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SUSTAINABLE ENVIRONMENTAL SANITATION AND WATER SERVICES

## Pricing Water for Sustainable Development

J. N. Shome, S. K. Mukherjee, India



FOR THE SUPPORT and improvement of the quality of life the availability of safe drinking water is inevitable. Without water, sanitation for human life cannot be maintained. The key issue to control the incidence of water borne diseases among the communities is the use of safe drinking water. Due to population explosion and to improve the quality of life the demand for potable water is being progressively increased and gradually emerging as a global issue with prediction of eventual crisis of this precious commodity before the growing population in foreseeable future. To check the wastage and for sustainable management the pricing of water has been conceived as a powerful tool for service providers. The clear understanding of water tariff structure with due consideration of varied socio-economic condition of the end user tailored with positive political will is necessary to achieve this goal. To start with, a few tariff structures have been discussed and case study made to analyze the conditional aspects to evolve users' friendly "water tariff" structure to realize the minimum O & M and running cost of the service since provided or to be provided to the community. After achieving this goal, the gradual stepping for "self-financing" water supply schemes on demand responsive approach may be taken up. This process is considered as better alternative to bring about a change in attitude and behaviour of community and create environment of "willing to pay" and "willing to charge" in the process of a sustainable development involving active people's participation and partnership.

The concept of realising the service charge for water has been gaining mileage at International level day by day. African countries are the examples although most of their populations are in low-income groups.

In Burkina Faso, 90% of the total cost is realized keeping the potable water under metered control. Cross subsidy from large consumers to the poor and low-income areas is present. Use of public kiosks are the operational management tools and in principle no service is given free of charge. In most of the Mvula Trust funded project in South Africa, the community manages the implementation of their own development projects. Community contribution @2% of the total cost of the water supply scheme is a policy of government in Mozambique. In Zambia, *ciba community* manages their

spring-source gravity system water project using the users' fees paid monthly and involving their local banks. The programme policy in Ghana stipulates the community to bear 5% of the chosen water supply cost. In India, the policy of water tariff both at national and state level in different forms and structures are increasingly being adopted suiting the socio-economic and location specific factors.

### Materials and Methods

Tariff structure (1996) of **Birhan Mumbai Municipal Corporation** for each Kilo litre of water has been considered as Rs. 0.60, Rs. 6.00, Rs. 11.00, Rs. 18.00, Rs. 22.00, Rs. 35.00, in respect of residence, religious places, industries, shopping centers, aerated water factory and hotels/ recourses respectively. These are tailored with quarterly minimum charge depending on the meter size and domestic/non domestic use.

**Surat Municipal Corporation** formulated their "water tariff" structure (2001) in 11 nos. of different categories where rate per kilolitre of water varies from Rs. 2.00 to Rs. 40.00 depending on the classification of end users.

Water tariff (2001) of **Vishakhapatnam Municipal Corporation** considered their structure in two categories namely "contributory" and "water tariff". The contributory charges for house connections are Rs. 5000.00 and Rs. 7500.00 for approved and without approved plan respectively. This charge for commercial connection varies from Rs. 25000/- and above depending upon the class of the building to be served. Different structure is followed in case of apartment or Govt. building. For bulk water supply the rate per gallon in Rs. 60.00 and advance for 13 months consumption charge is realized extra.

Usual water tariffs are: a) Tap rate - Rs. 60.00 per head per month up to 3 heads. b) Commercial connection - Rs. 20.00 per kilolitre (minimum Rs. 2000.00 per month). c) Residential metered connection - Rs. 10.00 per kilolitre (minimum Rs. 1000.00 pm). d) Semi bulk metered connection - Rs. 15.00 per kilolitre (minimum Rs. 1500.00 pm) e) Bulk water supply - Rs. 25.00 per kilolitre (minimum 60% of agreement quantity).

In Kolkata, different forms of Tariff structure are now followed by different water service providers.

**Kolkata Municipal Corporation (KMC)** do not charge for water supply through 1/4" - 3/8" size ferrule provided for slums / economically weaker section. Charge for bulk supply to commercial establishment through bulk metre is Rs. 10.00 per kilolitres, which is nearly 0.38% of daily city supply. Nearly two lakhs of floating population enjoy the service but without tax. **Kolkata Metropolitan Water and Sanitation Authority (KMWSA)** follow the tariff @Rs. 15.00 per kilolitre for Industries, Rs. 30.00 per connection per meter per month for domestic use in fringe area with one time connection charge as Rs. 1150.00 **Kolkata Metropolitan Development Authority (KMDA)** has adopted the policy for water charge on bulk supply and the tariff structure (2001) for each kilolitre supply is Rs. 3.00 for local bodies, Rs. 4.00 for housing society / permanent house, & Rs. 15.00 for Industries.

The norms of **Municipal Affairs Department (MAD)** for levy now laid by water supply in urban local bodies states suggest for 30% of property tax (minimum Rs. 35.00 per month, maximum Rs. 75.00) for house connection, and Rs. 15.00 per kilolitre for commercial establishment on metered or calculated quantity. There will be no charge for the (i) Public stand post, (ii) building having no house connection, (iii) holding not attracting property tax or with no valuation.

Case study on Barrackpore and Titagarh Municipality reveals that they are yet to adopt the water tariff in the guidelines of MAD besides the existing property tax system. Titagarh Municipality is a sewerage City with 1,24,196 population having nearly 90% slum dwellers and belonging to economically weaker section, whereas Barrackpore is a non-sewered city where the percentage of total population residing in slums is much lesser compared with that of in Titagarh.

Major source of revenue collection in Titagarh is industrial source but out of 15 nos. of such industries, 3 are sick and 3 are closed. The overall annual tax collection from those sources is about Rs. 25.29 lakhs. Due to better economic background of the population at Barrackpore having better residential houses - their assessed property tax is higher and introduction of computerized **Management Information System (MIS)** helps to collect the tax more effectively and efficiently by the municipality.

#### Discussion and Recommendations:

The concept of Tariff structure and modes of collection are different in different areas. Uniform structure is not workable everywhere and need rational and users friendly approach. Titagarh Municipality provides piped water supply through 13 nos. deep tube wells, the mills have their own arrangement also. The

municipality spends Rs. 1.48 for one kilolitre of water supply including the cost of the pumping of the resulting spent/ waste water which on the basis of nearly 90 lpcd monthly supply comes to Rs. 4.00 per capita per month.

The amount of quarterly property tax per person in slums is around Rs. 1.00 i.e. Rs. 0.25 per capita per month and 30% share for water tax stands to 7.5 paisa against expenditure of Rs. 4.00 (400 paisa). This condition prevails on 90% population. Thus the extended form of empirical formula for Tariff comprising of different identified functional parameter may be developed for improving the water tariff collection in Titagarh Municipality. The pattern of wide structured tariff followed in Surat and Brihan Mumbai needs to be considered also in formulating an empirical formula for Titagarh Municipality.

The Barrackpore Municipality is a non-sewered city and their water supply source is through 25 nos. of Deep tube wells and 372 nos. of hand pumps. The cost to supply one kilolitre water is nearly Rs. 1.05 for deep tube wells and Rs. 0.40 for hand pumps. While splitting the water tax from the property tax the consideration of the supply sources and nos. of house connections will be advantageous and users friendly approach.

In consideration of various aspects it is suggested that the water tariff should be fixed in a classified and categorized formats based on socio-economic condition of the taxpayer with due weightage on different well identified scoring points against the quality, type and quantity etc of the service provided. Thus the empirical relation that is considered a definite approach in this direction is suggested below where suitable basic data are to be generated from the target communities and fitted in appropriate manner in this formula.

$$T_f = \beta.C(I+p).n_f/P$$

Where  $T_f$  = Annual water tariff for the target holding

$\beta$  = Score based classified service factor

$C$  = Annual O & M cost

$p$  = Development charge in centage

$n_f$  = Family size of the target holding

$P$  = Total population served

For the realization of project cost a separate mechanism needs to be developed in a similar approach irrespective of uniform rate that may be in practice for planning a scheme.

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J. N. Shome : Member, Institution of Public Health Engineers, India

S. K. Mukherjee : Member, Institution of Public Health Engineers, India & Chief Engineer, MED, Govt. of West Bengal.

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