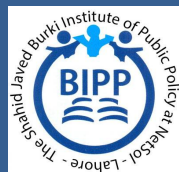


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## Water Crisis in Karachi: Old Issues Needing a New Look

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Like energy, managers of economy tend to keep the issues under the carpet till a full blown crisis is on board - history of Karachi water crisis is spanned over three decades, only recently the issue has been given the prominence it deserves, as we know that one can survive without energy but not without water - it is life. Being a student of water policy I have special interest and continue to monitor and study similar issues not only in Pakistan but also in Near East, Asia and Central Asia.

During my tenure with FAO/UN Regional Office, Cairo from 1992 to 2006, our policy group was very active in organizing water policy courses at national and regional levels, one such a regional workshop (for Near East countries including Pakistan) was organized in Cyprus with Harvard School, well known for its programme on sustainability and environments. During the workshop, one of the cases presented “Emergency Water Summit in Kuala, Pakistan” prepared by J.R Deshazo and Theodore Panayotou of HIID. Obviously it was based on policy project they completed for the Sindh government in Pakistan. The case looked at the problem from holistic lens, rather adopting a common approach that largely explores engineering solutions. In my view, some of recommendations are still valid for present water crisis in Karachi. In that workshop I actively participated with Professor Panayotou to teach the case and using this case as a good training material for similar courses/policy prescriptions in Middle East and Asia.

### **The Case Study**

The case from Kuala, involve participants with an interactive policy debate, simulated based on proposal prepared by Ministry of Planning, Ministry of Water and Sanitation, now the Karachi Water and Sewerage Board (KWSB) and Ministry of Finance. In addition, the Water Summit was facilitated through recommendation by an independent consultant contracted to analyze water issues and suggest solutions. The identified issues included - municipality (KWSB) cannot provide/expand piped water for two reasons (1) lacks funds and (2) cannot mobilize enough water to meet growing demand. The unmet water demand is partly supplied by water markets (tanker mafia). The policy prescription includes a typical water policy reform scenario for countries trying to address water shortage with larger emphasis on less costly demand management solutions.

### **Issues Needing Answers**

1. How water should be allocated between the sector to improve efficiency and reduce shortages

2. What can the price that each sector is willing to pay tell us about the importance of water to that sector?
3. How can municipal water system improve its financial position?
4. What should government learn about current and future pricing policy from price of vended water?
5. How can the water from the supply system be allocated more efficiently and fairly.

On the issue of water pricing, the important questions are - should consumers be charged from current flat rate or price is set according to long marginal cost using progressive block tariff. On water vending (tanker mafia), should all vended activities be banned or regulated or should be allowed to continue selling water. On financing issue, should the existing outdated and worn out system be upgraded through taxpayers or through debt and taxes or to put policy in place so user charges cover at least operation and maintenance cost. The case also address, how level of services can be improved, the question who determines it, should it be determined by water board, the types of service should be primarily public posts or this should be determined by the household willingness to cover the necessary cost of the service. Finally, inter-sectoral water allocation is a policy instrument often ignored, agriculture use good 95% of available water but pays the least, can a quota system should cut water to the agriculture sector by one third, or case is made that no reallocation should occur due to food security concerns. In addition water should be piped directly to Karachi or a market should be developed so that water flows to each sector according to the benefits that sector receives.

The debate often leads to this shorter version of conclusions: First the price consumers, especially the poor are paying reflects the opportunity cost of water. This represents a sizable portion of budget that can otherwise be used for buying other pressing needs. It is also very clear that consumer is willing to pay the water prices as long as they get a reliable supply which public service has failed to provide. The facts are that the private sector (water markets) is capturing the revenues, which potentially KWSB should have been collecting by raising the service level. The water markets will continue to supply water, as long KWSB fails to provide water and services needed by consumers.

### **Present Scenario**

The debate on present water crisis is now much intense and serious, though with different stakeholder. Now KWSB is the major supplier of water, competing with private vendors who mobilize water largely out of available supply through illegal means. The KWSB is well noted for

its poor performance as reflected by irregular and inequitable water supply, with around 60% of the households being connected to the supply network. KWSB operates 12 water hydrants to meet supply and demand gap - but it is not enough, forcing consumers to obtain unmet demand from tankers. The problems is further aggravated by lack of enough rainfall, unplanned and uncontrolled expansion, out dated water transport infrastructure and pumping stations needing proper maintenance and up gradation. Further, with present system of water supply, city vertical expansion makes more difficult to reach all areas.

Central to this is the governance problem at KWSB. The water pilferage/loss is estimated at 35%, to this a theft of 10% through illegal hydrants and connection that leaves available water supply only at 234.50 MGD out of available 655 MGD (425 million gallons from Dhabeji and K2 project, 30 million gallons from Gharo and 100 million gallons from Hub Dam) meeting about half the city's needs of 1.2 billion gallons a day. According to media report, water pilferage from KG-Canal for agricultural usage is quite high, over 5% as farmers are tapping this water through the use of diesel generators. What this means is that the reforms in the water supply management has not solved, rather aggravated KWSB financial woes.

On the other hand the tariff rates for water are very low and so is the collection rate thus generating revenues far less than needed to maintain the system let alone to upgrade the aging supply system, meaning contamination and leakages are common. The financial recovery ratio is very low as only 30% (some claim this figure is as low as 10%) of the registered 1.71 million registered consumers pay their monthly water bills. Than KWSB have payments issues with K-Electric. According to one report as of January 2015, KWSB's total receivables amounted to Rs 52.0 billion out of which Rs 24.7 billion is attributed to Government and CDGK. Biggest billing defaulters are various departments of the provincial Government. Financial sustainability is a critical aspect of water resource management, which affects every type of organization engaged in providing the service. The revenue of the service providers depends on the quantity delivered to users, and on the price charged for the delivery.

The most striking part of the analysis, water markets reflect partly what consumer can pay for water, both poor and rich. With present crisis the tanker mafia are charging Rs 3,000-8,000 per tanker, when official price of 1,000 gallons of water is fixed at Rs 1,000, though the rates may vary from one locality to the other. According to one media report (based on Parveen Rahman of the Orangi Pilot Project, 2008) tanker mafia generates Rs 49.6 billion annually as it siphons off over 272mgd — or 41 per cent of available supply, one can imagine with present steep rise

in water prices, what these profits would look like. On the other hand it is often argued that urban poor cannot afford to pay for water, on the contrary what they are paying through water tanker is outrageous, further the quality of this water often does meet the international standards. Poor section of the population does not have any choice other than to buy from vendors or seek whatever available public water posts can provide a rationed quantity. In the process the poor is spending sizable part of his income and time on buying water

In short, given that consumers are paying very high prices for water, KWSB needs to be reformed to create an entity with commercial outlook. Better technical, financial and administrative efficiencies are required through management improvements with policy to incrementally charge incentive pricing (to recover financial and economic cost) on one side and improve billing system to increase efficiency on the other.

### **Strategic Approach**

There are policy choices available to planners and decision makers, both short and long term to address the water crisis in Karachi or matter of facts other parts of the country with similar problems. They range from increasing water productivity through reduction of leaks in bulk water transport, commercial and public premises, use of water-efficient household appliances and faucets, to introduction of water-efficient techniques (mulching) in private gardens. At the other end reducing demand be promoted through policies that reduce irrigated areas (main culprit), reduce domestic and industrial demand of water supply through use of efficient technology. Unplanned urban expansion without embedded water supply plans be discouraged. Water metering is another demand management policy option often dropped due to high cost, but one needs know how much water it saves and the generated economic returns. The cost of these demand management options are far low compared to supply options often opted, for example improving agriculture practices including crop variety and reduce irrigation area are the most cost effective (.02 and .1 \$/m<sup>3</sup>) policy option to save water.

Supply side policy options (largely engineering solutions) are being planned that include among others, K-4 bulk water supply plan designed to enhance water capacity to Karachi by another 650 MGD. Expanding reservoir capacity (large scale), which includes development of new large reservoir upon hills introducing 24/7 hours supply on gravity basis. Collection of rainwater on rooftops for domestic use and direct use of seawater, mostly for industrial cooling and municipal water use are some other available options. Expanding reservoir capacity (large) and increase reuse of water from domestic and industry use are some of cost effective supply side policy

options which are priced at .05 and .3 \$/m<sup>3</sup>. (Charting Our Water Future, the 2030 Water Resources Group. 2009). Most importantly drafting stronger legislation and its compliance against the illegal hydrants and tanker mafia is long overdue.

### **New Opportunities**

Desalination using renewable energy (solar) is one option becoming viable for energy deficit countries, especially when price of energy has come down. A recent World Bank study has outlined two policy options for meeting water scarcity gaps at local and national levels, first rationalizing of water use in agriculture which has been briefly discussed above. A study in Morocco indicated that 10% water saving in agriculture is enough to meet growing water demand for domestic use. The second policy option lately promoted is desalination using solar energy. The volatility of the oil market and projected future increases/decrease (who knows) in oil prices, accompanied by the rapid advances in renewable energy technology, is expected to make this option economically viable. At present the unit cost is estimated at US\$1.2 per m<sup>3</sup>; by 2050, expected to fall to US\$0.9 per m<sup>3</sup> (Charting Our Water Future, The 2030 Water Resources Group. 2009). In our long-term plans, we cannot ignore this option, especially when solar energy is one of the planned energy-mix being promoted after recent inauguration of largest solar park in Southern Punjab under CPEC programme.

For long term planning, it would be important to study the issue using holistic approach, where technical, economic, social and environmental aspects are looked into with sustainable solutions. From economic perspective developing a cost curve based on cost per unit for mobilizing or developing an additional unit of water through possible policy options is good framework being used globally in bridging water scarcity gaps (FAO Water Scarcity Initiative, 2014). The author had the opportunity to be one of the lead consultants for this work, and for this reason trying to bring fresh ideas to old issues.