will affect existing connected consumers who may not be happy. This option is the next most prevalent now after up-front connection fee.

#### **Donor Finances Connection Under a Project**

This is a good option, but may be limited by the loan or grant terms and also by the fact that the “project” may not extend to all unconnected urban poor, which is its biggest drawback. If it is a loan, it may eventually be reflected in a tariff increase. However, there is the chance that the government may pass it on to the utility as a grant.

#### **NGO or Credit Union Finances Connections**

This would help most poor to connect. However, it still keeps the poor in economic hardship for another two or three years. The initial deposit and the terms may be critical. Still, the NGO has a very useful role to play.

#### **Tariff Surcharge to Make a Water Fund for Connections**

Everyone, except the existing consumer would be happy with this option. But when the new connection fee is high and the tariff is low, there is a problem with financing the connection fee out of tariffs. Utility staff will no longer be able to deal in illegal connections and in illegal sale of water.

#### **Utility Borrows for All Connection Fees**

This is the best option. It allows government policy to be implemented. Because it is a loan, the effect on the utility and all consumers with tariff increase is minimal. Even a high connection fee can be accommodated. Where a public utility is the water enterprise, the government may consider giving a soft loan. Or it may blend grant money from a bilateral source for this purpose. A further refinement would be if just the urban poor were given assistance with the connection fee, and those more well-to-do were still required to pay for the full connection fee.

#### **Government Subsidy of New Connections**

Obviously extending a subsidy to the people (such as 50% of the connection fee) would have a good response, but one must ask the question how many of these people will be poor? While it is certainly much better than the full connection fee being paid up-front, this option is still nowhere near an ideal solution for the urban poor.



## Recommendation for Financing Connections

- We should outlaw the paying on connection fees upfront by the poor because it prevents many poor from connecting.
- We should outlaw the paying of connection fee installments because it postpones economic improvement and puts the poor at risk of default.
- We should outlaw the paying of connection fee by credit because it postpones economic improvement by two or three years.
- We may encourage a direct subsidy for connections by the government provided that the lowered price of a new connection is affordable to the urban poor.
- We may encourage donors to finance connection fees within projects, but if the area of influence of the project is limited, the impact will be also.
- We may encourage utilities to finance connection fees out of tariff surcharge, but if the connection fee is high and tariff low, this may not work.
- We may encourage utilities to borrow for financing all connection fees because even if the connection fee is high it can be serviced by a small tariff increase over a long time.

## Open Defecation

There are many problems with open defecation, particularly in crowded slum areas of cities. First, the feces get carried by shoes or feet into all parts of the home and this poses a serious hygiene situation. When slum dwellers contract diseases from bad hygiene they affect not just the family or the community but all the city. This is because many of the slum dwellers work in homes of the better off, and the disease can be transmitted there too. If just 1% of a slum community practises open defecation, all that community is at risk. Permanent improvement in this area requires 100% open-defecation free.

Second, women cannot find places to defecate in the open in a crowded slum and must venture out under cover of darkness exposing themselves to security risks. Stones are hurled at them. In urban areas there are millions of women who have no individual or community toilet. As the former Indian Prime Minister, Jawaharlal Nehru once said “the day every person has their own toilet will be the day when we in

India know we have reached the pinnacle of development.”

Bangladesh and India (Box 2) have shown that open-defecation-free slums can be attained without subsidies. Individual toilets can be constructed by families for as low as Rs700 or about US\$15. Where there is inadequate space for individual toilets, community toilets can be constructed. The secret to the success lies in education and peer pressure for all to achieve this common community goal.

An incentive for a community to achieve open-defecation-free status, is provision of untied funds for the community for other developments (such as street lighting) that they desire but cannot fund.

For defecation-free slums, a community-led total-sanitation package is needed, with support from clinics and government and donors. India and Bangladesh are doing well. They have key local government officials and doctors who have done the hard work and succeeded. One of the

### Box 2: Communal Toilet Construction Program in Pune, India

The communal toilet program in the city of Pune has become a model for others to follow. The champion of the cause was the Pune Commissioner of the Municipal Corporation in 1999. Funds came from the city but the implementation was by women from the slums and eight NGOs. Some 237 communal toilet blocks with over 3,000 units were built under this program. Weekly meetings were held between the NGOs and the slum department officials. Employment of skilled people from within the settlements was a key feature. Each of the new blocks was built differently according to the needs and ideas of the local people and according to the available site and space. The toilets are pour-flush latrines, and water tanks (800 liters capacity) were located outside both the men’s and women’s toilets. The disposal is based on the septic tank system. Each block has a small toilet for children to use. A list of users was drawn up and each household issued a card on which their payments were recorded. The caretaker collects Rs20 from each household per month.

Source: McIntosh, Arthur. 2003, Asian Water Supplies: Reaching the Urban Poor. ADB, Manila.



facilitating factors was a map in the slum for all to see, that shows who has a toilet and who does not. This puts pressure on those who do not conform. Education is provided by NGOs and local government clinics, but they do not pressure people to build their own latrines. They do, however, provide advice on materials and construction.

Perhaps more than the hygiene gains are the gains of self respect for slum dwellers when they achieve an open-defecation-free slum. It is, therefore, important that subsidy schemes funded by governments or donors for building toilets cease, especially in the vicinity of the slum communities that are trying to become open-defecation free.

## Peer Pressure

When one community has, through great communal endeavor, become open-defecation free, people from that community can be used as “consultants” to convince neighboring slum communities to follow suit. In India, this has been achieved through songs and bands and poems written about the subject, sung and narrated all over the district. All stakeholders must play their part in this common cause.

It might be said that it is one small step, but both in terms of sanitation and in terms of human development it is a giant step. The hardest part is done. People like those in Kalyani Municipality of Kolkata have shown that it can be done. In Kalyani, the Chairman of the municipality, Dr. Shantana Jha, was able to put pressure on his ward commissioners through a yellow/green/red card system that publicly displayed progress with open-defecation-free areas.

## Community-led Total Sanitation

Community-led total sanitation (CLTS) efforts, which focus on demand creation, in Bangladesh and Pakistan, have not only successfully overcome the low demand for sanitation, but have also delivered significant changes in collective behavior thus resulting in improved health for all. In Indonesia, this approach has been successfully used in the absence of subsidies in a number of districts. Its advantages are shown in Table 1.

**Table 1: Comparison of Traditional to Community-led Total Sanitation Approaches**

Elements	Traditional Approach	CLTS Approach
Focus	Latrine construction, Hardware inputs	Stopping open defecation by the community
Technology	One fixed model	Menu of options
Motivation	Household level individual subsidy	Igniting behavior change through self-realization of health externalities caused by open defecation
Time Frame	Long and unknown	Short
Financial	Individual upfront hardware subsidy for latrine construction	Outcome-based reward grant at the community level
Monitoring	Focus on number of toilets constructed	Focus on meeting open defecation-free outcomes
Impact	20–40% coverage	Full coverage and behavior change

Source: Water and Sanitation Program. CLTS = community-led total sanitation.

The role of government in CLTS is to change subsidy policies into (1) incentives that reinforce collective action, (2) incentives that reward outcomes, and (3) rewards for achieving open defecation free communities.

Note that low existing toilet coverage is not a constraint. The base was low wherever CLTS has been initiated. Also, poverty is not a constraint—if it can work in Bangladesh. Neither is lack of water a constraint; there are technology choices.

Dr. Shantana Jha, Chairman of Kalyani Municipality, a double champion of the cause (good governance and open-defecation-free slums)



## Conclusion

There are, of course, many other important issues that cut across the different needs in water sector development, many of which can be addressed through improvement in governance. Neither should we forget the need for capacity building in government and utilities and the need to redefine the place of water in the national and local development agenda.

For the *AWDO*, it is important to focus on a limited number of important issues (three) and once endorsed by governments, make sure that

progress on all three fronts is closely monitored and the results published for transparency and accountability.

The starting point in addressing the many issues is government policy, made clear to all interested parties. Equally important are monitoring, evaluation, and dissemination of the results. In the absence of a government regulator, civil society can perform this role through a nongovernment or community-based organization.

## Endnotes

- 1 BBC News Beijing, 23 March 2005. *China Warns of Water Pollution*.
- 2 Bhardwaj R. M. (2005). *Water Quality Monitoring in India – Achievements and Constraints*. Central Pollution Control Board, India. IWG-Env Joint Work Session on Water Statistics, Vienna 20–22 June 2005.
- 3 Storey, Donovan. 2005. *Urban Water Pollution, Communities and the State in South East Asia*. Paper presented at the workshop on *Water in Mainland Southeast Asia*, December.
- 4 Ideally this means the costs of operation and maintenance, as well as debt servicing and the capital cost of expansion.
- 5 Singha, Dibalok (DSK). 2001. *Social Intermediation for the Urban Poor in Bangladesh*. DFID Regional Livelihood Workshop: Reaching the Poor in Asia.





## Asian Water Development Outlook (AWDO) 2007

*AWDO* is a new publication commissioned by the Asian Development Bank (ADB) in view of the increasing importance of water in the future development scenarios of the Asia and Pacific region. In recent years, water has steadily gravitated toward the top of the national agendas of ADB's developing member countries. This is a desirable development because water is an essential requirement for human and ecosystems survival. In addition, water is a critical component for most development needs. Without adequate quantity and quality of water, it will not be possible to ensure food, energy, or environmental security of nations.

*AWDO* is aimed at Asian and Pacific leaders and policy makers and those interested in understanding the complexities and dimensions of the current and the future water problems, and how these can be addressed successfully in policy terms. Its main objective is to raise awareness of water-related issues and to stimulate an informed debate on how best to manage Asia's water future. These are important and complex issues, and their timely management can contribute to the achievement of all the water-associated Millennium Development Goals and beyond.

*AWDO 2007* is ADB's first attempt to make a forward-looking assessment of the possible water future for the most populous region of the world. It is now increasingly being recognized that water is likely to be a major critical resource issue of the world, and that the social, economic, and environmental future of Asia is likely to depend on how efficiently and equitably this resource will be managed in the coming years.

## About the Asian Development Bank

ADB aims to improve the welfare of the people in the Asia and Pacific region, particularly the nearly 1.9 billion who live on less than \$2 a day. Despite many success stories, the region remains home to two thirds of the world's poor. ADB is a multilateral development finance institution owned by 67 members, 48 from the region and 19 from other parts of the globe. ADB's vision is a region free of poverty. Its mission is to help its developing member countries reduce poverty and improve their quality of life.

ADB's main instruments for helping its developing member countries are policy dialogue, loans, equity investments, guarantees, grants, and technical assistance. ADB's annual lending volume is typically about \$6 billion, with technical assistance usually totaling about \$180 million a year.

ADB's headquarters is in Manila. It has 26 offices around the world and more than 2,000 employees from over 50 countries.

## About the Asia-Pacific Water Forum

The Asia-Pacific Water Forum (APWF) provides countries and organisations in the region with a common platform and voice to accelerate the process of effective integration of water resource management into the socioeconomic development process of Asia and the Pacific. The APWF is an independent, not-for-profit, non-partisan, non-political network.

The APWF's goal is to contribute to sustainable water management in order to achieve the targets of the MDGs in Asia and the Pacific by capitalizing on the region's diversity and rich history of experience in dealing with water as a fundamental part of human existence. Specifically, the APWF seeks to champion efforts aimed at boosting investments, building capacity, and enhancing cooperation in the water sector at the regional level and beyond.

Asian Development Bank  
6 ADB Avenue, Mandaluyong City  
1550 Metro Manila, Philippines  
[www.adb.org/water](http://www.adb.org/water)

Asia-Pacific Water Forum  
Secretariat: Japan Water Forum (JWF)  
6th Fl, 1-8-1 Kojima Chiyoda-ku  
Tokyo, Japan APAN 102-0083  
Tel +81 3 5212 1645  
Fax +81 3 5212 1649  
[office@apwf.org](mailto:office@apwf.org)  
[www.apwf.org/](http://www.apwf.org/)