Issues of Pricing Urban Water

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Abstract

With urban expansion and the growth of population, Indian cities are not able to supply water services that are adequate both quantitatively and qualitatively. Most urban water supply authorities prefer to respond to this demand deficit problem by augmenting existing supply via tapping new distant and often costlier water resources. However, there are obvious limits to this approach. It cannot be a permanent solution because it cannot be sustainable in the long run. The soft policy of supply augmentation ignores the role of pricing in water demand management. Water pricing is a complex problem because water is merit good. The pricing policy, therefore, intends to achieve number of objectives, which are often inconsistent of to each other. The objective of this to paper is to focus on the issues that are crucial for determining appropriate price policy and the need to initiate reforms therein.

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Introduction

With urban expansion, population and lifestyle changes, urban water supply needs often exceeds supply availability. Most urban water supply authorities prefer to respond to this demand deficit problem by augmenting existing supply via tapping new distant and often costlier water resources. But there are obvious limits to this approach. It cannot be a permanent solution because it cannot be sustainable in the long run.

In this situation the policy of supply augmentation conceals the current wastage evident in the urban water supply system. A mere supply side solution does not create appropriate economic environment for the emergence of innovative practices. Furthermore, it undermines the search for more durable demand solution. As a result, the hidden water potential available within the existing levels of urban water supply remains unexploited. The policy of supply augmentation overlooks the role of pricing in regulating demand for water.

Water pricing is a complex issue because water is merit good. Water pricing policy is intended to serve many objectives such as equity, efficiency financial sustainability, and full cost recovery often inconsistent to each other. The resulting price policy is irrational. The need to fix an appropriate charge of price for urban water has been strongly advocated in recent years. Several reasons have been put forward in support of appropriate price policy.

(1) Urban water is underpriced in relation to the cost incurred on the provision of water resulted in serious concerns about the financial viability and sustainability of urban water utilities.

(2) Underpricing has resulted in poor and unreliable water services.

(3) Water is provided at subsidized rate because poor could afford it. In practice, however, it is the rich, not the poor, who always benefit disproportionately from subsidized water services. Unserved people in urban areas pay much higher price for the water. And it is the poor who are unserved. The subsidies, in fact, favour the rich and middle class. Four: underpricing has seriously affected the finances of the state governments; as a result, the service expansion becomes relatively slow.

Almost, all-urban water supply systems are characterized by poor and unreliable water services, the predominance of unmarred connections, high levels of water loss in conveyance and distribution and use in efficiency at the user end, low and biased tariff rate structure with cross subsidization between domestic households and industrial and commercial sectors and low water charge recovery.

The financial viability and sustainability has been consistently emphasized in water policies enunciated in successive five-year plans. National Water Policy 2002 proposed the need for physical and financial sustainability of existing facilities. There is, therefore, a need to ensure that the water charges for various uses should be fixed in such a way that they cover the operation and maintenance charges of providing the service initially and a part of the capital costs subsequently. These rates should be linked directly to the quality of the service provided. The subsidy on water rates to the disadvantaged and poorer sections of the society should be well targeted and transparent. Apart from laying the emphasis on the financial aspects the Policy also underlined the importance of universal coverage of population by water supply, privatisation and participation of the community in the management of water supply systems.

This paper is an attempt to bring out the issues that are relevant and crucial for determining appropriate prices for urban water by using secondary data. Besides this introduction, this paper discusses status of urban water in India and financial status of urban water supply It also discusses different price structures and its impact on the finances of urban water utilities. It also brings out the issues involved in pricing urban water services and, hence, the need to initiate reforms in the key areas.

Status of Urban Water

Rapid growth of urban population has been the characteristic of Indian urbanisation. The Indian urban population has increased more than 10 times since the beginning of the century and more than 5 times since the independence. The decadal urban growth rate of population has remained steady at 40 per cent. The reasons for the urban growth rate have been attributed to natural increase in population and rural-urban migration. Urban population has increased at the rate that has twice the rural population while the urban population accounts 5 to 6 per cent of total water consumption, which is inadequate in relation to its demand. Although 90% of the urban population has access to safe drinking water as compared to 75% in 1981(GOI, 1999), however, the coverage has not been uniform across the States.

Table I

Access to Water Supply in Urban Areas (Status as on 1997)

Population provided with Water supply(in %age)	**States**
High: more than 85%	Andhra Pradesh, Arunachal Pradesh, Delhi, Gujarat, Haryana, Himachal Pradesh, Jammu & Kashmir, Karnataka, Madhya Pradesh, Maharashtra, Meghalaya, Nagaland, Rajashthan, Uttar Pradesh, West Bengal.
Medium: Between 75% and 85%	Bihar, Goa, Manipur, Punjab, Tamil Nadu, Tripura.
Low: Less than 75%	Assam, Kerala, Mizoram, Orrisa, Sikkim

Source: GoI1999

In terms of per capita availability in class I cities (Table 2) water shortages are found to be acute in eastern region while the large states were able to meet 125 litres per capita per day.

Table 2
Water availability in Class I Cities (1988)

Per Capita water availability	**States**
High: Over 160 lpcd	Delhi, Jammu & Kashmir, Maharashtra, Orissa, Uttar Pradesh, Chandigarh, Pondicherry.
Medium: Between 120-160 lpcd	Andhra Pradesh, Bihar, Gujarat, West Bengal
Low: Less than 120 lpcd	Haryana, Karnataka, Punjab, Rajashthan, Tamil Nadu, Kerala, Madhya Pradesh, Manipur, Tripura.

Source: Compiled from TARU (1999:7) and MIDS (1995:7)

The water supply status in Class I cities indicates that 37 per cent Class I cities receive less than 100 litres of per capita water supply and 31 per cent between 100-145 lpcd. which is less than national than water consumption norms.

The per capita availability of water across the metros, varies from 76 lpcd in Chennai to 307lpcd in Kanpur. The average population coverage is said on an average to be 93 per cent with per capita supply pf 190 litres per capita per day. (Table 3)

Table 3

Status of Public Water Supply in Metropolitan Cities (1988)

Name of the Metropolitan city	Population (in million)	Per capita water supply (lpcd)	Population coverage (in percentage0
Mumbai	10.33	207.8	99
Delhi	7.46	258.0	96
Calcutta	4.53	226.7	95
Chennai	3.88	75.8	85
Bangalore	3.82	113.9	100
Hyderabad	2.70	241.6	100
Ahmedabad	2.61	200.1	90
Kanpur	1.77	307.0	75
Nagpur	1.54	206.5	75
Pune	1.52	169.8	78
Jaipur	1.35.	155.5	80
Lukhnow	1.05	262.3	100
Total	42.63	189.4	93

Source: Central Pollution Control Board 1990

Public Expenditure on Urban Water

Urban water supply is state subject; therefore, the financial responsibility for maintaining capital assets and fixing and collecting water charges is the responsibility of the local bodies. In most of the cases local bodies are found to be weak. Urban local bodies receive revenue internally and externally. Internal sources include water tax, drainage tax etc. and non-tax sources include water charges drainage charges etc. The external sources include loans and grants from the state government and international financial institutions.

There has been a significant increase in planned allocation in the country's five-year Plans over the years from Rs.0.43 billion in the First five-year Plan to Rs.117 billion in the Ninth five-year Plan. However, the plan outlay for rural water supply has been more than urban after the Fifth Five Plans. Public expenditure on urban water supply and sanitation accounts for 1.2-1.8 per cent while the urban population has risen from 62.4 billion to 306.9 billion in 2001. It is proposed that the end of Ninth five-year Plan will provide the entire urban population with a planned expenditure of 263billion with States contributing 56 per cent and the Centre and Municipalities contributing 34 and 10 per cent respectively.

Table 4

Plan Outlays on Water Supply and Sanitation in India (current prices)

Plan Period	Plan Outlays (Rs in millions)				
	RWSS	Percentage public sector outlay	UWSS	Percentage public sector outlay	Total Amount
1951-56 (1st plan)	60	0.18	430	1.28	490
1956-61 (2nd plan)	280	0.42	440	0.65	720
1961-66 (3rd plan)	163.3	0.19	893.7	1.04	1057
Three Annual Plans (1966-69)	NA	NA	NA	NA	1064.2
1969-74 (4th plan)	1550	0.98	2820	1.77	4370
1974-79 (5th plan)	4812.4	1.22	5494.4	1.40	10,306.8
Annual	2322.2	1.85	1979.3	1.58	4302.2
1980-85 (6th plan)	22803.2	2.34	17,666.8	1.81	40,470
1985-90 (7th plan)	35556.7	1.98	29,657.5	1.65	65,224.7
2 Annual Plans(1990-92)	27059.2	1.97	17,213.7	1.26	4,42,72.9
1992-97 (8th plan)	107287.9	2.47	59,822.8	1.38	16,71110.3
1997-2001 (9th plan)	209140.00	2.43	186240.00	2.16	39,5380.00

Source: GOI, 1999:67 and for the Ninth Plan (World Bank, 1999)

Water pricing structures

Water pricing is important for water demand management to achieve efficient and sustainable use of water. The basic rule of efficient pricing states that the price should be equal to marginal cost. If price is set below the marginal cost, society would consume more of water than otherwise it would be. Marginal value reflects the economic value of water but it is difficult to implement it. Difficulties in implementing arise because it is difficult to define and estimate marginal cost in quantitative terms needed to determine appropriate user charges.

Marginal cost is also disadvantageous because it tends to neglect equity issue. In periods of shortage or scarcity, if prices increase to the necessary level, lower income groups may be negatively affected. At a more practical level, marginal cost is difficult to implement because it requires volumetric monitoring which is very costly and difficult to administer. Also marginal cost pricing concept is frequently poorly understood by those involved in policymaking and administration (United Nations1980).

Water pricing by itself is a complex issue because water cannot be treated as economic good. Moreover, the urban water supply is state subject. The provision and its management and systems of pricing including price structures vary across the States. At one level, price structure distinguishes between metered systems from non-metered supplies as also from bulk provision from non-bulk provision. Price discrimination has been the common feature of water pricing structure to tailor the objectives of efficiency and equity. Cross subsidy is the feature of price discrimination. For instance, domestic users are charged less than non-domestic users.

Several types of water tariffs are used in water sector:

(a) Increasing block tariffs: An alternative to marginal cost is increasing block tariffs (IBTs). An IBT is based on volumetric component. In this price structure, water use per billing is divided into a number of discrete blocks for which separate prices can be set. A water user in particular category , such as domestic water consumption, is charged a relatively low pre unit price for consumption up to a specified amount. This amount

defines the end of the initial or first block. A user who consumes more water faces a higher per unit price for this additional consumption until reaching the end of the second block, and then a still higher price until reaching the end of the top block structure.(Boland and Whittington,2000)

Increasing block tariffs are popular tariff structure in many developing countries. In a survey of urban water utilities in Asia, the Asian Development Bank (1993) found that the majority of utilities in their sample (20 out of 32) used an IBT price structure. Many experts have shown their preference to IBTs because it contributes to equity, easy to recover the cost and it conserves the water resource. However, an incorrect structure of the IBTs leads to several shortcomings as by argued by Boland and Whittington, such as difficulties to set the initial block, mismatch between prices and marginal costs, conflict between revenue sufficiency and economic efficiency, absence of simplicity, transparency and implementation etc. Strictly speaking, there are no efficiency arguments for increasing block tariff structure and the evidences in favour of the pricing structure has psychological effect helping water demand management is ambiguous: OECD (1987) reports evidence in favour of this argument in Japan, Italy and Denmark and Switzerland while other studies (e.g. the metering trials in the Thames and Yorkshire water authorities in the U.K.) prove inconclusive.

Water utilities in Bangalore, Delhi and Hyderabad use block tariff for domestic and non - domestic supplies in combination with other price structures. Bangalore uses five water blocks, with each block of 25 kls; the price per unit in the fifth block is set 9.4 times the price in the first block. In Delhi, there are four blocks of 10 kls each, with the unit price in the terminal block being 8.6 times that in the initial block. Hyderabad uses four blocks of unequal sizes, and the price per unit of water in the fourth block is set 3.7 times higher than the price in the first block. (Table 5)

Table 5

Examples of Block Tariff for Domestic Use

City	Size of the initial Block (Kf)	Number of block	Water tariff/Id Rs.
Bangalore	< 15	5	3.5
Delhi	< 10	4	0.35 paise plus 50% per 1000 ltrs
Hyderabad	< 15	4	3.7

Source: Coming to grips with issues of pricing urban water intra- city bus transport, Om Prakash Mathur

Increasing block tariff is commonly used in non–domestic metered supplies.

Compared with domestic supplies, the price structure for non–domestic supplies is several times higher. For instance, in Bangalore, the average differential between non–domestic and domestic tariff is about 6:1. In Delhi, the non–domestic tariff is placed at Rs. 5/kl (plus 50% per 1000 ltrs) up to a ceiling of 50 kls beyond which the tariff rate is doubled.(Table 6)

Table 6

Examples of Block Tariff for Non-Domestic Use

City	Size of the initial Block (kf)	Number of block	Water tariff/Id Rs.
Bangalore	< 15	6	33.0
Delhi	< 50	2	5.0 paise plus 50% per 1000 ltrs
Hyderabad	< 50	4	8.0

Source :ibid

(b) A uniform volumetric charge: A uniform tariff, however, may differ according to the category of users. Although simple to use, a uniform rate does not provide any incentive to consumers to effect savings on water use (Table7).

Table 7
Examples of Single Tariff Rate

City	Uniform Tariff (Rs / kl)	
	Domestic	Industry
Kanpur	2.0	10.0
Indore	2.0	22.0
Surat	2.0	8.0
Madurai	5.0	20.0

Source :ibid

(c) A linear water charge,: A linear water charge rises with consumption. It prevails in Kerala where a monthly water charge is specified for discrete quantities of water. Thus, a consumer in Kerala is required to pay a monthly charge of Rs. 22 for a consumption not exceeding 10 kls; the charge increases to Rs. 25 for a consumption level of 11 kls, and rises to Rs. 550 for a consumption of 100 kls/month.(Table 8)

Table 8
Examples of Increasing water charge, Kerala

Kl Consumption / Month	***Charge including meter inspection charge (Rs)***
10	22
11	25
12	28
13	31
25	57
50	182
100	5

Source :ibid

These examples demonstrate the complex nature of water price structures that exists in India. It has been found that where the water charges are levied by the Municipal Corporation, little change having been made in their format and structure. On the other hand, where the statutory board has been set up for the provision of water, attempts have been made by the 1991–2000; The Bangalore Water Supply and Sewerage Board is endowed boards to simplify the pricing structures and periodically adjust them in line with costs. For instance, in Bangalore, tariffs have been revised six times between with powers to adjust the tariff if it is warranted on account of an increase in power tariff rates; increase in establish costs, maintenance costs, however, the approval of the government is essential. The Chennai Metropolitan Water Supply and Sewerage Board has also taken steps to simplify the tariff system. Municipal corporations like the Mumbai Corporation has also adjusted the tariff structure in order to meet the rising cost of water provision, although it has retained the irrational complex pricing structure. In fact, water is good source of revenue, next to octrio, hence, all proposals to create a water board have been rejected by the Mumbai Municipal Corporation.

The Status of Revenue Receipts and Revenue Expenditure

It is found that prices charged for urban water utilities do not cover the costs incurred on its provision. A recent country–wide study conducted by the National Institute of Urban Affairs on Urban Water Supply and Sanitation showed that

(a) the costs of water provision were in excess of recoveries in nearly 76% of cities and towns, and

(b) in the aggregate, the operation and maintenance costs of water supply systems, were approximately 22% higher than the receipts from water charges and water tax levied in lieu of water charges. The deficits i.e., costs in excess of revenue receipts, are estimated at Rs. 524/Mld;. The same study showed that the annual deficits on account of water (average annual per capita expenditure minus average annual per capita revenue) were Rs. 20 per capita in metropolitan cities, Rs. 40 per capita in cities in the

population range of 100,000 and one million, and Rs. 30 per capita in towns which have a population of over 50,000 but less than 100,000 persons. The survey has shown that the annual losses on operation and maintenance of the urban water supply systems would be anywhere between Rs. 9,000–Rs. 10,000 million. Inadequate cost recovery and losses on revenue account are a common feature with urban water utilities.

The Banglore Board could cover 95% of the total revenue expenditure resulting the deficit of 5% in 1998-99. Since the setting up of Water Supply and Sewerage Board, the deficit on revenue account has sharply declined.

The water rates in Delhi are among cheapest in the country. As a consequence, the losses of Delhi Jal Board are enormous. In the year 1999-00, the deficit was 46.8% of the total revenue receipts. No increase in tariff was sanctioned from 1989-90 till 1996-97. The Delhi Water Board was constituted on 2nd April 1998. The Board did increase most user charges except for those whose consumption remains below 10 cu m per month. The tariff structure in Delhi has negative consequence for non-metered households that are mostly located in low-income groups. The rate is fixed on monthly basis at Rs.20 per month whether the consumption is low or high. The same household if it had the meter would be paying 3.5 for consumption of 10 cu m. Similarly the Hyderabad Water Supply and Sewerage Board has been incurring losses, which, in 1997/98, amounted to about 28.5% of the receipts.

The Chennai Metropolitan Water and Sewerage Board (CMWSSB), levies water tax and a sewerage tax, could cover its operational expenses with a surplus of 25.5 crores in 1999-00, In 1999-00, the Mumbai Municipal Corporation generated a surplus of 40% over revenue expenditure.

Table 9

Revenue Receipts and Revenue Expenditure of Urban Water Utilities

City	Year	RR	RE	deficit %	surplus %
Banglore	1998-99	1936.3	2035.9	5.1	-
Chennai	1999-00@	2070.1	1818.1	-	12.2
Delhi	1999-00	2162.7	3175.8	46.8	-
Hyderabad	1997-98	1062.3	1365.5	28.5	-
Mumbai	1999-2000#	9712.1	5820.8	-	40

Note: RR- Revenue Receipts
RE- Revenue Expenditure
@ Inclusive of debt service
# Inclusive of capital expenditure

In Mumbai, consumers have to pay water and sewerage charges when meter is connected, water and sewerage tax when metered is not connected and water and sewerage benefit tax. Water tax is unrelated to water consumption. Water and sewerage tax is calculated as a percentage of the rateable value of the building for unmetered consumers. The water and sewerage benefit tax is also based on the rateable value of the building and has to be paid by all consumers. Both these taxes have been regularly increased since 1987.

Table10

Water Tariff in Mumbai

Connection	Nature of Use	Tariff (Rs per thousand litres)
Metered:	Domestic	
	Slums/Chawls	2.25
	High rise buildings	3.50
	Commercial/Industrial	10.50 - 38
Unmetered:	Domestic	65% of the ratable value
	Commercial/Industrial	130% of the value ratable value

Source: Municipal Corporation of Greater Mumbai 2002

The Mumbai Municipal Corporation has been able to generate surplus partly on water account periodic tariff adjustments. Since 1987, the tariff rates for the domestic (non–slum) sector have been raised more than times from 0.30 paise per cubic meter to Rs. 3.50 per cubic meter in 2002, and for non-domestic sector from Rs. 4.50 to Rs. 10.50 to Rs.38 per cubic meter in the year 2002.

In Calcutta, there are no water charges (neither volumetric charges as connections are unmetered and neither charges related to an estimated consumption). Calcutta Municipal Corporation (CMC) is mostly collecting revenue from allocation from the property tax rather than direct charges for service. It is due to allocate 30% of the property tax to water as well as sewerage and drainage. This is in practice subject to realisation of property tax. In recent years the CMC could allocate 9 to 15% for water and 7 to 10% for sewerage and drainage. The remaining amount is given by the State government for reaching the 30% figure. The problem related to the property tax is that it generates low rate of collection (50% in Calcutta) and the non-reassessment on regular basis of the property value. Therefore, in Calcutta the charges for water are, at least for domestic consumers, far from recovering the costs. Water and sewerage tax is calculated as a percentage of the rateable value of the building for unmetered consumer. The water and sewerage benefit tax is also based on the rateable value of the building and has to be paid by all consumers. Both these taxes have been regularly increased since 1987.

An important aspect of the finances of water utilities relates to their cost structure. Cost structures of water utilities are often difficult to determine on account of the problems of allocating costs to specific services. In Delhi power charges, which are used for pumping water, account for nearly 50% of the total cost incurred in water production and delivery. Wages and salary, which are known as the establishment costs, constitute 35.5% of the costs. In Bangalore, power costs constitute 60% of the operating cost.

A rational water tariff structure calls for graded water rates, which means charging higher rates for higher consumption. This necessitates that all consumers

should be supplied water through meter only. It has been the common feature of most of the cities that meters are non-functioning where the water is supplied through meter connection. For instance, in Mumbai there are 220744-metered connection of which 178350,about 81%, were reported to be non–functional. Besides because of intermittent supply of water, complaints are often received that meter show erratic reading.

Issues in urban water pricing

Since water is essential to human life, water pricing becomes the sensitive issue in a developing country like India. The common perception of people is that any thing that is essential to human life has to be to be supplied by the government at a subsidised rate. As result, the political parties generally oppose any small increase in water price by a local body. The political aspect plays detrimental role in water pricing. The prices, therefore, are charged less than the long run marginal cost of the water. The institutions responsible for providing these services do not receive adequate revenue to improve and expand the facilities. Second: subsidised pricing also leads to over consumption of water. The existing pricing structure is, therefore, unsustainable and lacks incentives. It calls for reforms that are essential and urgent. While bringing about water pricing reforms, following factors need attention:

Cost Calculation

Tariff is designed to recover costs incurred on supplying water, In an exercise of price fixation, the first step would be the estimation of cost. According to the procedure laid down for the calculation of cost of water, only the expenditure that are actually incurred are taken into the consideration and then according to the inflation rate prices are adjusted. This historical or backward looking basis for the costing service is at variance with the average incremental cost approach I.e. one with forward looking approach. This approach of backward looking basis for the costing of service is not conductive for promoting financial discipline in a public service organisation.

Moreover, where water charges are based on property tax, the non- revaluation of properties and the effects on rent control act have caused problems in generating

sufficient revenue to the authority. The reforms, therefore, are needed to bring about changes in property tax and rent control act.

Cost Controls

The areas where the reforms are needed include staffing norms, water leakages and execution completion of capital works. Overstaffing increases operational and maintenance cost. For instance, in the case of Mumbai, for every 1000 water supply connections,35 persons are employed while for the same number of connections the number of employees is one for Singapore. (Asian Development Bank, 2nd Water Utilities Book)

It is commonly observed that execution of capital works in the water supply sector often get delayed resulting huge cost escalation. As regards the water leakages, its share is generally reported to be about 25% to 30% of the total water supply. Since the water saved is revenue earned, emphasis needs to be given for setting up of leak detection cells.

Revenue Raising

Most of the water supply agencies in the country classify water demands into domestic and non-domestic category. Municipal Corporation is required to meet the former as obligatory responsibility while latter as discretionary function. Beyond this classification, the legislations do not provide further guidance as to which uses come under domestic category and which come under non-domestic category. Such details are necessary for fixation of tariff rates and differentiation therein. The differentiation in the rates would, in turn, be needed to achieve revenue targets while promoting at same time the efficiency and equity objectives of the service provision.

Cross subsidies

The revenue base of water utilities is grossly unbalanced in that the non-domestic sector, which uses hardly 25% of the water, contributes 60% to 70% of the total revenue. Industrial establishments pay five and ten times more In Channai and Mumbai than domestic consumers, In Chennai, the commercial sector uses only 16% of

the water but contributes 40% of the total revenue. On the other hand, domestic sector uses 69% of the water but contributes 40% of the income. Similarly, in Mumbai non-domestic sector uses only 20% of the water but contributes 80% of the total revenue. Cross-subsidisation is generally justified on the grounds of equity and financial sufficiency. However, it involves certain adverse consequences such as non-domestic uses pass on this higher tariff burden to the domestic consumers by raising the prices and lower tariff to the domestic users gives rise to the wastage of water. Hence water utilities must rationalise price structure, that is, higher price for the domestic sector and lower price to the non-domestic sector.

Narrow tariff base

Water paying households constitute very small proportion of the total urban households. Using proxies such as the number of connections and adjusting them to account for the multiple use of single connections would place the proportion of tariff paying households at anywhere between 30–40% of the total number of urban households. The balance would account for those households who are supplied free water through standposts and those who have acquired illegal water connections. The narrow tariff base is perhaps the most disconcerting aspect of the urban water supply systems.

Conclusion

The 74 Constitutional Amendment Act has specified a clear functional role of the third tier system in the provision of water supply and sanitation. The State governments are likely to entrust the responsibility of operations and maintenance of urban water supply and sanitation to local bodies. Looking at finances of various Municipal Corporations, plan outlay for the urban water supply and sanitation sector and their pricing structure, local bodies could financially survive only by initiating reforms in water sector. There are a number of gray areas that need attention and reforms in water sector that could bring down the cost of water supply. However, one could start with initiating reforms in water pricing, though politically a difficult proposition, to generate revenue for augmentation of water supply and for effective demand management policy.

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