



## Financing options for water supply

*Usha P. Raghupathi, India*

WATER HAS BECOME an extremely precious commodity in the urban areas of the country. It has been in short supply in many cities for a number of years, but increasing pressure of population in cities and modern ways of living have increased the demand for water. Water is no longer a freely available renewable resource. It is now a scarce resource in the urban areas of the country and will become dearer in future. Local authorities are, according to the acts under which they are set up, supposed to supply water in most urban areas, although there are different institutional arrangements in many cities. The task of providing water is made tougher by the existing practices such as low tariff and infrequent revision, political interference, low efficiency etc. These factors coupled with the exhaustion of accessible sources of water have added to the woes of city dwellers. Cities today are investing huge amounts of money in developing new sources and conveying water to urban areas.

The present paper briefly discusses the water supply situation in the urban areas of the country and recommends a new financing and institutional option for financing new projects. The paper argues that with such new arrangements the supply situation would improve and local governments could confer the entire population to achieve the goal of reaching the unreached by the turn of the century.

### Present situation

India's urban population which was 217 million in 1991 is projected to grow to over 300 million by the turn of the century. This continuous addition to the urban popula-

tion is putting tremendous pressure on urban infrastructure and services including water. At present only about 85 per cent of India's urban population is covered with water supply (i.e. those with piped connections). However, the coverage does not indicate the quantity or quality of water available. The minimum standards prescribed for water supply in urban areas are:

- Piped water supply with sewerage: 150 litres per capita daily (lpcd).
- Piped water supply without sewerage: 70 lpcd.
- Public stand posts: 40 lpcd.

The duration of supply and the pressure at which water is available determine the quantity of water available in any area. The per capita daily supply varies widely between different cities in the country (Table 1). For instance, Delhi has an average supply of 237 lpcd, Bombay 137 lpcd and Madras a low 47 lpcd. The hours of supply also vary widely. There are cities where the supply averages one to two hours a day with some smaller towns getting a potable supply of one hour every alternate day. This alarming situation is likely to get worse with time. The reality in Indian cities today is that there is moderate to acute shortage of water and urban areas are reeling under the pressure of increasing demand and this is also having its impact on the social fabric of urban settlements.

The worst affected are the poor who have to depend upon public standposts and often have to fight a daily battle for water, waiting in endless queues. Studies have shown that the inequities in distribution are enormous and that the difference between what is consumed by the rich is almost twenty times what is available to the poor in the same city. For instance, in Delhi the slum dwellers consume as little as 16 lpcd whereas the affluent consume as much as 313 lpcd. In many other cities the difference may not be as stark as the entire city may be receiving inadequate supply.

### Problems in improving supply

The reasons for this deteriorating situation are entrenched in the way the water supply entities function at present. The present tariff for water in most cities has little relation to the cost of production. The tariff is initially set close to the cost of production but over time, due to its non-revision or marginal revision, the gap between the cost of production and the tariff widens and results in tariff being completely out of line with cost. Therefore, water

**Table 1. Per capita availability of water in metro cities**

	Availability (lpcd)	Demand (lpcd)
Bombay	137	180
Delhi	237	363
Hyderabad	65*	120
Madras	47	200

\*For 1993-94

Source: Bhuvan C. Barah (1996). Fiscal instruments for environmental sustainability: reforms for urban water services and environmental pollution, National Institute of Public Finance and Policy, New Delhi.

supply has to be subsidized by other revenues of the local government or by the state government. The tariff is also usually set to cover only the O&M costs and not the capital replacement costs. Inefficiency in managing the system and leakages are a major problem leading to loss in revenue. Unaccounted for water in Indian cities are estimated to be in the range of 20 to 30 per cent of the total supply. These include leakages and system losses. Low efficiency of collection is yet another problem. However, what is emerging as a major problem in augmenting supplies and increasing coverage is the lack of funds to finance these.

### **Distant sources and increasing costs**

Water sources that are close to urban centres and which have been the traditional sources are now either polluted, exhausted or will get exhausted soon. Ground water too is depleting and also getting contaminated. Cities, therefore, are reaching out for sources that are far away and are very expensive to develop and convey (Table 2). For instance, Bangalore is planning to draw water from a source 90kms away from the city while Madras is going as far as 400kms to procure water for the city. This is a very

expensive option but is the only option for many cities. Huge capital investments are required for such projects and cities are now considering various methods of funding such capital expenses. Bangalore will require Rs2800 million for the new water supply project while Madras would be spending as much as Rs13470 million on one of the new schemes. Financing new capital projects is one of the main concerns in cities especially now when funds from the government has reduced considerably.

Traditionally funds for financing major capital projects of local governments came from state governments. The local governments submitted project proposals to state governments, which after scrutinizing the proposal, would not only finance but also construct such projects through the concerned engineering department. However, the situation has changed since 1991 when India embarked on a path of high economic growth. Since then the policies of the government have lead to a reduction in fiscal deficit. This has meant a reduction in the expenditure of the government. The government is thus encouraging accessing funds from capital markets and using private sector. This has given a new option for local authorities for financing capital requirements.

**Table 2. Distance to new sources of water supply**

Source: Bhuvan C. Barah (1996). Fiscal instruments for environmental sustainability: reforms for urban water services and environmental pollution, National Institute of Public Finance and Policy, New Delhi.

The financial problems related to water supply in India can be improved by focusing on the following:

- Setting realistic tariff and frequent revision to reflect real costs.
- Improving cost recovery by introducing proper billing and collection mechanisms and also decentralising collection.
- Finding innovative ways to finance new projects which will improve water supply in the city.
- Finding the right institutional option to implement the project.
- Allowing private sector entry into water supply while retaining the overall control over the service.

### **New financial and institutional options**

Finances have always been a major problem in increasing coverage and augmenting supply. Local authorities have almost no funds of their own and with the new economic policies, the funds from higher levels of government have also become limited. How should local authorities improve the service and provide adequate quantity of water at acceptable quality. The solution has been a capital intensive one with cities going to sources hundreds of kilometres away to augment supply. Where would the money come from and how would costs be recovered? In the present scenario it is relevant to talk of full cost recovery through user charges. Since government funds are limited it is expected that the users of the services will bear the entire cost of service provision.

Today cities are considering joint sector ventures for augmenting supply. Since the public sector does not have sufficient funds, financing will have to come from the private sector or from capital markets. An example of joint financing is being considered in Vishakhapatnam, a city in the state of Andhra Pradesh. For a new augmentation project in the city at an estimated cost of Rs1890 million, the industries located in and around the city who will benefit from the project are contributing Rs1000 million. Another city in the same state called Hyderabad, is considering developing a source for augmenting supply using a build-operate-transfer (BOT) arrangement.

### **Innovative financing of the Tirupur area development project (TADP)**

Tirupur is a small town with nearly 250,000 people located at a distance of 50kms, from the metropolitan city of Coimbatore in the state of Tamil Nadu. The town accounts for about 90 per cent of all cotton knitwear exports from the country. Despite having a large economic base the town suffers from an acute shortage of water. A few years ago the town received water once a week and with the commissioning of Water Supply Scheme II a year ago the supply situation improved to once in two days. However, the supply needs to be improved further not only for the domestic users but also for the industrial consumers who at present entirely depend on the water tankers for their daily requirements.

TADP is a comprehensive project, envisaging the provision of:

- 185 mld Water Supply Scheme.
- Municipal Sewerage and Drainage facilities.
- Industrial Effluent Collection and Treatment System.
- Improvement and expansion of intra-city roads.

The project is designed to cover the Master Plan Area and all the wayside unions covering a total area of 217sq km. The treated water from the water supply scheme will also be provided to the way side village unions which fall on the 55km pipeline corridor.

The total cost of the project, which is expected to be completed by 1999, is Rs5890 million, of which the water supply component is estimated to cost Rs2530 million (inclusive of inflation and interest during construction).

The uniqueness of the project lies in its financing mechanism and the institutional arrangement being used for implementing the project. The project will be financed by both debt and equity with the debt: equity ratio of 2.6:1. A Special Purpose Entity called the New Tirupur Area Development Corporation Limited (NTADCL) has been set up to implement the project and to raise funds from institutional investors and capital markets. The NTADCL will have equity participation from local institutions, state government, central government, a financial institution (Infrastructure Leasing and Financial Services), and the BOT Operator. About Rs1630 million would be raised through equity. Debt to be raised through water bonds will provide Rs4260 million. These would be revenue bonds with variable redemption period.

Traditionally only the state had the authority to do capital works in cities through its engineering department. TADP will be the first project in the country which will be implemented by a private company - a BOT operator. The state government of Tamil Nadu for the first time has allowed a BOT operator in this sector and has also allowed private sector to recover costs through levy of user charges indexed to inflation. TADP will also be the first project in this sector to be implemented on a commercial format and this has necessitated a policy change by the state government. The project will thus set a precedent for involving private sector to develop source and convey water to the distribution system. This would reduce the financial burden of government entities and would enable them to improve the quantity of water supplied as well as increase the coverage.

The recovery of costs from users will mean an increase in tariff which will go up from the present Rs2.00 per 1000 litres to Rs5.00 per 1000 litres in 1999 when the project is implemented. The tariff for industrial users, which has been set at Rs22 per 1000 litres, will remain unaffected as even today the industries pay these high rates for purchasing water from the water tankers. The pricing of water in the project has been done on opportunity cost basis. Internal cross-subsidy within the sector will ensure

that the poor are not overburdened with the increased costs although many studies have shown that the poor actually pay more for water than those with water supply connections.

The TADP will partly will be funded from Housing Guarantee funds to be raised in the US. This will be done under a programme of the USAID called the 'Financial Institutions Reform and Expansion' (FIRE) Programme initiated in India in 1994. One of the aims of the programme is to assist local authorities to access capital markets to finance their capital financing requirements to improve selected services. This is the first attempt in the country to enable local governments to use non-traditional means of financing capital works. It was considered necessary under the changed circumstances in the country to encourage such initiatives in order to improve services which have deteriorated under the pressure of increasing population.

### **Conclusion**

Water is an essential service which is required to be provided by local authorities to its residents as per prescribed quality and quantity norms. It is also a commodity that has negative externalities if provided in insufficient quantity. Therefore, local authorities have to ensure that all sections of the population are covered by the service. Indian cities have been suffering from acute shortage of water for many years mainly because of increase in population and changing lifestyles due to increasing incomes. The additional demand for water in most cities has not been met due to lack of funds to develop additional or new sources of water. The present supply system in many cities is very old and leakages are

common. A significant quantity of water is lost due to leakages. Unrealistic tariff and inefficient collection have been other major reasons why the water supply situation has deteriorated in urban areas.

In the changed economic scenario of the country it has become necessary for local authorities to find innovative ways of financing capital projects than to depend on traditional methods of funding based on grants from higher levels of government. This would enable them to improve the quality and quantity of water supply in the urban areas.

The Tirupur Area Development Project is an example of deviation from the traditional source of financing capital projects. The project will use debt and equity for funding the entire project of which water supply is a major component. The project will also recover the entire cost of provision of water from consumers by cross-subsidizing domestic users by industrial users. The industrial users would be charged over four times the rate for set for domestic users. Since the structuring of the project was done on a commercial format, the local government was not considered an appropriate institution to implement it. A special purpose entity was thus created to raise funds and implement the project through a BOT Operator. This is an approach which can be replicated by other cities, especially by those with a strong economic base where the ability to pay by consumers is not a major problem. If local governments can implement capital projects with the help of the private sector, they can direct their efforts to improving the service both in terms of the quality, quantity and coverage. The goal of reaching the unreached by the turn of the century will not remain a dream but could turn into reality.