



WATER UTILITIES LEADERS FORUM
18 - 19 SEPTEMBER 2013

Position Paper for Session 2 -
“Minding the Gap: Financing Water Infrastructure”

Prepared by: Senior Water Supply and Sanitation Specialist (Asian Development Bank) Alan Baird

Finance Officer (PUB) Chong Chor Ming

Industry Development Executive (PUB) Michelle Ooi

In consultation with: Vice President, Knowledge Management and Sustainable Development (Asian Development Bank)
Dr Bindu Lohani

A: The Growing Gap

1) In order to manage a resource well, we must understand and quantify its value. This is especially difficult for freshwater as it is freely available in nature, seemingly abundant, and apparently belongs to everyone. It is also difficult to capture and store, and is discarded after use. There are still consumers who view water as a “free” resource. However, in reality no service is or should be “free”. Ironically, the most marginalized members of our communities generally pay the most for water. They are also blighted through sickness and ill-health associated with low-quality water and inadequate sanitation.

2) The water sector is a natural monopoly with high fixed costs and a distant investment horizon. The water value-chain comprises infrastructure such as storm water drainage systems, raw water collection and storage, water treatment plants, distribution networks, wastewater treatment collection and processing plants, as well as recycling of wastewater for commercial, industrial, agricultural and other non-potable uses.

3) There are several key investment drivers. In many regions, water demand is not fully met due to investment backlogs. Sometimes, existing assets are redundant and are often overdue for refurbishment/upgrade to ensure continued effective service delivery. In others, there is little or no infrastructure. In addition, unconstrained urban population growth and rapid economic expansion strain ageing water infrastructure. Water scarcity, particularly in arid areas, may require governments to invest in costly water treatment technology, such as desalination.

4) The water infrastructure gap, which can be defined as the shortfall between projected operational needs and current funding, is a global concern. Demand for investment in the water sector is projected to increase substantially worldwide. For example, it is widely reported that Asian countries will need approximately US\$60 billion a year over the next decade to fully address the region’s water supply and sanitation requirements.

B: Key Financing Challenges

5) **Water services are intrinsically linked to politics, where politicians defer difficult discussions on tariff increases as a path to election. Water tariffs are thus often set well below levels necessary for cost recovery. Any proposed increases are often considered to be too sensitive to pursue,** leading to chronic underinvestment and exacerbating underperformance of many water service providers.

6) The capital outlay to finance water infrastructure is large. As tariffs often do not sustain existing operations, let alone asset acquisition or rehabilitation, the gap has traditionally been bridged from public sources - typically annual budgetary allocations from the state (thus essentially from the taxpayer). However, **there are enormous constraints on current public-sector funding of water (given many other government priorities), and these constraints are growing as the investment needs increase.**

7) The **low visibility and long-term nature of the benefits reaped from water investment** do not naturally match the shorter horizons of political leaders. Moreover, the often complex and prolonged construction processes can create severe disruptions to urban life, and hence further obscure the longer-term advantages of improved water infrastructure.

8) **Investment delay** raises costs and increases the likelihood of major infrastructure failures. Ways to mobilise more financing need to be found quickly.

9) Another key financing challenge is the **poor management practices present in many water utilities**. A large number of utilities are not very commercial in the way they go about their business. They are often overstuffed, and operate under top-down decision-making systems. Decisions are made without adequate access to essential management information, and often basic accounting principles are not followed. Issues of governance and lack of transparency abound, and many utilities are overly-influenced by political considerations.

C: Rebalancing Enabling Conditions

10) New or amplified sources of funding, new partners and new modalities are required to help address key financing challenges. However, in order to make the additional funding relevant, efficient and effective, utilities must be made “investment-ready” through reform and capacity-building. As capacity-building proceeds, the focus can move to mobilisation of funding sources. Thus, we need certain enabling conditions to attract additional financing, and this paper will highlight some of these.

11) Governments should prepare the ground by encouraging debate and/or participation amongst key stakeholders (including the business community and civil society) on how to expand vital infrastructure services. This is particularly important for wastewater management and sanitation, which have been the hardest areas in which to attract private funding, as this is where cost recovery is lowest and the underinvestment greatest. Outreach efforts should include discussion of business models (including private-sector participation). The goal is to deliver quality services which can be scaled-up, adopted more widely, and attain public acceptance.

Dependable government budgetary resources

12) If governments focus only on asset creation without commensurate commitment and financing support for long-term operations and maintenance (O&M), the assets will have a reduced economic life and taxpayer money will be reinvested in underperforming, failing infrastructure. A suitable mix of user charges, taxes and budgetary resources should be committed on a project-specific basis. The aim is ensure the water service provider (public or private) is not cash-starved in its O&M function. **Budgetary resources from the government for water investment should be dependable over the long-term** and not subject to annual changes or budgetary “horse-trading”. The importance of robust and credible regulation in this process cannot be understated.

Making water utilities “bankable”

13) There needs to be clearer focus on initiatives to make utilities "bankable", as the water sector may be viewed as effectively an investment “dead-end”. **There is growing evidence to show that success follows when utilities have transformed themselves into corporate entities, or have adopted a corporate approach to their operations.** Corporatization has happened where decision-makers viewed urban water and sanitation services as a long-term business proposition that ensured the financial sustainability of water and sanitation systems, and protected the value of water resources (from source to tap, and beyond).

14) Corporatization refers to the transformation of existing public water entities into autonomous corporations, with the aim of introducing sound business management principles and techniques to their administration. It is a change process, which enables existing entities to adopt management structures, and other desirable features and behaviours, employed by successful business-focused, public or private sector corporations. Such approaches stimulate private-sector participation and bring in external expertise and additional sources of finance. Nevertheless, corporatization is not necessarily a precursor to privatisation. There are good examples (such as Cambodia’s Phnom Penh Water Supply Authority and PUB, Singapore’s national water agency) of high-performing utilities that have attained corporate status while remaining wholly owned by the government.

Setting the right price

15) **Pricing water service for full cost recovery is a key success factor in attracting water infrastructure financing.** When cashflow from the water sector is sustainable, investments to expand services will be attracted. Water should be priced not just to reflect the cost of production and delivery but also its scarcity value, following the rationale of full cost recovery through tariffs and the concept of marginal pricing. The right pricing will encourage people to conserve water and will send positive signals to private-sector investors. When the true cost of water services is established, implementation of cost recovery will be carried out at a realistic pace. The European Union’s Water Framework Directive indicates that linking the price of water to the volume of water consumed can motivate customers to consume water more sustainably. In England and Wales, residents of metered properties consume on average 13 % less water than those in unmetered homes¹.

16) Tariff-setting for water services can be a complex task. **Determination of the price first requires comprehensive demand and cost data** (such as demand profiles related to population and economic growth; service provision, including factors such as geographical conditions, intermittent supply, non-potable water; and consumption data on metering, billing and collection). Price-setting also has to recognize differing social, economic and political objectives. Some additional considerations are: public reaction; impact on

¹ “Water in the city” article at <http://www.eea.europa.eu/articles/water-in-the-city>

households; willingness and ability to pay; and knowing price elasticity so as to manage water demand.

17) **Appropriately designed tariff structures are critical to the goals of sustainability, equity and affordability.** Some principles the public sector could consider are the “user pays” principle for water consumption, and the “polluter pays” principle for trade waste. The choice of components of tariff schedules and their rates usually depends on local challenges and the main priorities of the utility. The best tariff design is one which strikes the most desirable balance among the objectives that are important to the community. For example, many countries such as Singapore, the United Kingdom and the United States use the Increasing Block Tariff (IBT) methodology. Volumes of water used are divided into a certain number of blocks, with the price per unit of water rising for higher blocks.² At the highest block, consumers can use as much water as they wish, but they will have to pay the highest rate for each unit of water consumed. Consumers are thus encouraged to conserve or reuse water to minimise their consumption and bills. At the lowest block, the tariff rate is set below the O&M cost of water, which helps to provide the poor and vulnerable with a minimal and affordable amount of water (often called a “lifeline” provision). (The Annex below shows the components of water and wastewater tariffs which have been implemented in various cities.)

18) **Pricing policies should also give due consideration to subsidy schemes for the poor.** However, such schemes will have to be transparent and be reduced as consumers’ ability to pay increases, such as when the government of Argentina discontinued water subsidies for households in several affluent neighbourhoods in 2010.

Plugging the gap through improved efficiency

19) Utilities should strive to **achieve greater O&M efficiency in their operations, including delivery of services and management of their assets.** However, utilities should also be mindful to avoid a drive for greater efficiency which compromises system reliability, and adversely impacts levels of service. For instance, reducing wastage (non-revenue water or NRW³) in urban water supply systems to acceptable levels (< 20%) serves as more than immediate water, energy, and cost savings. Low NRW is also a proxy indicator of efficient and prudent management of a water utility, and could help customers to accept tariff increases targeted at improving service quality.

² Boland, J. J., & Whittington, D. (1997). *Water tariff design in developing countries: Disadvantages of increasing block tariffs (ibts) and advantages of uniform price with rebate (upr) designs*. Manuscript submitted for publication, The John Hopkins University, Baltimore, MD; University of North Carolina, Chapel Hill, NC.

³ NRW is “water that has been produced and is ‘lost’ before it reaches the customer. Losses can be real losses (through leaks, sometimes also referred to as physical losses) or apparent losses (for example through theft or metering inaccuracies).” Source: http://en.wikipedia.org/wiki/Non-revenue_water

Timing tariff increases with service improvements

20) Throughout urban Asia, **water tariffs need to be increased to realistic levels, sometimes by an order of magnitude, in order to cover costs and to drive water conservation.** To respond to understandable and justified consumer concerns, tariff increases will have to be accompanied by at least: (i) visible improvements to the quality of service, ultimately leading to water being provided throughout the day and at drinking water quality, thereby reducing the need to buy high-cost bottled water; (ii) manifest efficiency improvements by the utility company, such as NRW-reduction; and (iii) consumer information about possible in-house water-saving devices, to reduce water use and the water bill. This is a matter of customer engagement, to show improvements and secure extra revenue. It is not an easy balance to achieve.

Re-assessing capital and re-calibrating risk

21) Water service providers could also consider **lowering their cost of capital.** The stable nature of the water industry typically allows utilities to have a high gearing ratio compared to other industries. Furthermore, longer-term borrowing could be considered to match the liquidity and principal repayment schedules for the long-life assets (such as network and transmission) characteristic of the water industry. At the moment, this often does not happen because providers of finance do not trust that the financial stability is really there. Governments can help to increase the sustainability and “bankability” of a project by developing and fully committing to a good infrastructure plan with visibility of collection. This would include, as a minimum, an agreed programme of tariff increases (taking into account social considerations), with independent oversight and regulation, backed up by clear, predictable, long-term allocations from central and/or local tax revenues. Improving collection rates and enhancing data availability will allow informed decision-making and more certainty in planning.

22) **Fairness in risk allocation can help stimulate private-sector participation and prompt more efficiency by allowing the best solutions to be developed by those parties most able to manage their associated risk.** The public sector used to act as a “risk-taker of last resort”, underwriting much of the water infrastructure needed by society. This was possible in part because of the particular nature of public finance, with its secure claim on tax revenue, and in part because the public sector does not always account for all its liabilities. **In the right circumstances, the private sector will have the capacity to take risks it is comfortable with, such as technical and operational aspects of a deal.** Over time, the private sector will develop an appetite to pick up more complex risks, such as tariff collection and bulk water supply risks. The public sector needs to focus on political and legal risks, cost recovery shortfalls, unexpected events etc. The balance can change over time as the private sector develops greater confidence in the water industry, and the public sector establishes its own track record in managing public-private partnerships. There is much to be said for gradualism and learning-by-doing in seeking greater private-sector engagement.

D: Tapping the Private Sector

23) **Public-Private Partnerships (PPPs)⁴ are one peak-performing way to better manage the water sector, and frequently bring alternative sources of financing, with many possible proven models⁵ in evidence.** However, this number is still low (as compared to that in other sectors such as power, telecoms and transport), particularly when set against the enormous unmet demand. There are some “hot spots” (such as the People’s Republic of China) which mask an overall picture of low uptake in most countries⁶. This low number is probably indicative of the general structural and institutional constraints identified above, which may result in the private sector being aware only of the widespread view that water services are a basic human right (or public good) which should be not-for-profit.

24) However, Manila Water Company in the Philippines is a good example of a private utility which has shown that **a profitable business can serve the most disadvantaged members of society.** In 1997, following the National Water Crisis Act 1995, Manila Water was awarded a 25-year⁷ concession contract to take over the operation of Metro Manila’s East Zone (with five million inhabitants) with the aim of improving water services. Achieving optimum operating costs required meticulous planning and prioritisation of areas for connection, which included some of the poorest parts of the city where people were often illegally connected to the system. Under the company’s “Water for the Community” programme, these areas became connected at a reasonable rate, and the company was able to reduce NRW from approximately 63% to 30%, dramatically enhancing revenues and allowing commensurate expansion of service. Within ten years of operation, total customer numbers grew from two million to five million and the amount of water sold soared from 440 million litres per day to 948 million litres. Manila Water became “profitable” in 2001 and was able to attract additional financing and investment from international development banks, including the International Finance Corporation. While “profitable” by 2001, the development of the right enabling conditions in 1997 (at time of bidding) elevated the concession into “bankable business” status and attracted experienced private-sector partners, such as the UK’s United Utilities⁸.

25) The assumption that the private sector is in a better position to improve service delivery by bringing in new capital, raising the level of staff expertise, and making operations

⁴ Public-Private Partnership (PPP) is a long-term partnering relationship between the public and private sectors to deliver services. Through PPP, the public sector seeks to bring together the expertise and resources of the public and private sectors to provide services to the public at the best value for money. (Source: <http://app.mof.gov.sg/TemSub.aspx?pagesid=20090918945178394017&pagemode=live&&AspxAutoDetectCookieSupport=1>)

⁵ There are many possible PPP models, including joint-ventures, strategic partnerships to make better uses of government assets, Design-Build-Operate and Design-Build-Finance-Operate. (Source: <http://app.mof.gov.sg/TemSub.aspx?pagesid=20090918945178394017&pagemode=live&&AspxAutoDetectCookieSupport=1>)

⁶ According to the World Bank Group’s “private participation in infrastructure database”, there were 763 water PPP projects from 1991 – 2012, with more than half (428) coming from the East Asia and Pacific region.

⁷ This has subsequently been extended by a further 15 years.

⁸ “Manila Water Company - turning on the taps for the city’s poor” article: www.article13.com/A13_ContentList.asp?strAction=GetPublication

more cost-effective and efficient, is accurate only if given the right conditions. **Successful PPPs require harmonization, coordination and alignment between both partners, along with a strong balance of interests and fair contracts.** Efficient private-sector operators can lend their technical and management “know-how” for business efficiency, in addition to their capital contributions. This allows governments to focus on their core functions, such as regulation and supervision. When efficiency is achieved, service delivery will typically be affordable and economically sustainable, allowing adequate returns for investors and operators. However, to allow stimulate successful PPPs, the basic “building blocks” must be in place.

E: Fixing the Political, Business and Investment Climate

26) PPPs can be very effective but also highly complex and political in nature, with high capital outlay requirements and long-term planning demands. Identifying contractual targets may be far from easy due to factors such as the absence of robust baseline data, diverse technologies, and varying institutional capacities. Without a properly regulated, governing framework that will move existing water resources from less to more productive parties, the full potential of market forces cannot be realized.

27) Thus, besides the enabling conditions of dependable government budgetary resources and optimum water pricing, the case for **committed political leadership** is self-evident. None of the measures described below is likely to succeed without “champions” of PPPs in government (at national and local level). There needs to be role models who are clearly seen to drive any necessary process of change and reform, and manage the various opposing constituencies.

28) **A favourable business and investment climate, with the effective observance of the rule of law, is also essential for long-term investment.** In cases where the water sector is plagued by mismanagement, cronyism, political meddling and/or protected status⁹, governments may have to reform their institutions to create the right business environment and regain investor confidence. Governments should also ensure transparent, fair and reliable business regulation, as well as supervision and administrative procedures. Measures to enhance a country’s business climate could include protecting the rights of business entities, lowering the costs of entrepreneurial activity, simplifying administrative procedures, making infrastructure more accessible, creating a competitive environment and respecting the sanctity of contracts¹⁰.

29) **The private sector’s financial discipline, inventive spirit, and access to cutting-edge technologies can be used to generate affordable, cost-effective water.** PUB Singapore has to date initiated four PPP projects based on the Design-Build-Own-Operate (DBOO) model,

⁹ Some water utilities are compelled to accommodate political preferences in board and managerial positions, where individuals lacking sector experience may hold key managerial or board positions.

¹⁰ Source: Urban Agenda No. 2, Spring 2013 published by Moscow Urban Forum NGO

providing a total of 182 million gallons per day of desalinated and NEWater¹¹. Under this approach, the main aim of PUB is to select the best private-sector provider to optimise the configuration of technologies, such that it is able to offer PUB a competitive service charge for the provision of desalinated water. In return, the private-sector company is guaranteed a long-term service contract (typically 25 years) to allow it to recover its investments.

F: Closing Thoughts

30) The drive to find the best ways of funding our water infrastructure gaps in a sustainable manner can open up avenues for fruitful collaboration between the public and private sectors. To pave the way for such partnerships, governments should consider what enabling conditions need to be introduced at various levels, such as improving governance, enhancing the autonomy of utilities, as well as implementing policy and institutional reforms which recognize that water must be a local, regional and national priority.

QUESTIONS FOR DISCUSSION

- 1) *Are there other ways in which water utilities make themselves more “bankable” (compared to other utilities)?*
- 2) *What are some of the stumbling blocks that have been encountered in attempts to implement the “polluter pays” principle? How could they be overcome?*
- 3) *How can we increase water tariffs to cover costs, doing so with the support of all stakeholders?*
- 4) *What are the pricing policies or subsidy schemes your organization has adopted to address the needs of the poor and disadvantaged?*
- 5) *What other enabling conditions can spark greater collaboration between the public and private sectors?*
- 6) *How can we attract finance, given the different stages of development of our numerous and varied utilities?*

Disclaimer: This position paper has been prepared by staff from PUB Singapore and the Asian Development Bank (ADB) to provide outline information to stimulate dialogue at Session 2 of the SIWW Water Utilities Leaders Forum. The views expressed in this paper do not necessarily reflect the opinions and policies of PUB and ADB. The contents contained in this paper are strictly for personal, non-commercial or internal use only.

¹¹ NEWater, a product of Singapore’s PUB, is high-grade reclaimed water produced from treated used water, which is purified further using advanced membrane technologies, delivering water which is ‘ultra-clean’ and safe to drink.

Components of water and wastewater tariff schedules (Tables 1 and 2)

Table 1: Components of water and wastewater tariff schedules

Tariff component	Description
Basic service charge	
Fixed charge	This is a fixed amount paid per month or year and does not allow any minimum amount of consumption. The charge usually depends on the meter size and accounts for the cost of infrastructure and account maintenance. There can be combined or separate basic charges for water and wastewater respectively.
Minimum charge	This is a fixed amount paid per month and allows a minimum amount of free consumption of water.
Volumetric water charge	
Increasing block tariff (IBT)	This is a charge per unit volume which increases step-wise according to the level of consumption.
Decreasing block tariff (DBT)	This is a charge per unit volume which decreases step-wise according to the level of consumption.
Constant unit charges (CUC)	This is a charge per unit volume which remains uniform for all levels of consumption.
Seasonal charge	This is a charge per unit volume which changes with the time of the year to account for peak (summer) and off-peak (winter) demands. It can be of any of the three types listed above (IBT, DBT or CUC).
Wastewater or sewerage charge	
Volumetric charge	It can be of any of the three types listed above (IBT, DBT or CUC) and the volume of wastewater generated is same as the volume of water consumed.
Flat	It is a fixed percentage (usually less than 100%) of the water bill. Mathematically, this can also be interpreted as a volumetric charge, but in this case a rate per unit volume is not specified.
Additional components	
Conservation or pollution tax	These are additional components to account for the scarcity value of water or the environmental externalities caused by discharge of wastewater. These are usually a fixed portion of the total water bill.
Stormwater or property damage charge	This is a fixed charge per month or year and depends on the land area of the property. It accounts for the fact that rainwater falling on a paved property ultimately discharges into the public sewers and increases the volume of wastewater to be treated.
Water resource development fee or capital contribution	Sometimes utilities impose a temporary fixed charge on consumers to earn revenues for development of additional infrastructure to meet expanding demands.

