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Kolkata Keys to Water Governance

by

Mayor Bikash Ranjan Bhattacharaya

The Kolkata Municipal Corporation
India

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Kolkata is the capital of the State of West Bengal, one of the eastern provinces of India. British Colonial rule was anchored in the 18th century in this city. This city has a tremendous historical importance. The city of Kolkata was a conglomeration of 3 villages when the British merchants came to India and started living here for trade and business. Calcutta now Kolkata was the centre of all merchandise activities of East India Company, a British company. Colonial rule over India started its journey from Kolkata. Anti imperialist struggle was also launched from this city. Resistance to the imperial rule compelled the British rulers to shift the capital of India from Kolkata to Delhi. Kolkata being the capital of West Bengal had to pay the price of independence in 1947, in burdening huge refugee problem. Millions of people uprooted from Bangladesh, the erstwhile East Pakistan were accommodated. At present the K.M.C. jurisdiction is extended to an area of 187.5 sq km with a residential population of 4.56 million and about 6.00 million commutes daily to the city for their livelihood from outside K.M.C. area. KMC thus has to cater the needs of about 10 million people. The most important service to ensure is the Supply of Potable drinking water.

Calcutta's first water distribution system started way-back in 1820 during the British regime with a small pumping station at Chandpal Ghat to extract water from River Hooghly and distribute through a masonry aqueduct to the Europeans and their followers. It is pertinent to mention that Kolkata is situated on the bank of river Hooghly.

The filtered water distribution system was installed by virtue of a Slow Sand Water Treatment Plant at Palta in the year 1865 to supply potable water to Barrack pore Cantonment and later a transmission main was laid from Palta to Talla for supply of water to the main city in the year 1870 by means of a 42 inch. CI gravity main pipe. The capacity of WTP was 8 MGD at that time . Later 48 inch. .C.I., 60 inch. M.S. (Riveted), 72 inch M.S.(Welded) was laid in the year 1888, 1927 and 1962 for additional capacity of 30, 65 and 70 MGD respectively and the capacity of WTP was also increased simultaneously up to 280 MGD in IGWTP at Palta.

The total storage capacity of Talla pumping station was augmented to 60 MG simultaneously.

WTP – Water Treatment Plant

The said seedling of 1865 has grown through stages and was the first and the biggest Water Treatment Plant in whole of Asia at one point of time. Our present status of this water supply system is as below:-

1. 4 NOS W.T.P.
 - a. PALTA WATER WORKS (INDIRA GANDHI WTP)
TOTAL CAPACITY-2
SLOW SAND FILTER-93 MGD
R.G.FILTER-60 MGD-18 MGD+18 MGD=78 MGD
PULSETTER-60, AQUAZER-V FILTER
LEMELLA-40, R.G.FILTER
 - b. GARDENREACH-
TOTAL CAPACITY-120 MG of which KMC's share 91 MG+4MG
Industrial
R.G.FILTER-
 - c. WAT GANGE WTP
TOTAL CAPACITY-5 MG
 - d. JORABAGAN WTP-8 MGD, LAMELLA
2. RESERVOIR WITH PUMP STATION
 - a. PALTA-2 MG
 - b. TALLA-43 MG
 - c. RAJA S.C.MULLICK SQ-60 MG
 - d. AUCKLAND SQ-6.00 M.G.
 - e. M.D.ALI PARK-3.5 MG
 - f. PARK CIRCUS MAIDAN-4.5 MG
 - g. RANIKUTHI-3.5 M.G.
 - h. KALIGHAT-4 M G
 - i. KASBA-3.5 M.G.
 - j. BEHALA-3.5 M.G.
3. DISTRIBUTION SYSTEM
 - a. PRIMARY GRID-600 KM
 - b. SECONDARY GRID-5350 KM
4. SUPPLY -
 - R WATER SUPPLY-80 MG
 - TUBEWELL-20 MG
 - BIG DIA TUBE-WELL-340 NOS
 - S.D.TUB-11500 NOS

For the last 10 years KMC has concentrated on the improvement of water generation & distribution. The achievement was done at Palta by means of a 100MGD W.T.P. package of 4 modules three of which is 20 MGD each and one 40 MGD. We are adopting latest technology for up gradation of these packages. Out of total 4modules 3 nos. 20 MGD WTP were

commissioned with the latest pulsator clarifier and auazur – V filter and on line digital data acquisition system for better performance and reliability and control. 1 no. 40 MGD plant has also been commissioned with inclined plate settler technology (Lamella Plate) and on line data acquisition system for better space utilization and performance. The two newly constructed WTP at Watgange & Jorabagan two different parts of the city, having capacity of 5 MGD & 8 MGD respectively, have the same inclined plate settler(lamella) technology & online data acquisition system. Moreover, at present we are focused to equitable distribution of potable water all over the command area of KMC. We have installed 78 nos of flow and pressure monitoring stations which are directly connected through GSM modem at Tala central monitoring station for on line data acquisition for quality of water at the receiving end.

A sustainable water supply is a cornerstone of a sustainable community. It is a challenge for a local authority to ensure sustainable water supply to its inhabitants and visitors. Improving water supply management in our kind of environment requires major reforms in governance and utility structure. The systematic information on the topic is very widely varying from place to place vis-à-vis locality to locality with their habits and practices. Hence, highly volatile and difficult to model. Notwithstanding that the KMC feels that it is the basic human right of every individual to get Supply of Arsenic free hygienic potable water. To ensure Arsenic free supply KMC as a matter of principle decided not to tap sub-soil water and explore treatment of surface water by application of very modern technology.

The urban population is expected to grow by 60% of total world population by the end of 2025. Rapid urbanization, Industrialization and globalization are the prime cause of serious strain on urban infra-structure.

The proper management of safe drinking water supply with critical consideration of protecting water resources requires immediate action by local authorities coupled with state and national action plan.

KMC being a local self government constitutionally bound to impart a sustainable effort to supply safe drinking water to the urban agglomeration as well as to protect the environment by reducing the pollution level and augment the capacity of natural resources.

In implementing this objective the basic stress needed to be pin pointed on the aspects of the governance. Modern outlook of the governance with proper technical input should ensure better and quality output at the end level where recipients are the hapless citizen. Local bodies now a days with their clear objectives in mind, encourages the stake holders/beneficiaries to actively participate in the process of implementation of the projects to ensure, transparency and to generate confidence in the system. Citizen start feeling that they are essentially a part of the

system. They own the system and feel responsible for the same. Water treatment, conservation, distribution is a huge task. To carry out this task successfully effective governance becomes very important. In the present era computer technology, governance is no more based on manual response. KMC has thus adopted e-governance for effective management. Through this technology of e-governance detection of wastage in transmission and distribution can easily be detected and quantified. Consumer at his level can also get in touch with the authorities for suggestions and remedial measures without delay. Response time to answer the problem is also gets minimized with e-governing system in place.

The challenge of city manager of water supply system is involved serving several masters. Municipal water supply is to fulfill many aspects of real life requirements, protecting public health, meeting industrial, commercial and residential demand and maintaining environmental quality. Our water supply managers balance all such goals on daily basis. The importance of water supply for sustainable community development is an accepted fact and awareness has also reached its threshold now. Our primary consideration for achieving the goals are:-

- i. Environmental integrity, including protection of natural resources
- ii. Financial/economical viabilities of the system.
- iii. Social well-being of the community including public health and safety

The experience we have gathered during last 150 years of potable water supply to the inhabitants of our city is enumerated below in the light of consideration of good governance vis-à-vis e-governance towards its sustainability.

Supply & Demand-Side:-

1. Aging infrastructure
2. Decline in quality & quantity of raw water resources availability (i.e. river Hooghly)
3. Unpredictable quality of raw water resources
4. Upcoming stringent laws towards the use of natural resources of water
5. Growing Urban population
6. Growth in per capita demand with improved standard of living.
7. Expectation of higher level of services.
8. High percentage of unaccounted for water.

Financial:-

1. Insufficient fund for routine renewals and replacement of water supply components.
2. Under investment in water supply infrastructure including renewal and replacements
3. Major dependence on ad-hoc funding.
4. Unfavourable income and expenditure ratio.
5. Rationalization of receivables.

Management & Governance:-

1. High transparency
2. Proper accountability
3. Efficient management with proper information acquisition and analysis on routine basis
4. Introduction of managerial autonomy with inbuilt checks and balances

The “three lows’ is a word often used by a water supply infrastructure service provider like us. Low investment, low quality of services, low recovery (cost recovery). This is acute when we do not set water rates to recover all the infrastructure cost over the full economic life cycle of the water supply system. With the raising of population and demand of supply of potable surface water effectively. Proper utilization of resources and augmentation of water treatment plant become very important. To meet such a challenge e-governance, in the present era, is the reasonable answer.

Good E-Governance principal to water managements

Principal	Example of application
Accountability	Demonstrating adherence of future plan for water infrastructure through publication as well as explaining the financial involvement with person liable for each activity.
Responsiveness	Development total plan to ensure water system capacity to accommodate future growth and publish it to the public for constructive suggestion.
Effectiveness	Water main repair/laying should be done at the same time all related maintenance within logically accepted time frame and exchange of information.
Transparency	Most of the planned work should be publicly informed including technical and financial aspect and its effect on the people at large to be absorbed.
Financial sustainability	Recovery of cost of the project should be done within the economic life of the system including its O&M with public knowledge.
Respect for the rule of law	Residual chlorine of the supplied water should be within the standard practice and people have the access to such information and routine monitoring.

To awake the above management a successful one the question of public audit becomes very imminent which again is possible through e-governance. Anyone from any corner of a street just pushes the key board button and keeps the city managers about their responsibility. Earth Summit organized by UNCED (UN Conference of Environment & Development) declared that by 2025 the world population to be covered by potable water. In that backdrop, our target is water for all by 2011. To achieve this we have planned to develop a comprehensive, self sustainable environmental responsive, consumer interactive water supply system. Depending upon our resource mobilization capacity the action plan to reach the target by 2011, is divided into the different stages, as follows:-

Reduction of gap between demand & supply.

Inspite of the fact that water production capacity is to satisfactory to cater the need of the population but because of failure to extend the networking of distribution for the target could not be achieved.

Equitable distribution –

None the less, Zonal reservoirs have been constructed to cater the need of different zones. Old distributions are being replaced to reduce loss in transmission and check contamination.

Creation of information base –

Kolkata, being an unplanned city, did not have a proper map of the underground utilities. Very recently, with a view to introduce e-governance a comprehensive city map is under preparation. Later the said base map will be used to document underground/over ground utility services. As a result, the different components of Water supply system like W.T.P., Central & Zonal Booster Station and water distribution network will be readily available for references with their connectivity.

Integrated Water supply information system –

Once the base map and map of Water Supply network system are available , the data base relating to the social and environmental and financial condition of water supply system will be correlated/attached with the base map of water supply system and it will create an integrated GIS and this would enable managers of updating, analyzing the

data base (spatial and attributer) and supplement the operation of engineer to act efficiently and promptly . As a result the consumer will also be benefited with decision and get the best possible services in the prevalent condition. It will even be easier for them at their level to detect leakages and reduce the water loss activating the city managers at the fastest possible time.

Automation & E-Governance KMC

After development of integrated GIS and analyzing it accrued data strategic management would be established to maintain the water supply system of desired quality and quantity. Automatic gadgets could also be installed to monitor the quantity and quality of water and transfer the result online to the main system to enable analyze the short comings and find best alternative solution which will save time and energy. The information can also be made available to the consumers online through internet/web for their constructive suggestion.

Now, as many a tools have eased out the undue strain of mankind to buy time for man to do more creative things, e-governance has also proved its worth in many a field of production, distribution and services as one of the most effective tool of modern age.

In the field of water supply also it has already made its mark, elsewhere in the globe, for remarkably improved response and action we are also encouraged to use the same for our betterment in the near future in further extensive way.

In Kolkata admittedly per capita supply of potable water is highest in the country. This is of –course because of geographical advantage of the city being situated on the bank of the river Hooghly coupled with the strong political will of the city governor and sincere efforts of its employees.

Augmentation of filtered water plant with the proper distribution network to be monitored through e-governance with the aid of sincere work force. K.M.C. feels proud to claim that it would be able by 2011 to reach the population of 10 million with potable water.