

7. Urban Water Supply and Demand: A Case Study of Bangalore City

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Water is a basic necessity and has remained so as no alternative or substitute has been developed to meet its need. In addition, individual as well as interactive effects of demographic growth, economic development and changes in living standards have all contributed significantly to increasing the demand for water. Urbanites, with their modern lifestyle, demand not only higher per capita availability of water per day than their rural counterparts, but also good quality and regularity. Although the issues of urban water supply are universal, they are more serious in developing countries in terms of acute water shortage, huge percentage of water unaccounted for, poor production and distribution cost recovery, inefficient pricing and institutional structure, inadequate infrastructure and technology for treatment and supply, etc. These problems have been empirically illustrated based on the analysis of urban water supply system in Bangalore.

Bangalore, the capital city of Karnataka and a globally known software city is located in the higher altitude of the water deficit zone of southern India. Its water problem is further compounded on account of rapid population growth and area expansion. The main water source to the city is the surface water from the river Cauvery located at a distance of about 100 kms and two other sources from the river *Arkavathi* – a tributary to the river *Cauvery* – located at distances of 18 kms and 28 kms from the city. Though constant efforts are being made to augment the supply, it is being nullified by the high percentage of unaccounted for water (44 per cent). The major share of water is consumed for domestic purpose followed by miscellaneous use. However, marginal share also goes towards commercial and industrial use. There are differences in intra-city water supply. Due to resource constraint, water is being supplied to the city on alternative days. Hence, 115 per capita litres supplied per day, which is very much lower than the prescribed per capita supply of 150 litres per day. In reality, owing to higher percentage of unaccounted for water, the water received by consumers is only 75 litres per capita per day.

The cost of production per kilolitre of water is Rs 23.13 and by excluding the un-accounted for water share, it works out to be Rs 34.25. The marginal costs derived based on the exponential behaviour of cost function have revealed higher treatment and supply costs for with and without water loss. While cost recovery per kilolitre is just Rs.12.05. Hence, cost recovery is on the lower side as compared with the cost of production and supply and not at all comparable with the production cost derived by excluding the water loss.

The BWSSB spent Rs 5,722 million to treat and distribute 247,382 million litres of treated water

to the consumers during 2001. The capital (47.5 per cent) and supply costs (52.5 per cent) almost have a matching share in the total cost of production and supply of water. During 1991–2001, the capital cost recorded a higher percentage increase per year (74 per cent) than the revenue cost (50 per cent) while overall cost has increased by 60 per cent during the same period. Under revenue cost, power, followed by interest payment, has recorded a higher share of expenditure. The higher expenditure on power is mainly due to pumping of treated water from the river *Cauvery* site to a distance of about 100 kms to the height of almost half a kilometre to reach Bangalore city. The higher share of expenditure on interest payment is due to huge borrowings to invest on the completed as well as on-going Cauvery water supply project to the city. Higher spending on establishment in the context of reducing staff strength is mainly due to investment on capacity building activities and programmes of BWSSB staff for efficient water supply management.

In the city, differential water consumption slabs have been evolved and hence, differential tariffs have been fixed to meet the social objective. Accordingly, the first two consumption slabs have been cross-subsidised to the extent of 50 per cent and 30 per cent respectively by the higher consumption slab consumers. While higher consumption slabs have been charged with the actual production cost. However, frequent tariff revisions during 1991–2002 have affected the lower consumption slabs, thereby nullifying the subsidy benefits enjoyed by them.

Bangalore Water Supply and Sewage Board (BWSSB) was established in 1964 by an act of legislation of the Govt. of Karnataka with the twin objectives of supply of drinking water to Bangalore city and safe disposal of waste water generated in the city. However, the BWSSB, with its declining manpower index, is facing a greater challenge in the water supply management of the city. In the context of downsizing of staff, the existing staff has been encouraged with several capacities building programmes for efficient management of the water resources.

Main Policy Issues

The main policy issues that emerge from the study are:

- a) in the context of rapidly increasing population of Bangalore and associated area expansion, and constraints of river Cauvery and non availability of other major source of water, it is high time that area and population growth of Bangalore were delimited and the latter diverted to several counter magnets for balanced regional development;
- b) Planned reduction in the share of unaccounted for water for efficient use of treated water resource;
- c) Appropriate pricing policy to recover the full cost of production and supply,
- d) Evolve a suitable tariff structure with least impact on the lower consumption slabs, and
- e) Evolve an integrated water management policy by encouraging people's participation to conserve the Blue Gold.