Cost Recovery in Urban Infrastructure Provision

Om Prakash Mathur
Professor
National Institute of Public Finance and Policy
New Delhi

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Abstract

Infrastructure services comprising services such as water and wastewater, bus transport, solid waste collection, disposal and management, and street lighting in most Indian cities and towns are underpriced, with damaging long-run consequences, on the one hand, for households who have inadequate access, and on the other hand, for infrastructure-supplying entities who are unable to invest and expand the coverage of services. Most infrastructure-supplying entities – be these the municipal governments, state or city level boards or corporations, or the Public Health Engineering Departments of the state governments, run at a loss, and cover the loss - defined as the gap between revenues from the sale of services and cost of service provision – from government subsidies and accelerated depreciation of capital. The result is a low-level equilibruim: low tariff, poor services, and constraints on access, especially of poor households.

*Using city-level experiences of **one** infrastructural service, i.e., **water**, this presentation attempts to bring out the challenges that are faced in striking a balance between cost and price, and provide a framework that spells out key areas of reform.*

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Layout of the Presentation

Section 1	Importance of Cost Recovery in Urban Infrastructure Provision - why are we discussing it more than ever before?
Section 2	Cost Recovery Instruments and Structures - what are the established mechanisms for water charging?
Section 3	Water Pricing Experiences - A Four-City Survey
Section 4	Key Findings, Challenges, and Possible Directions of Change - where do we go from here?

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Section 1

Importance of cost recovery in urban infrastructure provision: why are we discussing it more than ever before?

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- Recent years have seen in India much discussion on the importance and role of cost recovery in the provision of urban infrastructural services. The genesis of the discussion lies in the fact that underpricing of urban services, particularly water, whether it is part of a conscious policy or just a practice, has caused serious damages both to the consumers and producers of water, and is manifest in—

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(i) **poor service and reduced incentives to expand the spatial coverage of services**: although most cities and towns have been able to reach a reasonably high level of access to safe water (90.01%: 2001), about 50% of the urban households face limited hours of service, and water services are uniformly sub-standard. The Government of India and the World Bank reported that urban water supply systems in India "deliver on average 50 to 60% of their capacity to end-users, compared with 80-85% in other countries. Poor and sometimes non-existent management leads to waste and inefficiency, with the resultant large claim on resources that could be redeployed for service improvements".

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(ii) **inability of urban poor households to benefit from subsidized water**: much of the evidence points out that the poor pay more, often two-three times, if coping costs were included, and the price subsidy meant for them and built into tariff structures is appropriated by the non-poor households. A large proportion of the urban poor households do not have private connections, and are unable to benefit from water subsidies.

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(iii) **financial strain on the water-supplying entities**: although firm estimates in respect of water price and costs are spotty, on average, prices or recoveries from the sale of water and other charges relating to water provision are approximately 20-25% lower than the operating and maintenance cost. Annual losses on account of operating and maintaining the urban water supply systems are conservatively estimated at Rs.50,000-60,000 million, placing an enormous burden on water supplying entities.

(iv) **increased burden on the finances of state governments who have either absorbed the losses of urban water utilities or adjusted the losses by capital account support to them for capacity expansion**: although the macroeconomic consequences of low water prices are difficult to assess, urban water services could cost the state governments the equivalent of 0.3-0.4% of their gross domestic products.

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- The present position in respect of water pricing is no longer sustainable; it has impeded investment and is being viewed as a major deterrent to the flow of private capital into this and similar infrastructural services. There are **only** two instances of private investment in urban water (Tirrupur and Vishakapatnam).

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Section 2

Cost Recovery Instruments and Structures: What are the Established Mechanisms for Water Charging?

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Water Pricing Instruments

Three types of instruments are currently is use for water charging:

(i) connection fee or a fixed access charge – based on the size of the lot or holding or the size of connection and ferrule, or a combination of the two;

(ii) water tax – a tax which is unrelated to water use or consumption, and is leviable on the annual rateable value of land and property; and

(iii) water charge – conceptually designed as a charge on consumption, it is an ubiquitions instrument for charging both metered and unmetered water supplies.

Besides these, there are minor instruments such as a meter rent, a license fee, water cess, meter maintenance charge, and development charges.

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Water Pricing Structures

Water pricing structures in India are extremely complex and often even clumsy. Price structures distinguish between-

(i) metered connections from unmetered connections;

(ii) bulk provision from non-bulk provision;

(iii) domestic users from non-domestic and other assorted categories of users;

(iv) income groups of households; and

(v) filtered water from unfilled water and water supplied by tankers etc.

Cross subsidy is central to the principle of price discrimination.

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Types of Water Tariff

(i) Increasing block tariff (IBT) – Delhi and Hyderabad use IBT for domestic and non-domestic supplies in combination with other price structures.

(ii) Uniform Volumetric charge – Kanpur, Indore, Surat and Madurai use a fixed charge per unit of water consumption which, of course, varies with the category of water users.

(iii) Linear water charge – a charge which rises with consumption, not in blocks but with every discrete unit of consumption (Kerala).

(iv) Two-part tariff.

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(iv) Tariff for unmetered supplies – Vijaywada, Surat, Belgaum, Guwalior, Nagpur, Patiala, Gorakhpur are examples of cities which lay down fixed tariffs for unmetered supplies.

Variations are for too large to be able to test the adequacy of different water price structures.

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Section 3

Water Pricing Experiences: A Four-City Survey

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- ***Institutional Framework***

  (i) state-level parastatals: Agra and Allahabad
  (ii) city-level parastatal: Bangalore
  (iii) city-level corporation: Pune

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- ***Charging Instruments***

Agra and Allahabad	Water tax using the annual rateable value as the base; water charge on all metered and unmetered water connections; meter rent on metered water connections; development charge/fee for connections; and service and supervision charge on all connections. Charges discriminate between domestic and non-domestic consumers, with non-domestic users being further categorized into special industry (Rs.15/kl), business (Rs.7.5/kl), government and semi-government (Rs.6.0/kl), army cantonment (Rs.4.5/kl), and others (Rs.3.0/kl). Charges for special industry category is five times that of water for domestic users.

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Bangalore	Connection fee (varying with the floors); water cosumption charge, where domestic consumers in high-rise apartment buildings and government institutions are charged bulk rates, and others according to rates for different slabs; and meter hire charges.

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Pune	Water connection charge; water tax; water benefit tax; volumetric water charge; and fixed charges for new unmetered connections in slum settlements.

Thus, water is charged in different ways: (i) a one-time charge, invariably for securing access, (ii) an annual charge or a tax, often leviable on the annual rateable value; and also a meter rent, leviable generally once a year, and (iii) a water consumption charge collected on a monthly, bi-monthly or an annual basis. (See Table 1-6)

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Structure of Cost

- Water provision which includes production and distribution of water entails costs comprising establishment cost; electricity charges; chemicals for treatment of water; general repairs and maintenance of plant and machinery; cost of raw water where applicable; and interest payments. For the reason that water is drawn from different sources and distances, the structure of costs varies between different cities, often widely, reflecting the joint effect of local factors such as geography, topographic system and operational efficiencies.

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- Energy costs have become an important component of cost and are exogeneous to the water supplying entities. Table 8 and 9 show the structure of cost incurred on water provision (in percentage terms). In Agra and Allahabad, establishment costs account for anywhere between 50-70% of the total cost; the same is only about 17-20% in Bangalore and Pune. Energy costs are a major cost in Bangalore and Pune and negligible in Allahabad. These costs are particularly high in Bangalore on account of sources that are distant and energy is spent on abstraction, diversion, and transport. Most costs on a unit basis have risen over time, with the rates of rise in electricity costs being greater compared to other cost items.

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Recoveries from the Water Sector

- Recovery from water sales has risen at a faster rate in recent years compared to expenditure on water provision, signalling that price adjustments have found acceptance as a tool for financial viability among water supplying entities.

- Price of water as manifest in recoveries does not cover the cost incurred in water provision in Agra, Pune and Vadodara. In these cities, the price is able to cover 97.9%, 48.3%; and 74.4% of the cost respectively. (See Table 10)

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Section 4

Key Findings, Challenges and Possible Directions of Change: where do we go from here?

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Past work in India on water pricing is limited and focussed on (i) the inadequacy of tariff, and (ii) issue of leakages. There are, however, several other spheres which point to some directions in developing a framework for reform:

(i) Expansion of user base – an important component of water price reform.

(ii) Balancing the revenue base of water utilities – current burden on the non-domestic sector is much too high and adversely impact the commodity market.

(iii) Protecting of the poor by means of a life–line block that reflects their demand portfolio.

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(iv) Complete and proper accounting of costs of water provision, accounting of revenues of water supplying entities is complex.

(v) Reduction and eventual elimination of non-revenue water – high proportion of non-revenue water is a major stumbling block in the rationalization of water tariff.

(vi) In view of the fact that a greater part of the cost incurred on water provision is determined exogeneously (e.g., salaries and energy costs), it would seem essential to provide some kind of an automatic adjustment of water price with such exogeneous factors.

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Table 1
Water Connection Charge, Pune

Diameter of the pipe (in inches) (1)	Charges (Rs.) 1999/00 (2)
0.50	500
0.75	1,000
1.00	2,500
1-2.00	5,000
2-3.00	7,500
3-4.00	10,000

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Table 2
Water Connection Charge, Bangalore

Type (1)	Fee (Rs.) (2)
Domestic (ground floor)	1,620
Domestic (ground and first floors)	2,220
Domestic (ground and two floors)	2,820 + prorata charges @ Rs.70/sq.meter
Non-domestic	1,050 + provata charges @ Rs.120/sq.meter

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Table 3
Annual Water Benefit Tax, Pune (Rs.)

Basic (1)	1996/97 (2)	1999/00 (3)
Annual rateable value	2%	2%

Table 4
Water Charge for Metered Connections, Pune

Type (1)	1996/97 (2)	1999/00 (3)
Domestic	2.00	2.50
Non-domestic	10.00	16.00

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Table 5
Annual Water Charge for Slum Settlements, Pune

Year (1)	Rs. (2)
1996/97	175.0
1997/00	250.0

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Table 6
Volumetric Domestic Water Tariffs, Bangalore

Consumption stab (kl) (1)	Tariff Rs./kl* (2)
<15	5.00
15-25	6.50
25-50	10.00
50-75	25.00
75-100	30.00
>100	30.00

* A minimum payment of Rs.75/month.
* A minimum payment of Rs.75/month for each apartment in high rise building.

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Table 7
Water Charges for Domestic Use in Agra and Allahabad (Rs.)

Annual rateable value	Size of meter connection					
	15 mm		20 mm		25 mm	
	Agra	Allahabad	Agra	Allahabad	Agra	Allahabad
(1)	(2)	(3)	(4)	(5)	(6)	(7)
<360	360	480	540	720	840	1080
360-2000	720	900	1080	1080	1620	1200
2001-3500	1080	1080	1620	1200	2400	1680
3501-5000	1380	1200	2040	1680	3060	2040
>5000	1800	1680	2700	1800	3600	2400

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Table 8
Structure of Cost Incurred on Water Provision, Per cent of Total Cost, 1999/00

Structure	Agra	Allahabad	Bangalore	Pune	Vadodara
(1)	(2)	(3)	(4)	(5)	(6)
Establishment	48.6	78.7	20.1	19.0	24.2
Electricity	14.8	1.2	59.5	47.8	48.5
Chemicals	19.5	4.5	-	1.9	-
General repairs	2.3	9.6	7.6	8.8	13.9
Raw water	-	-	-	16.3	-
Interest payments	-	-	12.8	6.2	13.3
Others	14.9	6.1	-	-	0.1
Total	100.0	100.0	100.0	100.0	100.0

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Table 9
Per Unit/kl Structure of Cost in Water Provision, 1999/00 (Rs.)

Structure	Agra	Allahabad	Bangalore	Pune
(1)	(2)	(3)	(4)	(5)
Establishment	1.54	1.66	2.61	0.61
Electricity	0.47	0.03	7.72	1.54
Chemicals	0.62	0.10	-	0.06
General repairs	0.07	0.20	0.99	0.28
Raw water	-	-	-	0.53
Interest payments	-	-	1.66	0.20
Others	0.47	0.13	-	-
Subtotal	3.17	2.11	12.98	3.22
Total (including outstanding electricity charges)	3.69	2.67	12.98	3.22
Water installed capacity (mld)	280	230	705	790

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Table 10
Water Price – Cost Linkage
(expressed in per unit/kl Rs. terms)

Cities	Recoveries from sale of water		Cost incurred on water provision		Recoveries as a % water provision	
	1995/96	1999/00	1995/96	1999/00	1995/96	1999/00
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Agra	1.74	3.10	3.04	3.17	57.2	97.8
Allahabad	1.11	2.28	1.86	2.11	59.7	108.0
Bangalore	8.04	13.79	8.91	12.98	90.2	106.2
Pune	1.61	2.40	1.74	3.22	92.5	74.5

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