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## FINANCING OF URBAN INFRASTRUCTURE IN INDIA

MULKH RAJ

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The term infrastructure is very wide and includes variety of goods and services like water, drainage, sewerage, sanitation, telecommunication, transport, health, electricity or education. The scope of this paper is however limited to only those services which are essential to land and shelter development. This means water, sanitation, roads and solid waste.

At present there is a huge backlog in provision of these services. Unless we undertake a review of the policy perspective of the provision of these services in India the supply constraints seem perpetual.

## INTRODUCTION

Traditionally in India it has been viewed that the provision of urban infrastructure fulfils the basic need and users cannot be denied the use of service. It is also believed that water, sewerage schemes being capital intensive with long gestation period and uncertain returns on investment, the private sector will not be interested in this sector. It also seemed to be in the mind of planners, that unless government intervenes it shall promote private sector monopolies and jeopardise the interests of the consumers.

As a result the government took upon itself the responsibility to provide all these services. In practice, because of limited resources available with the government, unremunerative and in some cases free supply of services, high overhead cost of the government organisations, there has developed a huge gap between supply and demand of infrastructure facilities in every Indian city.

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*\*The views expressed are purely personal to the author.*

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## II URBAN INFRASTRUCTURE DEFICIENCIES

The shortages in provision of urban infrastructure is serious in cities of all types and sizes. A recent all India survey <sup>(1)</sup> shows that only 56 per cent of sample households had access to treated water supply. Nearly 16 per cent still use hand pumps and for 21 per cent households the source of water is a well. The rest 29 per cent access water from unsafe sources. The conditions in the urban transport sector are no better. Shortage of public transport capacity has reached a critical stage. In sheer disgust the middle income group in big cities have made their own arrangements. The urban poor do not use any transport and hence walk or bicycle to the place of work. The quality of roads is equally bad. Roads are ill maintained and have little width to facilitate traffic.

In respect of sanitation only 12 per cent of the cities have facility of underground sewerage system and the poor neighbourhood have no facility at all. Most of the towns (over 87 per cent) depend on open surface drains for disposal of waste water. <sup>(2)</sup> Further there is a concentration of underground sewerage facilities in big towns. In smaller towns the underground sewerage facility is just not available. As a result almost all these towns have only open surface drainage. In most of the Indian cities, there are open rubbish dumps, breeding flies and insects. Solid waste disposal has become another major problem.

At the same time there is serious shortage of resources for investment in urban infrastructure. Most of the investment up till now has been in the government sector, and its impact in terms of either meeting the needs of the cities or assure good quality of services has been inadequate. As project cost recovery in most of the government projects is poor, investments in urban infrastructure has only increased the debt and interest burden on the government. Percentage of total plan outlay in urban development sector is negligible. There is also little likelihood of any significant increase in government resource allocation to urban infrastructure sector.

The urban infrastructure sector thus needs an overall review to explore alternative ways of financing this sector with the aim to augment resource availability and meet the demand for essential urban services.

## III FINANCING OF URBAN INFRASTRUCTURE - EXISTING ARRANGEMENTS

### Role of the State

Though Government look upon themselves the responsibility to provide all major urban services but has resulted in failure and which has made it imperative to look for other options. Government agencies need to review their role and help establish an alternative paradigm of servicing the urban areas. Because of huge infrastructure backlog and the urgent need to meet the needs, it is being realised that provision of urban infrastructure can not be handled by government alone.

### Realisation of the Problems

There are broadly two reasons for this realisation. First the capacity of the State to meet the financial needs of the infrastructure sector remain limited. Due to limited resources the budgetary allocation for urban development has also remained negligible. The outlay in the Seventh Five Year Plan <sup>(3)</sup> (Centre, State and Union Territories) for this sector was only 1.1 per cent of total Plan Outlay (1985-90). The possibility of any significant increase in plan outlay for infrastructure services is remote in the near future. This is due to severe budget and fiscal problems of the governments at all levels. The combined budgetary deficit of the Central Government, State Government and

Union Territories has increased from Rs.55040 million in 1987-88 to to Rs.88530 million in 1988-89. As the gap between total expenditure and current revenue has been predominantly met (74.5 per cent) through draft on domestic savings,<sup>(4)</sup> the interest payment burden on the Governments is severe.

Secondly as cost recovery in a typical government sponsored urban infrastructure project has remained negligible or was never intended, any possibility of increase in resource allocation through receipts on past investments is also not possible. Only if the rate of return on capital on these state sponsored project had been adequate the sector would have expanded considerably. In actual practice due to lack of proper tax policy and adoption of unremunerative tariff rates, financing of urban infrastructure is a huge liability. In cases where financing of urban infrastructure is through raising of loan it has only lead to increased indebtedness of the government and the mounting interest burden. Further there is also neglect of maintenance of assets once created.

All this has lead to decline in quality of services and inability of the government agencies to increase the quantity supplied. This has naturally lead to incessant resistance from the users against any increase in tariff rates. In contrast only if infrastructure sector was efficiently managed it would have helped increase the productivity of the private sector enterprises and its willingness to share the cost. In actual practice neither of it has happened.

#### Central/State Governments <sup>(5)</sup>

Water Supply, sanitation etc. as per the constitution of India are State subjects. The Government of India is responsible inter alia for policy formulation, information system, securing assistance under International or bilateral arrangement from institutions abroad or donor countries.

Under the UN International Drinking Water Supply and Sanitation Decade programme to which India is a signatory, it was decided to cover the entire urban population by 1991 with water supply facilities and with sewerage and sanitation facilities to the extent of 80 per cent.

It was also been decided to eliminate manual scavenging to the maximum possible extent. At least 500 towns will be made scavenger free annually. The scheme provides a mix of subsidy and loans as follows:

Economically Weaker Section	45 per cent subsidy 50 per cent loan and 5 per cent Beneficiary Contribution
Low Income Group	25 per cent subsidy 60 per cent loan and 15 per cent Beneficiary Contribution
Middle/High Income Group	75 per cent loan and 25 per cent Beneficiary Contribution

## Infrastructure in Small and Medium Towns

Further urban infrastructure is provided in small and medium towns under the centrally sponsored scheme for their integrated Development. The Scheme was launched in 1980 under the Sixth Five Year Plan (1980-85) with an outlay of Rs.960 million and Rs.880 million during the Seventh Year Plan (1985-90). Under this scheme central assistance of Rs.4.6 million on 50 per cent matching basis is given for infrastructure facilities with an additional compulsory provision for low cost sanitation (Rs.8 lakhs) and Rs.6 lakhs as additional optional provision for low cost sanitation. During the period 1980-95, 235 towns were covered with central assistance of Rs.635 million. Additional Rs.800 million were provided during the period 1985-90 for 143 towns. Total investment at the end of 1990 is estimated at Rs.1952 million.<sup>(6)</sup>

## Transport Studies

Steps have also been taken to establish 'Urban Consortium Fund' to assist various State Governments and Union Territories in taking up studies for the improvement of transport network in urban areas. Number of feasibility studies have been sponsored by the Ministry of Urban Development for the cities of Bangalore, Madras, Jaipur and Calcutta.

## National Capital Region

The National Capital Region (NCR) Planning Board was set up in April, 1985. Since then the Board has prepared a Statutory Plan for the National Capital Region (Delhi). The NCR Plan 2001 has laid primary stress on development of infrastructure both at regional and local level in the identified priority towns. The Board has prepared an investment plan for the period 1990-95 (Eighth Five Year Plan). It visualises an investment of Rs.17500 million in the Central Sector (National Highways, Express Ways, Railways, Telecommunication, Power) and Rs.11520 million in the State Sector (infrastructure development, upgradation of regional roads, upgradation of infrastructure, Land Acquisition). It also visualises an additional investment of Rs.8280 million for counter magnet areas. The NCR has already enabled investment of Rs.1340 million by October, 1990.<sup>(7)</sup>

## Plan Outlays for Urban Development

The plan outlay in Central, State and Union territories for urban development programmes is as under:-

**Table 1 : Plan Outlay for Urban Development**

Year	(Rs. in million)
1985-86 (Actuals)	3232
1986-87 (Actuals)	3590
1987-88 (Actuals)	4010
1988-89 (R.E.)	4624
1989-90 (Plan outlay)	6102
Seventh Five Year Plan (1985-90)	18013

Source: *Economic Survey 1989-90, Ministry of Finance, Government of India, New Delhi, India, p.S.44*

## Local Government Financing

A survey of the urban areas by the National Institute of Urban Affairs (NIUA) brings out the niggardly contribution of urban local bodies in capital works projects. The expenditure at constant prices by Municipal Boards on Capital Works actually declined between 1979-80 to 1983-84. In 1983-84 it was Rs.14.2 per capita per annum as against Rs.15.1 per capita per annum in 1979-80. With a little over one rupee per capita per month, it is an insignificant effort by the municipalities to either improve the quality or quantity of infrastructure services.

The per capita expenditure (at constant prices) on public works in different size of the towns is as follows:

**Table 2: Per Capita Expenditure on Maintenance of Public Works at Constant Prices 1979-80 and 1983-84**

	79-80 (Rs.)	83-84 (Rs.)
Cities with population more than one million	18.9	13.9
Cities with population of 0.1 million and above	10.4	15.4
Cities with population of 50000 to 0.1 million	8.2	14.8
Cities with population of 25000 to 50000	8.0	10.8
Cities with population less than 25000	9.1	11.2
All Classes	15.1	14.2

*Source: National Institute of Urban Affairs, New Delhi, India.*

## Problems of Municipalities

Most of the municipalities are scrambling to make both ends meet and seem to be 'permanently failing organisations'. Municipal Administration seems an 'organised anarchy' i.e. organisation in which goals are ambiguous, preferences are ill defined, participation is fluid and change appears imminent. Cohen<sup>(8)</sup> calls this environment as non decision making model in which decision opportunities are fundamentally ambiguous stimuli. Decision makers thus then meet the situations either by oversight (without much attention and with minimum time and energy), or by flight (avoidance; no immediate resolution) or by resolution (although the length of time required may vary greatly). The result is that cities seem ungovernable.

## **Financial Health of State Sponsored Agencies**

The financial health of state sponsored infrastructure agencies also is not very encouraging. For example the Maharashtra Water Supply and Sewrage Board has (as on 31st March, 1990) over due amounts of the order of Rs.523 million(9) as against the annual works expenditure of Rs.2127 million during 1989-90. The administrative expenses of the Board are 20 per cent of the works expenditure.

The Kerala Water Authority,(10) another government owned financing agency had default on repayments to the extent of Rs.804 million at the end of Rs.1987-88. This is against annual loans and advances of Rs.31 million only during the year 1987-88. The grants received from the government were Rs.113 million during 1987-88 and Rs.106 million during 1986-87. Its excess of expenditure over income during 1987-88 was Rs.100 million and Rs.104 million during 1986-87. The agency operates at 19.63 per cent of overhead expenses.

Similarly Bangalore Water Supply and Sewerage Board(11) has overdue recoveries at 37.43 per cent of amounts due during 1987-88. This is against corresponding figures of 31.13 per cent during 1986-87. The agency has no reserves or surpluses. The Board operated at 9.61 per cent administrative and supervision cost during 1987-88. During 1985-86, the corresponding figure was 40 per cent. The Board had an annual deficit of Rs.15 million during 1987-88, Rs.78 million in 1986-87 and Rs.58 million during 1985-86. The net accumulated losses of the Board as 31st March, 1988 were as high as Rs.151 million. At the end of 1987-88, the agency had an outstanding amount of Rs.163 million payable to State Government and which it is trying to get it waived.

The Karnataka Urban Water Supply and Drainage Board(12) has similar problems. Its percentage of overdue levels was as high as 59 per cent during 1989-90. Its percentage of administrative and supervision expenses was 21.53 per cent in 1989-90, 37.03 per cent in 1988-89 and 30.80 per cent during 1987-88. The Board has no reserves or surpluses.

The financial position of other government sponsored agencies is no better. There is over dependence on the government for grants, overdue levels as well administrative and supervision costs are high, financial management relatively weak and generation of internal resources inadequate or negligible.

## **Limits to Government Investment**

Seeing the inadequate performance of these government sponsored agencies, insufficient government investments in urban infrastructure and there being little likelihood of its increase in future, it is desirable that we should stop pursuing course of action which is incompatible with private incentives; altruism, but one which is often ignored.

This is also because the country has yet to settle the basic problem of applied welfare theory(13) to help it arrive at in the changed context the right mix of government, private, community and household responsibilities. Also it has yet to quantify institutional costs, benefit and responsibilities on an economic basis of the framework set up to deal with the issue. These elements remain as critical endogenous constraints in evolution of effective urban infrastructure development policy.

The basic premise however is becoming clear. The ultimate limit to which government can go on investing in urban infrastructure is determined by economic viability of its investments. As viability levels of government sponsored projects in the past have been negligible or very low, the urban infrastructure supply constraint has become more severe year after year. These supply constraints seem perpetual unless alternatives to existing system of financing urban infrastructure projects are thought of.

## **INSTITUTIONAL FINANCE**

Of late the institutional financing in urban infrastructure sector has become significant. The World Bank is providing considerable finance for provision of city level urban infrastructure. The Life Insurance Corporation of India also finances water supply, sewerage and urban transport projects. The Infrastructure Leasing and Finance Corporation has also started financing viable urban infrastructure projects. HUDCO has now branched off on a significant scale in providing financial support to essential urban infrastructure projects at city level.

Total investments being made by these institutions is now more than the annual urban development plan outlays of all Central, State and Union Territory Governments for the year 1989-90. Assuming that the World Bank sanctioned projects will last 4 years, it will give an average of Rs.5000 million per year,<sup>(14)</sup> HUDCO is expected to disburse Rs.3200 million during the year 1991-92. The additional investment from LIC/IL&FC can be assumed at Rs.2000 million. The total investment by all these institutions can thus be expected at Rs.10320 million as against Rs.6102 million under government urban development Plan Outlay during 1989-90.

The nature and scale of support being provided by these institutions is as follows:

### **World Bank/IDA Assistance**

The World Bank is assisting urban development projects. These projects are under implementation in the States of West Bengal, Madhya Pradesh, Maharashtra, Gujarat, Uttar Pradesh and Tamil Nadu. The total cost of the project is US \$1421.91 million. Slum upgradation, water supply, sanitation, Shelter Upgradation, Area Development, Transportation etc. are the main components of these projects. The projects under implementation have been extended IDA assistance of \$ 800 million.<sup>(15)</sup>

### **Life Insurance Corporation**

Life Insurance Corporation (LIC) was the first institution to provide financial assistance for water supply, road and water supply and sewerage projects. At present LIC is statutorily required to earmark about 8 per cent of its funds for the water supply and sanitation sector. Financial assistance provided by it during the last five years has varied between Rs.600 million in 1986-87 to Rs.1584 million in 1990-91.<sup>(16)</sup>

### **Infrastructure and Leasing & Finance Corporation<sup>(17)</sup>**

The Infrastructure Leasing Finance Corporation promoted by Unit Trust of India and other organisations have set the trend to promote viable urban infrastructure financing system i.e. toll expressways, bridges etc. The fundamental requirement of their financing is that recovery of investments be effected through the levy of end user charges.

Wherever possible, such assets are financed by an operating lease linking the rental payment to the usage of the asset. This effectively helps translate the financing cost from a fixed cost to a variable expense. On recovery of investments made at a designated rate of return, the asset in question is then transferred to the Government or the concerned local authority. In the intervening period until such transfer takes place, maintenance costs of the assets are funded through the user charges. As a consequence, the asset is created for public use and pays for itself, but eventually reverts to the full control of the State.



## **Housing and Urban Development Corporation (HUDCO)**

The Housing & Urban Development Corporation (HUDCO) was incorporated in 1970 and started its operations in 1971. Till March 1989, HUDCO's operations were mainly concerned with housing sector. To check the deteriorating conditions in cities and towns and to ensure timely investments in urban infrastructure projects, the Government of India, pending creation of the separate Urban Infrastructure Finance Corporation, permitted it to extend its financial assistance to agencies dealing with the implementation, operation and maintenance of urban infrastructure. To facilitate this, in 1989-90, a separate Urban Infrastructure Finance Wing (UIFW) has been set up for processing loan proposals for city level urban infrastructure projects for HUDCO financial assistance.

At the end of October, 1991 HUDCO has already sanctioned projects with its loan commitment of Rs.6,142 million. <sup>(18)</sup>

The urban infrastructure projects sanctioned by HUDCO so far cover water supply, sewerage, storm water drainage, construction of roads, bridges, Transport Nagars.

### **Growing Institutional Contribution**

The contribution of the above institutions in urban infrastructure is growing. As institutional intervention brings about financial discipline in the borrowers, the sector it is hoped will get the much needed boost. Financing institutions are insisting that agencies give overriding importance to effective demand for services. The importance of cost recovery is being increasingly emphasised and which in turn will necessitate appropriate delegation of powers to municipalities or Water Supply, Sewerage, Drainage Boards and Transport Corporations. It will also be insisted that agencies establish efficient systems of project costing, pricing, billing for services and cost recovery.

In this context it is useful to survey the existing project costing, pricing practices and contribution of non-government agencies in provision of urban infrastructure sector. The details of which are as follows:-

#### **IV COST LEVELS, PRICING PRACTICES AND PRIVATE-PUBLIC SECTOR INTERFACE**

Urban services encompass a wide variety of engineering services. Broadly these can be classified in two categories i.e. Nodal and Network services. Nodal services refer to production and processing units. Network services enable the service to reach the user. Each category of engineering service has its own production and cost function.

#### **Per Capita Cost Levels**

For example the per capita cost of water supply is as low as Rs.157 at Tellicherry in the State of Kerala to as high as Rs.1125.65 at Calcutta. The following table 3 gives the details of per capita cost (based on project received in HUDCO) of city level water supply projects in various cities.

**Table 3: Per Capita Cost of City Level Water Supply during 1990-91**

State/Town	Per Capita Cost (Rs.)	State/Town	Per Capita Cost (Rs.)
<b>Karnataka</b>		<b>Gujarat</b>	
Arasikere	808.00	Rajkot	394.00
Tiptur	435.00	Baroda	443.00
Hassan	233.00	<b>Orissa</b>	
Tumkur	418.00	Bhubaneswar	358.00
<b>Kerala</b>		<b>Assam</b>	
Tellicherry	157.00	Guwahati	208.00
Cannanore	450.00	<b>West Bengal</b>	
Malapuram	673.00	Calcutta (Salt Lake )	1125.65
Iranjakuda	865.00		
Tiruvalla & Changanachery	1060.00		
<b>Tamil Nadu</b>			
Salem	171.00		

*Source: Project Reports of HUDCO Financed Projects 1990-91*

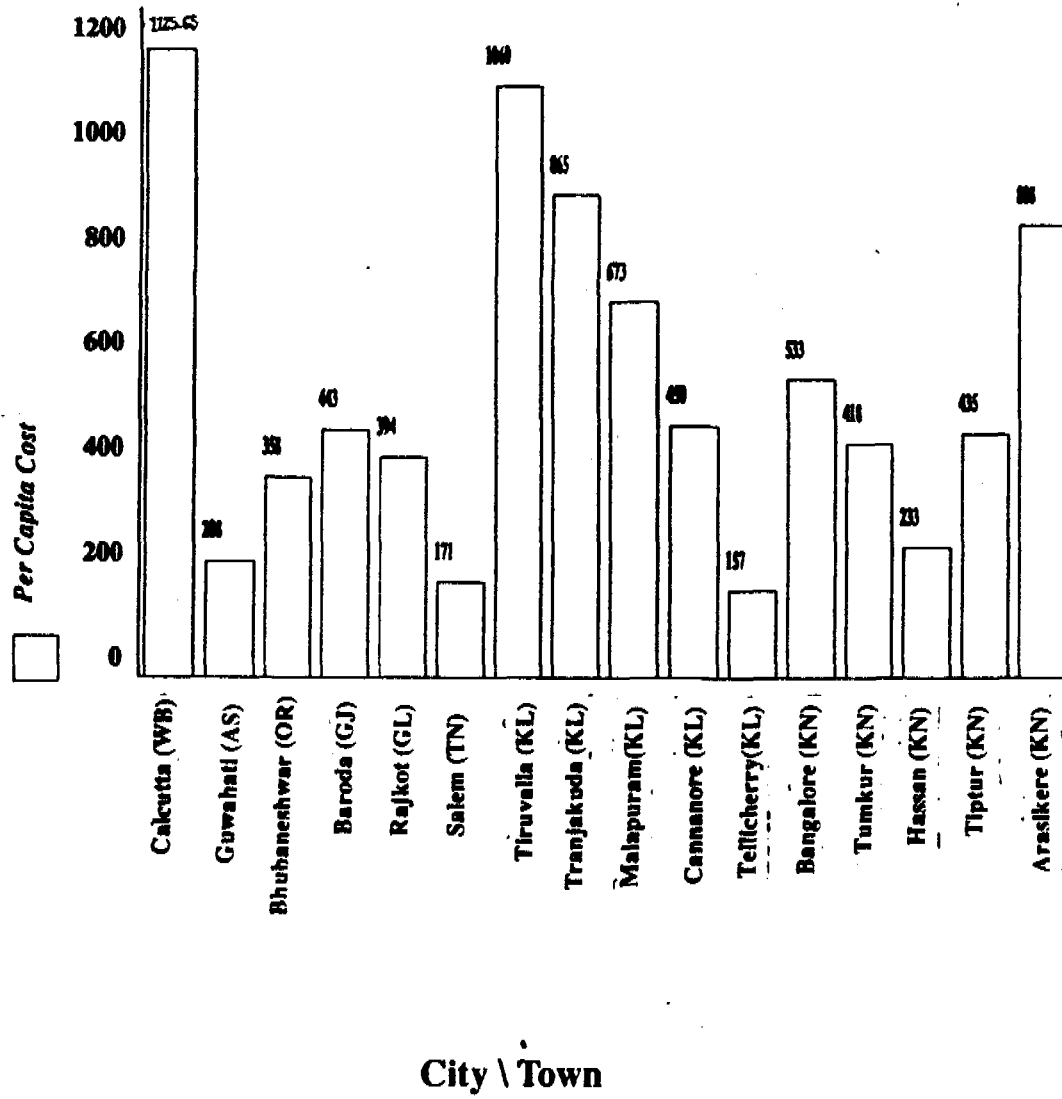
The per capita cost of sewerage too varies from Rs.92 in the town of Aurangabad to Rs.414 in Nanded. The details of per capita cost in five projects sanctioned by HUDCO in the State of Gujarat and Maharashtra are as follows (Table 4):

**Table 4 : Per Capita (1990-91) Cost of the City Level Sewerage Projects**

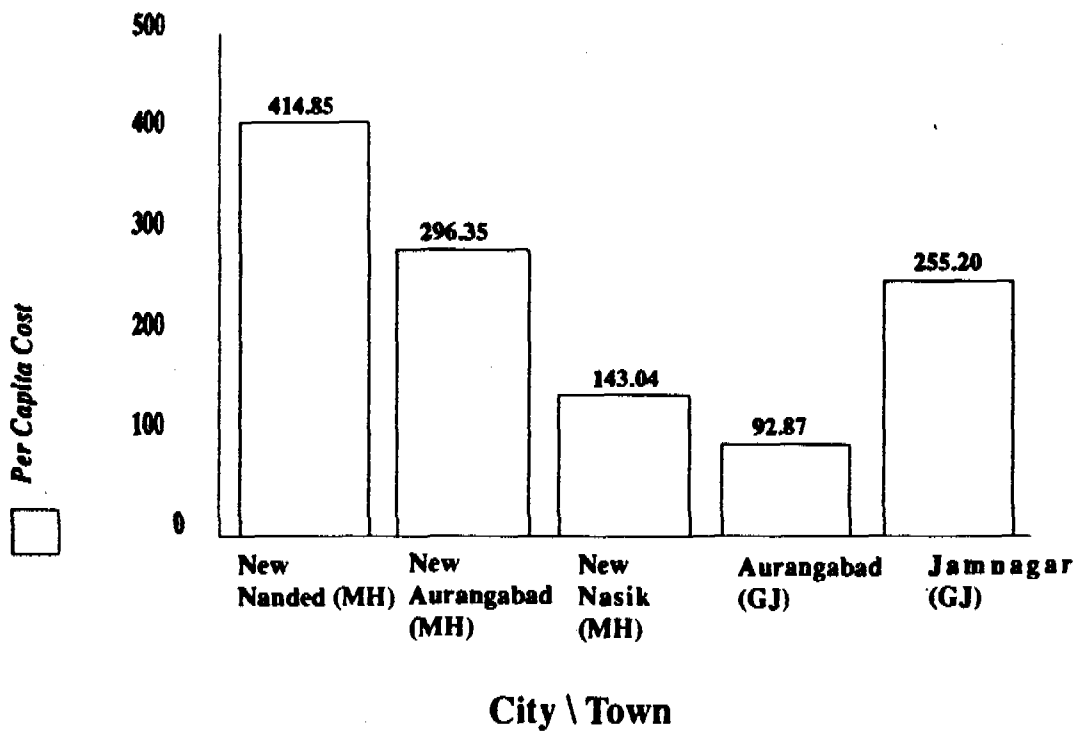
State/Town	Per Capita Cost (In Rs.)
<b>Gujarat</b>	
Jamnagar	255.20
<b>Maharashtra</b>	
Aurangabad	92.87
New Nasik	143.04
New Aurangabad	296.35
New Nanded	414.85

*Source: Sewerage Projects Financed by HUDCO, 1990-91.*

# WATER SUPPLY



# SEWERAGE



## **Per Capita Cost Variations**

The cost of infrastructure in HUDCO sanctioned projects varies considerably from one project to another. These variations are mainly due to differences in the scale of project, design efficiency, the standards adopted and more importantly the geometrical characteristics of the layout. (19)

The cost of water supply for example varied depending upon as to whether its supply was from a distribution network connected to urban area water grid or has to have its own supply system. The costs also varied depending upon the type of individual or communal facilities or individual facilities combined with communal facilities being provided in the project.

The inter-project costs of sewerage disposal were found to vary depending upon plan of layout to be served, average plot size and number of plots, maximum expected density, requirements of private and semi-public space, presence or absence of urban main collector pipes, average discharge and peak factor, minimum velocity, level of infiltration, levels of upgradation assumed and local government regulation and municipal bye-laws.

Another variation in cost can be attributed to level of technical solutions adopted. In some low cost projects (site and services) and where water borne sewage disposal network was not available, the planners adopted alternative solutions i.e. Septic Tank, Aqua Privy etc.

The storm water drainage cost in normal situation was found to depend on the plan of layout to be served and size of area to be drained, traffic levels on local, peripheral and main roads, rainfall average and co-efficient of run off. However, irrespective of solution adopted, the basic costs more on account of trench excavation for ditches, specifications of drain sections, side walls, side slopes, longitudinal slope, number of culverts and specifications of the drainage pipes.

Road cost variations are due to differences in physical conditions, standards and specifications adopted. Geometrical decisions play critical role in determining road costs as circulation system is an important cost component.

## **Pricing Policy Practices**

As most of the urban infrastructure projects were sponsored by the government as a social service, pricing was not an important issue. As a result the state sponsored Water Supply and Sewerage Boards or municipal authorities are providing water free or at highly subsidised rates to domestic consumers. The price policy for supply of water to commercial and industrial consumers however varies. While in some cities the agencies charge very high rates for these users. While in other cities it is as per quantity of water consumed.

Wherever urban infrastructure services like water are priced, the price of services varies significantly from city to city i.e Rs. 0.71 KL at Bhubaneswar (Orissa) and Rs.1.50 KL for domestic use at Hubli (Karnataka). In some cities of the State of Karnataka, water is supplied free of cost. For number of years the price has been kept constant despite increase in O&M costs of water supply. On the whole water tariff adopted are unremunerative and neither help to recover capital cost nor O&M costs. The prices also remain stable for number of years irrespective of the cost of production.

### **Inflexible Tariff Policies**

At local level in India, it is very rare that we see price fluctuations of infrastructure services either due to variations in demand or supply or both. If prices vary, it is mostly to charge higher prices from industrial or commercial users. The price mechanism is rarely used to guide the decision of the user, as to how much to consume or to balance supply with demand. The stability in unremunerative prices is predominantly due to regulatory mechanism installed by the State Government and further reinforced by institutional inertia.

Even in Bombay the households till recently were paying negligible amounts as water tariff. Before World Bank intervention, the average monthly domestic water and sewerage cost was no more than Rs.20 i.e. about two per cent of average monthly household income. Even for a relatively affluent domestic consumer, the water cost was no more than Rs.35 per month. To compensate these unremunerative pricing, the commercial and industrial consumers were made to pay six times the rate of domestic consumer. On an overall basis as against the average incremental cost of Rs.29/10,000 liters, the overall effective tariff rate in Bombay was only Rs.19/10,000 liters.(20)

### **Inability to Recover Costs**

Most of the cities, leave aside recovering the capital cost, are not even recovering the variable cost. In the city of Hyderabad, since 1987, the price of water has not been revised though the production cost (Rs.3.89, 1991) per 1000 liters of water increased by 100 percent, cost of chemicals by 48 per cent, electricity charges by 94 per cent and cost of labour and material by 50 per cent.

It is only recently and as part of conditionality of institutional lending, that the prices have been revised in August 1991 (Table 5).

Still the revised tariff rates, represent the same general tendency of charging unremunerative & highly subsidised prices from domestic consumers neighbouring municipalities and villages. To avert huge loss on supply to these consumers, high tariff rates have been fixed for commercial and industrial consumers. This way of pricing is common and represents the socio-political environment for the infrastructure sector.

**Table 5 : Proposed Water Tariff for Hyderabad**

<b>Water Tariffs for Diverse users ( August 1991)</b>	
I Domestic	No Change
Upto 12000 liters per month	(Earlier minimum monthly charge of Rs.30 will continue)
II 12001 liters to 25000 liters	Rs.2.50 per 1000 liters
III Bulk Supply to Neighbouring Municipalities (NM)	No change (Rate Rs.2.25 per 1000 liters)
IV Bulk supply to Neighbouring Villages (NV)	Reduced from the present level of Rs.2.25 per 1000 liters to Rs.1.75 per 1000 liters.
V Commercial Consumers (CC)	
Upto 50 kilo liters/month	Rs.5.00 per 1000 liters
Above 50 kilo liters/month	Rs.7.00 per 1000 liters
VI Industrial Consumers (IC)	
Upto 500 kilo liters/month	Rs.7.50 for 1000 liters
Above 500 Kilo liters/month	Rs.10.00 for 1000 liters.

## Retrograde Pricing Practices

In some states the price of water is linked to rental value. This makes not only project cost recovery difficult but also rules out necessary rationalisation in water rates. For example in the State of Uttar Pradesh, it is proposed to undertake water supply projects in over a dozen towns. The per capita cost of water supply varies from Rs.454.90 to Rs.885. The cost of production of water varies from Rs.1.62 KL to Rs.3.10 KL, but the tariff proposed is at the rate of 10 percent of annual rental value of the houses.

Apart from the irrationality of its linkage, it creates operational problems. If the rental value have not been revised or is difficult to revise, then it becomes difficult to adopt flexible price structure which helps to recover cost of the project and also pays for its operation and maintenance. Table 6 gives citywise details of per capita cost of production, maintenance and annual rental value.

**Table 6 : Water: Cost of Production per KL, Per Capita cost of production, maintenance and annual rental value of properties**

City (State of Uttar Pradesh)	Cost of Production Per K.L. (Rs.)	Per Capita Cost of Production (Rs.)	Per Capita Cost of Maintenance	Annual Rental Value (Rs.million)
Badaun	1.62	455	83	3.8
Agra	3.10	772	118	11.4
Shahajampur	1.80	639	91	11.4
Hamirpur	1.86	526	83	5.9
Banda	2.60	885	135	28.5
Hardoi	1.80	648	92	31.6
Modinagar	2.20	800	112	14.0

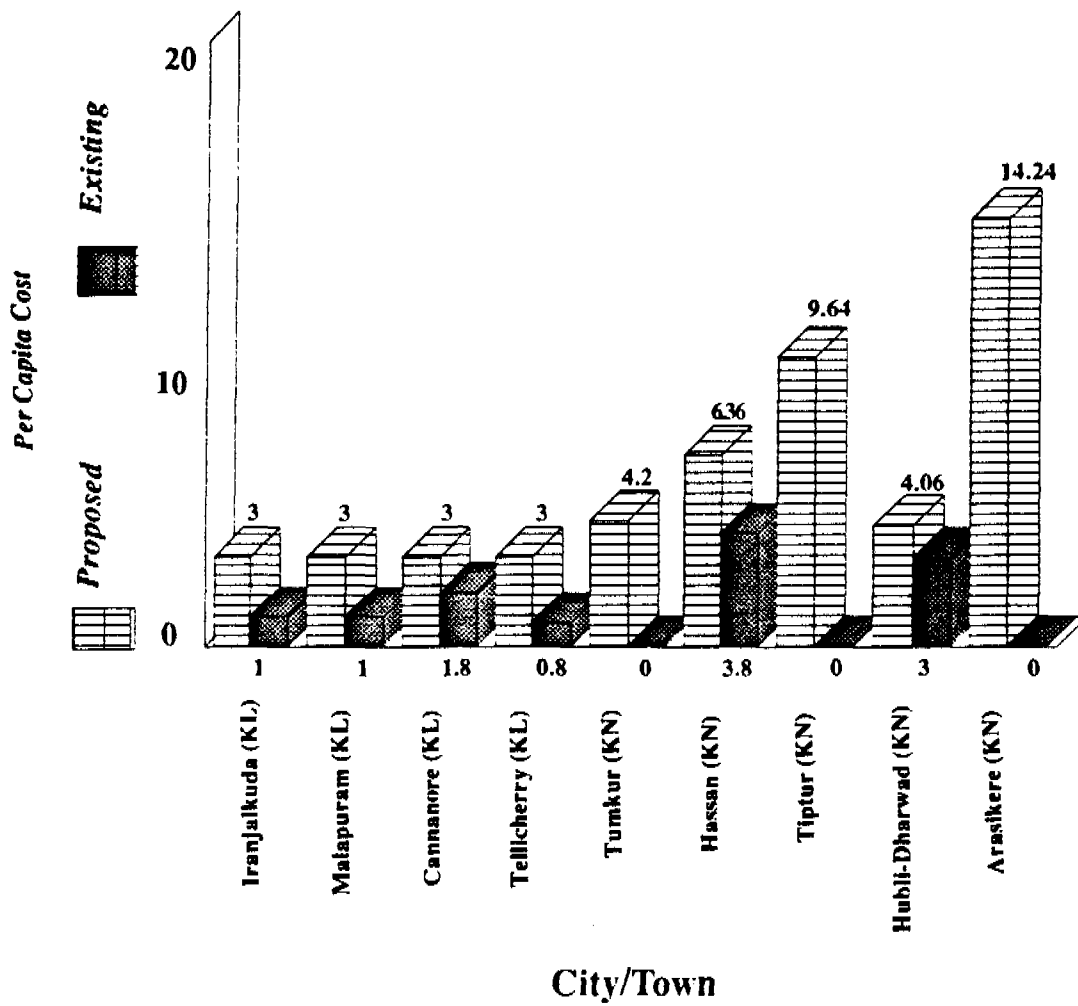
*Source: Project Reports submitted for Loan Sanction to HUDCO, Nov.91*

## Institutional Intervention in Pricing Practices

This pricing formula also makes no distinction between quantity of water consumed and type of consumer. It is these types of water tariff policies which are being subjected to evaluation when institutions negotiate to extend project loans.

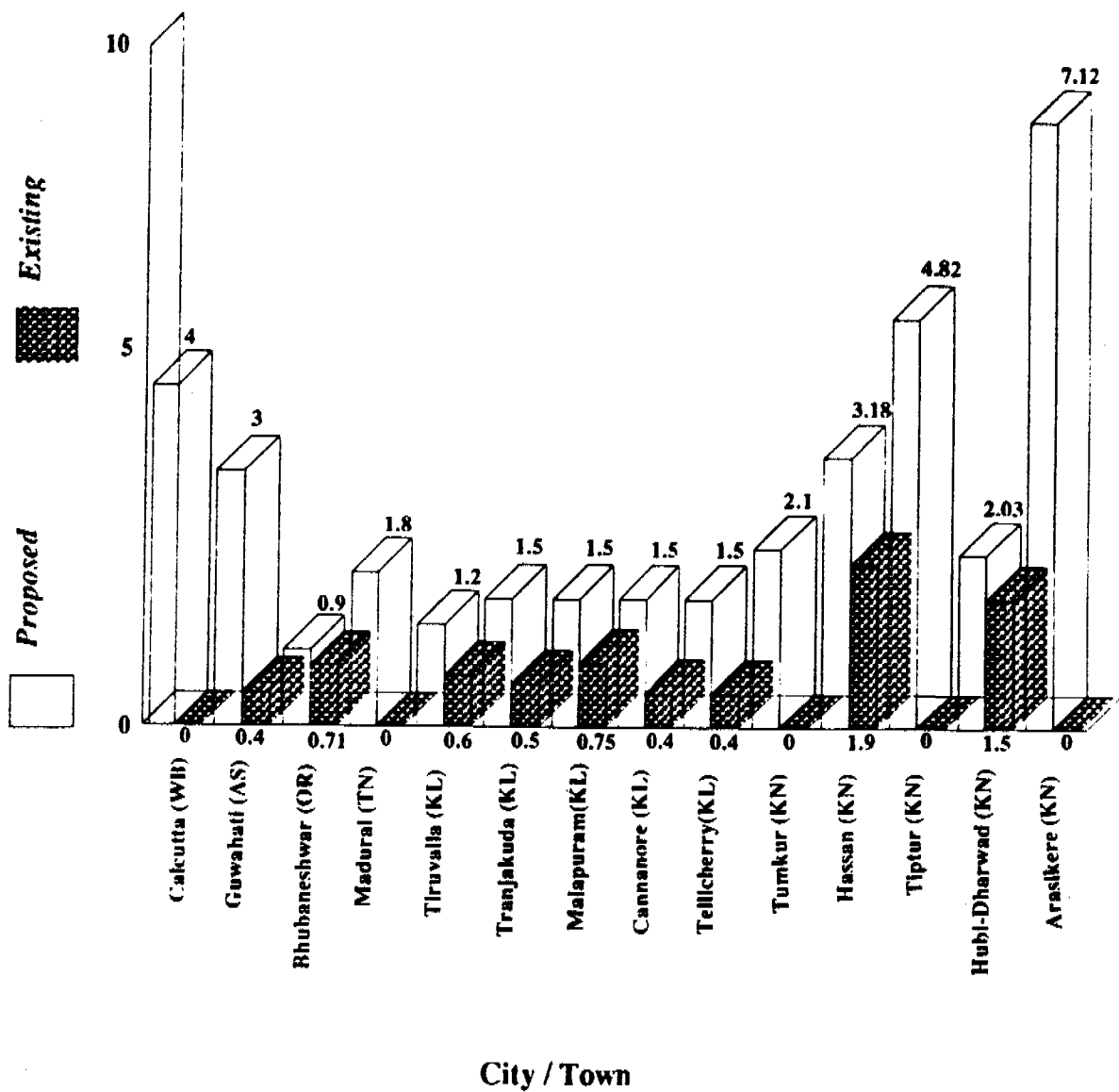
The water rate policies adopted in general underlie the unwillingness of the supplier to recover project costs. The household consumer is highly subsidised. It is only recently that institutions are insisting on the borrowing agencies to adopt a viable pricing policy. Data on existing water tariff and the proposed tariff due to conditionally attached by HUDCO is given in Table 7 below. In some cities, the increase in water rate agreed to with HUDCO is as high as 650 per cent (Guwahati). The minimum increase in price is for domestic use i.e. 35 per cent in Hubli Dharmad. For non domestic consumers the increase in price is 25 per cent at Hubli-Dharmad and 275 per cent in Telicherry. The details are given in Table 7 below:-

## Existing & Proposed Water Tariff (Non-Domestic)





## Existing & Proposed Water Tariff (Domestic)



**Table 7 : Percentage increase in Agreed Water Tariff**

Name of the State/Town	Existing Rates per KL	Revised Tariff	Increase (%age)
<b>Karnataka</b>			
Araskire	Free of cost	7.12	-
Hublic Dharwad (D)	1.5	2.03	35.33
(ND)	3.0	4.06	35.33
Hassan (D)	1.9	3.18	67.36
(ND)	3.80	6.36	67.36
(Comml)	5.7	9.54	67.36
<b>Kerala</b>			
Telicherry (D)	0.4	1.50	275.00
(ND)	0.8	3.00	275.00
Cannanore (D)	0.4	1.50	275.00
(ND)	1.80	3.00	66.66
Malapuram (D)	0.75	1.50	100.00
(ND)	2.00	3.00	50.00
Iranjal Kuda (D)	0.50	1.50	200.00
(ND)	1.00	3.00	200.00
<b>Orissa</b>			
Bhubaneshwar	0.71	0.90	26.76
Guwahati	0.40	3.00	650.00

Source: HUDCO Project Files 1990-91

\* D-Domestic, ND-Non Domestic, Comml.-Commercial

In actual practice it is also seen that very high water rate for industrial/commercial consumers has provided incentive to bulk consumers to find their own solutions. At the same time highly subsidised or free supply water has discouraged the growth of water market.

It is also seen in many cities that price increase after the availability of the service meets with the resentment of the user. It is this consideration that while sanctioning water supply projects in Orissa, HUDCO is now insisting(21) that borrowers announce the revised water rates and also obtain registration of the potential users. Also collect in advance payment for capital costs even before the service is available.

The point of price fixation in actual practice in a typical project is determined by non-economic considerations. There is also no pre-announcement of two or three emergency rates to take care of either unanticipated upsurge in demand, or break down in supply. Once adopted it is hoped this shall help motivate the consumer to reduce demand without imposition of any coercive measure by the supplier.

The main objection against adoption of such flexible pricing policies comes from people's representations at local and state level. But once advantages of assured supply of service are realised at socio-political level, this resistance is expected to break down.

## **Cost Recovery and the Urban Poor**

There are two ways in which the social safety belt have been created to cater to the needs of the poor. This is particularly so far water supply. Most of the Municipal Acts (See Annexure I)

lay down that the needs of the poor will be met through public stand posts and the water shall be free by this method of supply. It is now being realised that supply of water through public stand posts apart from contributing to waste of water, is not sufficient to meet even the minimum requirements is intermittently supplied and that too for short period. This arrangement is grossly inefficient as well as inadequate and at the same time expensive for the city. It is to prevent this to happen that HUDCO is now insisting in water supply projects that instead of providing public stand posts, water kiosks under charge of petty entrepreneurs be provided. The petty entrepreneurs be selected out of beneficiary slum neighbourhoods.

In regard to services other than water, the poor have negligible or no access to it. It can be argued that the existing delivery system needs a change to help reach the poor. Lack of community participation is a serious constraint in achievement of this goal. Wherever it has happened the urban poor are not only able to access to service but also willing to pay for it.

The experience of Bombay and Vishakapatnam<sup>(22)</sup> is an eye opener as to how to make the poor pay for land, as well as on site infrastructure services. The Maharashtra Housing Development Authority (Bombay) with the help of NGOs decided to organise the urban poor into cooperatives. All this was done with the objective to set up a mechanism for infrastructure purchase and management by the slum dwellers themselves.

The urban cooperatives have not only agreed to make their own arrangement to sweep but also repair pavement and roads which are less than six meters wide, cleaning and repairing of gutters along these roads, collect domestic waste and undertake even small repairs of public lampstands. The cooperative is to act as a cost recovery agent. This will also recover as well as pay all taxes, cost of infrastructure and its maintenance.

The estimated cost of infrastructure per hut varies from Rs.1250 to Rs.2000. The cooperative is also to pay lease rent and environmental charges to the Municipal Corporation. The charges relate to locational advantages of the slum, the land use and the plot size.

The experience of Vishkapatnam (Andhra Pradesh) is equally innovative. Neighbourhood committees have been formed in slums to carry out road maintenance, cleaning storm water drains, replace defective or stolen bib cocks, repair suction pumps of bore wells, repair the domestic feeder lines small repairs to sanitation and prevent theft or breakage of light poles inside slums. A declaration to carry out these activities have to be signed by the authorised representatives of the committee.

So cooperatisation of slums is being adopted as one way of partial self-financing of the infrastructive provision as well as maintenance.

### **Need to maintain the Momentum**

The scale of increase in tariff (Annexure II) and willingness to agree for urban services is a good omen that after all project viability approach has come to be accepted. The increase in price level from free of cost water supply to Rs.7.12 KL at Arsikere, or Rs.4.82 KL at Tiptur in the South

Indian State of Karnataka is a very bold initiative. For once we see the changing scenario in this sector. The momentum now built up should not be allowed to slacken.

### **Financial Analysis of Projects**

There is a heavy engineering emphasis in project formulation of infrastructure services in India. Any evaluation by an economist or a financial analyst is still considered very inconvenient. Little realising that use of their services can help to economise use of resources, carry out project appraisal and to help identify the impediments in efficient, economic as well as just financing of a project. Their services can also be useful to carry out financial evaluation of the borrower and help reorient pricing policies towards recovery of full life cycle cost of the project.

Where projects are financed by a financial institution (FI) like World Bank, HUDCO & IL&FS, they go in detail into the financial position of the borrower and the impact of additional borrowings and its project absorption capacity. Institutional appraisal has also given the lender, crucial information about the ability of the borrower to recover costs, capacity to formulate cost, monitor a project commitment to instal and implement flexible pricing system.

### **Emphasis on Economic Framework**

Institutions have emphasised on adoption of appropriate economic framework in a project, use various evaluation criteria like opportunity cost of capital, rate of return techniques, social discounting, real exchange rates in case of use of foreign exchange if any. The institutions use these evaluation criteria to identify funding possibility by it. This has also helped them to know the impact of a project within the social time preference and justification or otherwise for the project submitted for its approval. This also provides a practical basis to identify projects which can be financed by it and help the institution in its optimal allocation of resources amongst competing projects.

Comprehensive project appraisal also helps to quantify the expected social and economic benefits by giving appropriate weightage to private costs and benefits. The application of appraisal techniques like social rate of discount has helped evaluate project finance alternatives. The rate of discount determined or may not have any normative significance but has been helpful, as an appraisal technique to determine the optimal level of investment at which marginal productivity of investment equals the marginal social discount rather than the level at which marginal productivity equals the market rate of discount.

At the same time the institutional appraisal has helped the lender to understand the financial discipline and organisational effectiveness and the extent which organisational changes are required to achieve targeted level of efficiency.

### **Institutional Appraisal, Project Viability & Risk Analysis**

The overriding consideration in institutional funding is that lending must enable a borrower to earn income and through it amortise the loan with interest and also meet project operation and maintenance cost.

Frequently problems of risk and uncertainty also emerge due to non compliance of conditionalities once agreed by the borrower. There are also cases in which weak monitoring of project during implementation have seriously jeopardised the success of the projects.

It is now being realised that it is not enough to do a good project appraisal it is equally important for the FIs to closely monitor the implementation of the project to ensure its success. In some cases FIs have insisted on taking of adequate safeguards to take care of the risk and uncertainty. In many cases this has delayed the project appraisal as well as sanction.

The borrowing agencies no doubt argue that this way of appraisal costing and pricing of project is only exacting price from the present end users, while the benefit will accrue for all time to come. But then institutions argue that this a larger issue as to how society views consumption and utilisation of savings in the contemporary context. It is also argued that the State sponsored infrastructure projects put too high a premium on individual interests than long term sectoral (and hence societal) interests and thus give undue concessions in favour of current welfare function of individuals than expected levels in future.

It is now being realised that by not recovering project costs the "aggregate value of the time preference maps of individuals into a single social preference" the society is actually in a worse situation over a period of time.

## THE PUBLIC-PRIVATE SECTOR INTERFACE

In this section an attempt is made to have a look at the public-private sector interface in provision of water, urban transport, solid waste disposal, sanitation facilities in India.

This is discussed in detail in the following paragraphs:-

### Water Supply

The private sector role in water supply is directly related to the method of supply. As per an All India survey non-official agencies are responsible for 28.5 per cent of the total water supply in India. The details of break up as per source of supply is as follows (Table 9):

**Table 9: Source of Water As Per Agency**

Agency	Source of Water Supply (Percentage)
I Government	71.47
II Non-Government Agencies	28.53
(i) Community	2.79
(ii) Charitable Trusts	0.52
(iii) Others	25.22
III Total	100.00

Source: N SSO 42nd Round 1990. National Sample Survey Organisation, Government of India, New Delhi, India 1990.

If we take method of water supply, supply through 'Taps' continue to be overwhelmingly in the government sector. While in respect of supply through Hand Pump/Tubewell, Pucca Well, Tank Pond, 64.58 per cent to 81.13 per cent of the water is made available by non-government agencies. However supply of water through tankers is again dominated by the government agencies (79 per cent). The details are given in table 10:

**Table 10: Source of Water Supply as per Method of Supply**  
(Percentages)

Method of Supply	Government	Non-Government	Total
Tap	86.87	13.12	100.00
Hand Pump/Tube well	35.42	64.58	100.00
Pucca Well	17.86	81.13	100.00
Tank/Pond	26.96	73.04	100.00
Tankers	79.05	20.95	100.00

Source: Amitabh Kundu. *Access of urban poor to Basic Amenities. Jawahar Lal Nehru University 1991. P.214*

When one analyses the supply of water in metropolitan cities, especially the ones with strong industrial base, more and more bulk consumers are making their own arrangements. A survey of Baroda city is a glaring example in this regard. While in 1951, the non municipal organisations were responsible for only 16 per cent of water supply, in 1991, they contributed 84 per cent. Out of over 70 million gallons a day non municipal sources provide 60 million gallons of water per day. The details of municipal, non-municipal water supply capacity from 1951 to 1991 in the city of Baroda (Table 11) is as follows:

**Table 11: Municipal, Non-municipal Water Supply Capacity in Baroda, 1951-91**

Capacity	(million gallons per day)				
	1951	1961	1971	1981	1991
I Municipal	6.0	6.0	10.0	10.0	10.9
II (a) Non-municipal Industries	0.5	1.0	53.3	53.0	56.0
(b) Other Business establishment & Institutions	0.3	0.7	1.0	2.0	2.5
(c) Household	0.2	0.4	1.0	1.5	2.0
Total Non-Municipal	1.0	2.1	55.3	56.5	60.5
III Ratio of Municipal to non-municipal Water Supply	6:1	3:1	1:5.5	1:5.6	1:5.5

Source: Mike Rodell, *Case study of Baroda Water Supply., IHSP/ Human Settlement Management Institute, New Delhi, Oct. 1991*

## Urban Transport

In respect of urban transport, private sector is active and is also more viable. About two third of the passenger buses in India are owned and operated by the private sector. A comparative study of private and government sector transport companies is also interesting. Table 12 and 13 give public and private sector company cost comparison for Delhi and Calcutta. At Calcutta the total working expenditure per effective Km for Calcutta State Transport Corporation (CSTC, a government agency) is Rs.9.21, the corresponding cost figure for Private operator is Rs.4.45. For Delhi the total working expenditure per km. for Delhi Transport Corporation (DTC, a Government Undertaking) comes to Rs.5.54. The corresponding data for private operator is Rs.2.56. In Calcutta different types of services are provided by both the public and private sector. The public sector company provides stage carriage service supplemented by limited stops and special services. Private operators offer stage carriage with standard size buses special carriage using mini buses and point to point contract carriage. In case of Delhi, DTC provides basic stage-carriage service. Until March 1988, the privately operated (PO) buses were operated under a scheme in which DTC hired standard size buses at a rate of Rs.2.60 per km. Since March 1988, the operation has become totally private except the control of schedule by DTC.

**Table 12: Comparison of Cost Structures of Public and Private Sectors in Delhi (1988)**

Cost Element	Expenditure per Km.	
	DTC (paise)	PO (paise)
H A S Oil	103	105
Lubricants	9	8
Tyres and Tubes (including retreading material)	56	36
Stores spare parts	32	19
Petrol for staff cars	0.3	Nil
Tickets	1.6	1.6
Salaries & Wages	262	77
Bonus	17	1.2
P F, Gratuity, Family Pension, Linked Insurance and Benevolent Fund	27.0	Nil
Medical	17	Nil
Welfare and leave travel Concession	0.8	Nil
Motor Vehicle Tax	7	3.1
Property and other taxes	2.4	Nil
Uniforms	6.2	Nil
Other miscellaneous	6	Nil
Maintenance to buildings	2	Nil
Insurance (machine and risk)	4.3	5.2
DTC : Total working expenditure per km		= Rs.5.54
PO : Total working expenditure per km		= Rs.2.56

Note : 100 paise = One Rupee

Source: Umrigar F S and others. *Cost Models for Evaluation of Urban Bus Services under different ownership, 1990(Memo-graph).*

**Table 13: Comparison of Cost Structures of Public and Private Sectors in Calcutta (1986-87)**

Cost Element	Cost per effective Km.	
	CSTC (paise)	PO (paise)
<b>Personnel</b>		
a. Traffic Staff	371.4	112.3
b. Workshop & maintenance	123.2	14.3
c. Other staff	63.3	3.5
d. P F., Welfare and Superannuation, etc.	49.8	1.77
<b>Materials</b>		
a. Fuel and Lubricants	155.0	145.8
b. Spare parts	82.5	67.0
c. Tyres and tubes	49.1	58.8
d. Batteries	2.5	3.11
Taxes and other fees	8.5	6.87
<b>Miscellaneous for CSTC</b> (Contingency, temporary works, repairs and maintenance of other assets)		
	16.0	-
<b>Miscellaneous for PO</b>		
a. Garage cost	-	3.83
b. Syndicate fee	-	2.92
c. Route association fee	-	11.67
d. Fitness certificate	-	7.78
e. Insurance	-	5.67
CSTC : Total working expenditure per effective km		= Rs.9.21
PO : Total working expenditure per effective km		= Rs.4.45
Note : 100 paise = One Rupee		

Source : Umrigar F S and others, *Ibid.*

Solid waste disposal is a neglected sector. In some of the smaller towns despite the fact that 45 to 50 per cent of the municipal budget is spent on the activity, these cities are in decay. With per capita generation of about 0.5 kg. per day, at least hundred million kg. of solid waste is thrown on the roads and streets in urban India.

The solid waste consists of domestic city waste, industrial wastes, agriculture wastes and wastes in water bodies. The type of solid wastes that is generated in Indian cities and its characteristics are given in Table 14.

**Table 14: Solid Waste Composition in Urban India**

Paper	3.7 %	Plastics	0.5 - 0.9%
Metals	0.4 - 1.0%	Glass	0.3 - 0.8%
Ash & fine earth	30 - 50%	Total compos- itable material	30 - 50%
Moisture Content	20 - 30%	Organic matter	20 - 30%
C/N Ratio	20 - 30	K Cal/Kg	800-1100

Source: AD Bhide and others. *Street Cleaning and waste storage and collection in India.*(Mimeograph)



The characteristics of solid waste depend upon the source of its generation. While waste material which can be recycled is collected by the rag pickers and gets consolidated in an informal manner. Material which cannot be recycled without processing, becomes the responsibility of the city authorities to collect and if possible shred, pulverise, compost, incinerate, recycle or just put it in a land refill.

Solid waste management is one of the potential areas for privatisation. It is only in few cities in India that private sector is recycling the solid waste. But the private investors (i.e. Bangalore) have put conditions that they would like the material to be collected and delivered in agreed quantity at factory site at the cost of municipal body. They feel that otherwise the process becomes uneconomic for them as cost of collection, storage and processing in the given social-political context cannot be recovered through sale price of the end product. Incineration plants in the private government sector have not become popular because urban wastes have low calorific value, have high moisture content and the operating and capital costs are considered high.

In general the issue of solid waste has not attracted the attention that it deserves in India. Most of the cities have no proper documentation of solid wastes or to deal with the the problem in a commercial manner. As there is neither a local waste management policy, nor resources with the local body, solid waste is an urban nuisance.

Money does not smell.<sup>(23)</sup> This is proved in India by the significant success of a private enterprise i.e. Sulabh Shauchalaya. The enterprise deals in construction of pay and use toilets and low cost sanitation units. It is viable, vibrant and has grown tremendously in terms of turnover. Its success has shown that it is possible to adopt similar approach for other services in the city.

A big sewerage water treatment plant (Rs.180 million) has also been set up in Madras to treat 1.2 million gallons of sewerage water and supply the same at acceptable TDS level to meet the water requirements of a fertiliser unit.

The excess of this plant will set the trend in India to treat sewerage water and help meet the needs of industries. Privatisation of sewerage will mean that projects are cost effective and commercially viable and will allow no leakage in revenue. It will ensure that every household pays for the service and that sewerage or waste water is either recycled or sold. The entire activity will thus become economic as well as self-financing.

Now when financing institutions have started financing sewerage and sanitation systems, conditionalities are being imposed that costs be recovered. The tariff rates are also being made to reflect the actual cost of resource to the economy.

### **Private-Public Efficiency and Cost differentials**

Studies have also concluded that the efficiency of an employee in private sector irrespective of the specific urban service is also higher. It may be due to higher job security in government sector or lack of incentive system, inflexible use of staff as per tasks, lack of linkage between productivity and salary.

The government agencies due to budget constraints are also not able to adopt cost cutting technologies. Poor maintenance of equipment further reduces what ever productivity can be achieved

through available technology. So is the process of decision making. In private sector the entire process is determined by profit, while in government sector apart from decision making being dilatory, its goal is to avoid any public controversy.

On the other end it is also true that privatisation reduces employment, means higher prices for services made available, unprofitable activities are never undertaken even if socially needed and staff welfare levels may be less. But these are short term consequences. In the long run, if private sector is properly encouraged as well as monitored, it can create conditions in which employees as well as people get a fair deal.

## **V Consequenses**

The consequences of aforesaid practices are that government has taken upon itself to meet the entire demand for urban infrastructure services in India. Provision, financing ownership as well as maintenance of these services is all undertaken by the Government or State sponsored agencies. As resources of the State are limited, the sector has not expanded. Further as provision of these services was considered a social activity to meet basic needs, no attempt was made to either cost or price the project appropriately to either achieve cost effectiveness or recover the fixed as well as variable costs of the project.

The state sponsored agencies have also not been able to set up efficient cost recovery mechanism as is obvious from high overdue levels. The result of all this is that the debt and interest burden on the state has increased significantly and reduced its capacity to put in more resources in the sector. Percentage of total Plan outlay at Central/State and Union Territory level devoted to urban development sector is no more than 1.1 per cent.

No attempt has been made to entrust some activities to the organised private sector. Its contribution in infrastructure management has not been adequately recognised. Whatever vitality it has, it is all due to its own exhuberance, rather than any overall policy of State or Local level to harness this sector.

Further wherever informal sector is engaged in either supply of water or garbage collection, it is disorganised, works on a petty scale and is not officially recognised.

Thus the consequences are that we have neither been able to harness the strength of private sector nor achieve optimum utilisation of public sector resources.

This situation raises number of important issues, which need urgent attention to put the urban infrastructure sector on a sound footing. Some of these are discussed in detail in the following paragraphs.

## **VI Important Issues in Financing of Urban Infrastructure in India**

It has been estimated that to meet the shortages of urban infrastructure services the total investment required is Rs.140940 million. This means average annual outlay of Rs.28188 million. This is ten times more than the average annual outlay (i.e. Rs.2180 million) during 1975-80, over five times higher than the actual annual outlay during the sixth Plan (1980-85, Rs.5540 million) and over six times higher than the average actual outlay during 1985-90 (i.e. Rs.431 million). In addition the interest and debt burden of investments made in the past and ineffective cost

recovery have also become heavy. So unless we look beyond the inter-governmental transfers or tax or government debt as source of urban infrastructure finance, it is difficult to mobilise the required resources. Thus it becomes urgent that alternative options are thought of to meet the resource requirements of the sector.

### **Reviewing the Classical Categorisation of Public Goods and Services**

Any attempt to work out an alternative finance mechanism, need to begin with critical evaluation of the consideration that all urban infrastructure goods are public goods. This classical approach is based on attributes of exclusion or joint consumption.

Attribute of exclusion connotes that the users can be denied access to the service, if they do not fall in line with the conditions of consumption imposed by the supplier. In contrast the attribute of joint consumption means that the particular good or service can be consumed only jointly and there is no discrimination in terms of quality or quantity for any one person. The hitherto adopted classical justification for government role based on theory of public good has undergone a sea change. Over a period of time some of the joint consumption goods like roads have been made to acquire the attribute of exclusion i.e. conversion of highway road into a 'toll road'. In many countries more and more public goods have been subjected to pricing and hence acquired attribute of exclusion.

So in actual practice goods and services have moved from the category of joint consumption to the other category with attributes of exclusion.

Understanding of ways and means of initiating and facilitating this process is very critical for any urban infrastructure finance institution. Some of the goods may be just private consumption goods and can be treated as such from the point of view of costing, pricing as well as cost recovery.

While others can be joint consumption goods but can be recategorised as goods/services subjected to 'toll' or 'user charge'. Yet another group can be joint consumption goods which are non-marketable. These include natural water resource or air quality or environment. While these can not be priced at individual user level, but the cost incurred to maintain the desired level of quality can be recovered suitably through devices like Environment Tax etc. The other way would be to charge those, whose activities lead to reduction in quality of these natural assets.

Thus we are left with only those goods and services which are pure joint consumption goods in technical sense. It is also possible to exempt some goods and services from application of the principle of exclusion as costs of doing so may be too high in relation to the revenue.

It would be prudent if we adopt only two tier classification i.e. marketable and non-marketable goods. There is no doubt scope for conflict as to what can be made marketable or not. Political ideology lead institutions will see to it that more and more private goods are provided like joint consumption goods by the government. In contrast market led institutions will try to find ways and means to reclassify more and more joint consumption goods as private goods available for use to only those who pay for it.

Traditionally as goods/services were produced in India on a small scale, it was all private enterprise. However over a period of time the State took over the production as well as distribution of these goods and services.

Today as cost of this welfare function has become unaffordable and infrastructure provision deficiencies having become socially unacceptable, the State Governments are now evaluating alternative ways of financing infrastructure.

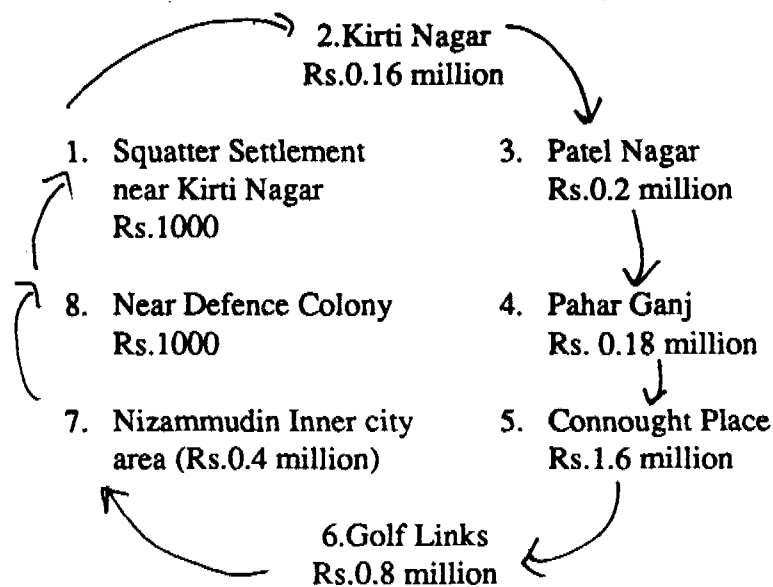
### Realising the Value-added Role of Urban Infrastructure and Capturing it

The value-added role that infrastructure upgradation and restoration can play in city management is now being emphasised by all institutions responsible for financing urban infrastructure. Apart from other factors, provision of infrastructure facilities is the key causal factor in increasing the exchange value of the properties.

It is useful to illustrate this by an example of a rotating small hut<sup>(24)</sup> made of thatch, non durable and inflammable material in various zones of the city of Delhi. The price of this hut is as low as Rs.1000 to as high as Rs.1.6 million depending upon where it gets located. (Figure 1)

**Fig. 1 Revolving Hut**  
Area of Land 20 Square Meters

### Land Price linked to the quality of the Neighbourhood - Delhi



#### Location Conditions:

- (1) No Services, all squatters, no drainage, only community toilet/Tap
- (2) All Services available locality upper middle income group but disadvantages of congested access roads.
- (3) As in location 2, in addition to location being on main road, the site has access to good markets, hotels and recreation facilities.
- (4) All facilities, highly congested, commercial traffic congestion.
- (5) Highly valued commercial area. All facilities.
- (6) Very high income and elite neighbourhood. All facilities.
- (7) Congested, lower, middle and ethnically homogeneous group neighbourhood. All facilities.
- (8) Squatter settlement along the waste water drainage. No facilities only land occupancy.

## **Tapping Exchange Values of Land & Property**

This value-added contribution of infrastructure provision needs to be understood and harnessed. The role of infrastructure in land and property values is very substantial and is a potential which need to be tapped to make urban infrastructure provision self financing. This will help generate resources to help finance capital, operation and maintenance cost of services and on the other end help recover incremental cost of upgrading the quantity and quality of existing urban services provision network. The land value differentials are obvious from the above example of rotating hut in different zones of the city i.e. 1:16000. Cost recovery has to be intelligently worked out with proportion to be recovered from users and land/property owners. The need to capture increase in urban land values by the government was also endorsed at 1976 Vancouver Conference and it is time the country operationalise this recommendation.

## **VII International Experience <sup>(25)</sup>**

### **Mopping up Exchange Values**

#### **valorisation Development Impact Fee, Betterment Levies**

The international experience in project cost recovery is quite rich and strategies adopted in this regard vary from country to country. In Colombia, the authorities capture the rise in exchange values through 'Valorizacion'. Under this system, the city is zoned as per increase in exchange value of property/housing and each property designated as per increase in its value. The whole job is done at very high professional standards to establish credibility of exact appreciation calculated. Since introduced it has become an important source of infrastructure finance in the country.

In USA, the government has designated special assessment areas in which one time charge is levied to help finance infrastructure projects. In California for example, the authorities levy 'Development Impact Fee'. In Greece, all property owners within the betterment zone, have to pay one to 25 per cent of the value of the property to help finance development. They have also to give free of cost a portion of the land to be used to meet the needs of the Development Plan.

### **Collection of Sewerage Cost**

In Germany the sewerage cost was recovered on the basis of per mile cost of sewer from the residents of properties fronting the sewers. It was as high as two third of the per mile cost of sewer. This cost was recovered through a special property assessment. The rest of the cost was recouped through annual charges on the owners of the buildings or financed out of general revenues of the city government.

In USA, under the law it is laid down that no financial assistance shall given directly or indirectly for sewer or other waste disposal facilities unless it is certified that waste material carried by these facilities will be adequately treated before it is discharged in any other way to help maintain local water quality standards.

### **Solid Waste Management**

In 1990 Western Europe, the US, Canada, Japan, Australia and New Zealand produced a total of 420 million tonnes of household waste, 1.5 billion tonnes of industrial waste and 7 billion tonnes from other activities - or roughly 10 tonnes per person a year. Regulators have seen higher charges as a means of encouraging waste minimisation and recycling.

Stringent regulation are already imposing more complex procedures for the waste companies. In Britain the Environment Protection Act has put new obligations on the waste industry. Local authorities have to set up Local Authority Waste Disposal Companies which will operate at 'arms length', a move intended to intensify competition. Further under discussion in Brussels is a directive introducing civil liability for waste.

It is also being argued that it is uneconomic to adopt uniform tariff in all cities in a state or different zones in a city. Studies in respect of water supply in some cities have shown that depending upon the location of the household the cost of its supply depends upon the distance of the houses from the main distribution line. The tariff policy ought to reflect these realities apart from just differentiating the consumers into domestic, industrial or commercial and/or as per quantity of water consumed.

### **Cost Recovery of Investments in Roads**

In respect of roads, road user charges have helped recover not only use of road facility but also cost of road damage, congestion cost and environmental pollution. Even road damage cost are being recovered in all its aspects. One is the cost of pavement and the other is the road damage externality i.e. increase in operating cost to subsequent vehicles of using damaged or rougher roads. Innovative approaches have been adopted to recover congestion costs i.e. time loss costs, traffic control costs, and even the cost of accidents. This is due to the fact that the higher is the number of vehicles on the road, the higher is the probability that accident will occur. Similarly as most of the pollution in cities is due to vehicular traffic, the owners are made to pay for any cost incurred to protect air quality and in proportion estimated as due to them.

Major problem of economic analysis have arisen no doubt in respect of recovery of cost incurred on road maintenance as the expected life of the different surface treatment is not well defined. Further road maintenance is almost like any other public good and the benefits accruing from it are well defined to help instal an effective, efficient and adequate cost recovery mechanism.

The space use and vehicle relationship has also been well established. Vehicles which use road for transit purpose are being made to pay tax on vehicle ownership or use. Those who use road for access to place of activity or property have to pay for ownership of the place of activity or property. Those who use for parking pay through parking fees. The wear and tear costs of the roads is collected through charge on fuel or price of tyres; the use of which varies with tonne kms performed by vehicle.

Congested road use costs are being collected through taxation on property or vehicle ownership. At the city level, the experience of Singapore is interesting. The government started an ambitious scheme called "Area Licensing Scheme". Under this a license is required to enable one to drive a car in congested inner city areas in the morning. They have also to pay high parking fees. The traffic is thus drastically reduced.

In regard to congested roads, attempt has been made to distinguish vehicles as per price of it or use. Toll tax on congested roads or high capital cost roads or bridges is a common way of collecting costs in many countries.

To help finance metro and new subways in Australia, the employers have to pay a special tax. In Paris the incidence of this tax is as high as two per cent of the salary bill of the employees.

## **Cost Recovery Levels**

The cost recovery mechanism is also very effective. In Germany the levels of cost recovery are highest for sewerage disposal (85 per cent), refuse disposal (91 per cent) and street cleaning (63 per cent). In Sweden the National Swedish Association has estimated that charges for services cover 93 per cent of the costs of commercial and industrial services and 14 per cent of the cost of other services.

## **Municipal Development Funds & Financial Innovations**

Some countries have set up Municipal Development Funds to help augment resources for infrastructure sector. In France the Caisse des Depots et Consignations and the Municipal Development Fund played a major role in this regard. In countries like USA, the authorities issue Industrial Development Bonds. It has been used to finance urban infrastructure facilities. The Bonds are issued by the local government, but the private company setting up and owning the facility has the responsibility to redeem the Bonds.

Turkey raised capital through issue of Bonds and the subscribers were assured a rate of profit. Turkey has also introduced an innovative profit sharing scheme and under this scheme share certificates are sold to raise capital. Those holding certificates are assured a rate of return. Seeing the success of this scheme in financing the construction of Bosphorus Bridge, the scheme is being expanded to cover other projects.

In Japan urban infrastructure projects have been financed under FILP (Fiscal and Investment Loan Programme). The source of finance in these cases is Pension/Postal Saving Funds. Urban Green Space Development Foundation in Japan is putting in tremendous efforts to raise funds to put up 'parks' at neighbourhood and city level.

## **Land Readjustment Scheme**

Infrastructure cost has also been recovered in some countries (i.e. Korea) through implementation of Land Readjustment Schemes. Under this scheme the government collects value added contribution in kind i.e. land with service. Well set formula are laid down for this purpose. The difference between the price of raw land and the one after development, is taken by the government in terms of land. If this land ceded to project authority is sold, it can fetch substantial resources which can be ploughed back into further projects.

The United Kingdom has set up a special grants Programme to help meet the administration costs of voluntary organisations to identify projects which are in line with the national priorities to implement innovative projects.

## **Devolution of Resources**

Until a country is able to establish devolution of resources from the Central to municipal government, it is also being argued that indirect ways be found to help increase municipal government revenue. If municipal governments increase taxes or property taxes then these contributions to municipal government could be exempted from federal income tax. This will help on the one end to create conditions for resource mobilisation at local level and on the other end to establish indirect transfer of resources from the higher level Government to local level.

## **Reversal of Land Use**

Similarly vigorous efforts are under in various West European countries to recycle land in disuse in cities. It is now apparent that reuse of vacant derelict land or abandoned factory sites in cities with declining industries can also be a source of sizeable resources. Reversal of land use from uneconomic to economic purposes have helped revitalise core part of the city in many West Europe countries as it has been possible to undertake city renewal on self-financing and sustainable basis (i.e. France, Netherlands). Funds like the "Urban Initiatives Fund" has been set up in UK to help voluntary organisations to carry out feasibility studies for land reuse strategies.

## **Contracting Out the Services**

A survey of 2375 cities undertaken by Advisory Commission on Inter Governmental relations in USA shows that 339 cities have contracts with private parties for refuse collection, 145 cities for solid waste disposal, 84 for water supply, 67 for water distribution service, 21 for sewerage disposal, 309 for street lighting and 258 for electricity supply.

In Britain hundreds of thousand sterling per annum have been saved by the local governments in contracting out the municipal services. The city of Bath saves  $\pounds 300,000$  per year as it has contracted out refuse collection and street cleaning. The council of Boxbourne saves  $\pounds 200,000$  per annum as it contracted out the street cleaning. Eastborne B.C. annual savings are  $\pounds 500,000$  for street cleaning and refuse collection. In Kensington and Chelsea, the annual savings through contracting out of refuse collection are  $\pounds 100,000$  per year. Merton B.C. saves annually  $\pounds 750,000$  as it has contracted out refuse and waste paper collection.

These economies are available because undertaking of these activities in government sector are more expensive. In USA it is found that public collectors in Monmouth New Jersey were 70 per cent more expensive, in Connecticut they are 25 per cent more expensive, in Fairfax county, Virginia 50 per cent more expensive. Private refuse collection has been found more efficient in Switzerland. In Alexandria (Egypt) the garbage collection is all in private sector.

In France the General Directorate of Local Authorities has issued a list of standard specifications to be included in contract documents to be executed with private agencies. The standard conditions lay down the maximum duration of the contract, checking of operating accounts, need to submit finance and technical report every year to the local government. There is also a provision for review of pricing arrangement. Failure to send reports attracts penalties.

The city of Stockholm divides the jurisdiction of the private company into various service districts. Close contact is maintained with the consumers to get feed back on the quality of service. Some service zones are also kept with the municipality to help know the exact costs of service. In UK the Local Authorities Management Services and computer Committee frequently give information to the local authority about the exact cost of services provided by them. The same is being done in Germany.

## **Decentralisation**

The Swedish Parliament have also approved a pilot project entitled 'Free Commune Experiment' and under which the local authorities can deviate from laid down regulations and guidelines to help them work better in a local environment the needs of which local authorities know better.

The Norwegian government has now introduced the concept of 'output oriented budget' and while implementing the budget, efficiency and standards of provision of services become an important determining criteria.



## **Towards Equality in Neighbourhood Quality**

In order to enable neighbourhoods to have more or less equal access to quality and quantity of services, attempts have also been made to concentrate on neighbourhoods with below average quality of services. Responsive Public Services Programme in Savannah Georgia, USA is an ideal example. The programme divided the city in planning units, scores of quality of service were assigned and the the worst planning units identified on this basis. As a result the city started targeting its resources in these depressed areas and the result was a better city as a whole.

All these examples collected at random from experience of various developed countries need to be studied in detail by all those responsible for infrastructure development policy and practices in India and try to adopt these with due adjustment made for local context.

### **VIII Lessons for India**

The aforesaid examples drawn from other countries underline that provision of infrastructure can be undertaken on economically viable basis. In these countries all ways and means have been adopted to recover project cost. In cases where it is not possible to identify direct end users, the cost has been recovered through betterment levies or special property assessment. The overriding goal in all these endeavours is to recover fixed as well as the variable cost.

In many cases number of infrastructure services have been contracted out to private sector companies. Though various regulations and promotion of competition amongst them, they have ensured that consumer is not exploited and has access to desired level of quantity and quality of services.

Innovative financing mechanism has also been established to ensure financing of projects without debt liability on the State or State agencies.

In some countries private sector companies have been promoted by the municipalities themselves carry out the municipal tasks. Lastly more and more goods and services have been taken out of category of joint consumption goods and have been being brought under the principle of exclusion.

If the whole issue of financing of urban infrastructure is viewed as above, then it does not seem difficult to find resources as identified by the Working Group for the 8th Five Year Plan (1990-95). The additional investment proposed by it is no more than Rs.671 per capita (Rs.14094 crores to meet the needs of 210 million urban dwellers). Even if we take it as an under estimate because people who already have the facility of water supply, sewerage etc may not be willing to pay or are not made to pay and if we exclude this population the per capita cost to be recovered even then is quite affordable. According to NIUA data, about 75 per cent of 1981 urban population (i.e. about 120 million), received urban services. That means 40 million dwellers had no facility. Taking the same percentage for 1991, 54 million population can be taken as having no access to these facilities. If they are made to pay, then per capita in five years is Rs.2610 during 1990-95. or 522 per year. Collection of Rs.522 per capita in one year is not that large figure that cannot be collected from all those who directly or indirectly benefit.

These are not large sums to be collected as end user or betterment levies from the beneficiary groups who are property and land owners. The recovery burden can be suitably divided between those who benefit directly and others who own land and property. Thus differential recovery system can be set up to help reduce the financial burden on the urban poor.

It is also necessary to ensure that future urban dwellers can also be made to pay for the current investments as the assets will benefit the city for four to five decades. This can be done, if a decided part of the investment is financed through public borrowings which the government can repay through future revenues.

## **IX A Suggested Paradigm for Urban Infrastructure Financing in India**

An overview of existing arrangement in India for financing infrastructure shows the utter incapability of Budgetary resources as an option to provide required levels of infrastructure in urban areas.

The present socio-political environment is opportune to tap other options. With economic liberalisation policies adopted at the national level, it ought to get replicated with deregulation of sectoral policies at state and local level.

The end users who benefit from a service and all those who benefit through increase in exchange values of land and property need to fully pay for the services rendered. Be it water supply, sewerage, roads or solid waste management project. Successful cost recovery approaches adopted at Bombay and Vishakhapatnam underlie that even the poor are willing to pay.

It is also necessary to set up a new arrangement of inter-institutional or public-private sector relationship in provision, financing, ownership and maintenance of urban infrastructure projects. It should be based on contractual and cost sharing basis. Investing agencies should recover their investments from beneficiaries for the services provided and consumers to get the desired quantity and quality of goods.

In this regard it is necessary to lay down as to the role that each agency would play in the provision of various infrastructural services. Some of the services can be contracted out to private agencies. In case of natural monopolies like water supply, the local authorities can promote joint sector companies and in other cases operation and maintenance function can be contracted out. Each service if need be can be segmented and marketing decisions taken accordingly. The overriding goal of restructuring must be promotion of competition and assurance of quality of service.

Lastly in the absence of 'city care' institution, the local role for local responsibilities need to be firmed up. It is necessary that local agencies ought to have all the powers necessary to make success of these approaches. Be it pricing or private-public sector interface. Local agencies under this arrangement will then grow by merit than patronage or bail outs through budgetary support.

A beginning has already been made in this direction. Institutional intervention in urban infrastructure sector has created conditions for local level urban reforms and the process needs to be strengthened. Further all conditions and reforms accepted at project level, need to be institutionalised, so that local agencies on their own and as a matter routine adopt pragmatic policies.

However under no circumstances the sector be allowed to go back to budget financed delivery of urban services. In the long run the new approach will emerge as fair deal for the producers as well as consumers of the infrastructure facilities.

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**Extent of authority of Municipal Authorities under various Statutes in respect of the mandate to borrow funds and provide urban infrastructure services - water supply, sewerage, sanitation, solid waste treatment and garbage disposal (services).**

<b>Municipal Authority under the relevant Statute</b>	<b>Power to borrow money</b>	<b>Role assigned to Authority in respect of services</b>	<b>Power to fix prices for water</b>	<b>Providing Water supply free</b>
1) <b>Delhi Municipal Corporation</b>	Power to borrow money by the Authority is subject to previous sanction of the Central Govt. unless the loan amount is within the limit laid down under Local Authorities Loan Act, 1914 (for DMC it is Rs.25 lacs)	The Authority has an obligatory function to perform these services of water	Inherent power to fix rate of tax and levy for use	Not mandatory. It may be provided through public hydrants.
2) <b>Bihar and Orissa Municipal Act 1922</b>	Power to borrow with the approval of State Govt. unless with limit of Local Authorities Loan Act 1914 (with State Amendments).	The Authority has an obligatory function to perform these functions.	Power to impose taxes, levy with the sanction of State Govt.	No provision.
3) <b>M.P. Municipal Corporation Act 1956</b>	Power to borrow with approval of State Govt.	The Authority has an obligatory function to perform these functions.	Inherent power to impose taxes/levies.	No provision

4)	Gauhati Municipal Corporation Act, 1969	Power to borrow with the approval of State Govt.	The Authority has an obligatory function to perform these functions.	Inherent power to impose taxes, levies.	Not mandatory. It may be provided through public hydrants.
5)	Karnataka Municipal Corporation Act, 1976	Power to borrow with the approval of State Govt.	The Authority has an obligatory function to perform these functions.	Power to impose taxes/ water-rates with prior approval of State Govt.	Mandatory supply of gratuitous water supply to public through hydrants, pipes.
6)	Maharashtra Municipal Corporation Act, 1965	Power to borrow with the approval of State Govt.	The Authority has an obligatory function to perform these functions.	Power to impose taxes/ water-rates with prior approval of State Govt.	Not mandatory. It may be provided in public places for bathing, washing etc.
7)	Madurai City Municipal Corporation Act, 1971	Power to borrow with the approval of State Govt.	The Authority has an obligatory function to perform these functions.	Inherent power to impose taxes/ water-rates with a power of control by State Govt.	Mandatory supply of gratuitous water to public through standpipes, fountains etc.
8)	Madras City Municipal Corporation Act, 1919	Power to borrow with the approval of State Govt.	The Authority has an obligatory function to perform these functions.	Inherent power to impose taxes/ water-rates with a power of control by State Govt.	Mandatory supply of gratuitous water to public through standpipes, fountains etc.
9)	Kerala Municipal Corporation Act, 1961.	Power to borrow with the approval of State Govt.	The Authority has an obligatory function to perform these Services.	Inherent power to impose taxes/ water-rates with a power of control by State Govt.	Mandatory supply of gratuitous water to public through standpipes, fountains etc.



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12)	Uttar Pradesh Nagar Mahapalikas Adhiniyam 1959.	Power to borrow with the approval of State Govt.	The Authority has an obligatory function to perform these services.	Inherent power to impose taxes/ water-rates	No provision.
13)	Himachal Pradesh Municipal Act, 1968	Power to borrow with the approval of State Govt.	The Authority has an obligatory function to perform these services.	State Govt. control over imposition of taxes/water-rates/levies.	No provision.
14)	Rajasthan Municipalities Act, 1959.	Power to borrow with the approval of State Govt.	The Authority has an obligatory function to perform these services.	Power to impose taxes with a power of control by State Govt.	No provision.

## Existing And Proposed

## WATER TARIFF

State	City/Town	Existing Tariff (in Rs. per KL)	Year	Proposed Tariff (in Rs. per KL)	Increase %	Year	Production cost based on	
							Gross Water Production Rs. per kl	Net water Production Rs. per kl
Karnataka	Arasikere							
	Domestic	Free of cost	1991-92	7.12	--	1993-94	7.87	9.26
	Non Domestic	"	"	14.24	--	"		
	Commercial	"	"	21.36	--	"		
Karnataka	Hubli-Dharwad							
	Domestic	1.50	1991-92	2.03	35.33	1992-93	2.24	2.635
	Non Domestic	3.00	"	4.06	35.33	"		
	Commercial	--	"	6.09	--	"		
Karnataka	Tiptur							
	Domestic	Free of cost	1991-92	4.82	--	1993-94	5.32	6.26
	Non Domestic	"	"	9.64	--	"		
	Commercial	"	"	14.46	--	"		
Karnataka	Hassan							
	Domestic	1.90	1991-92	3.18	67.36	1993-94	3.525	4.147
	Non Domestic	3.80	"	6.36	67.36	"		
	Commercial	5.70	"	9.54	67.36	"		
Karnataka	Tumkur							
	Domestic	Rs.8-10/month/p.house	1990-91	2.10	--	1993-94	--	--
	Non Domestic	Rs.75/month/p.connec.	"	4.20	--	"		
	Commercial	--	"	6.35	--	"		
Kerala	Tellicherry							
	Domestic	0.40	1991-92	1.50	275.00	1992-93	--	--
	Non Domestic	0.80	"	3.00	275.00	"		
Kerala	Channanore							
	Domestic	0.40	1990-91	1.50	275	1992-93	--	--
	Non Domestic	1.80	"	3.00	66.66	"		

Kerala	Malapuram							
	Domestic	0.75	1990-91	1.50	100	1992-93	--	--
	Non Domestic	2.00	"	3.00	50			
Kerala	Iranjal Kuda							
	Domestic	0.50	1990-91	1.50	200	1993-94	--	--
	Non Domestic	1.00	"	3.00	200			
Kerala	Tiruvalla & Changana Cherry	Rs.0.60/kl	1989-90	Rs.1.20/kl	100	1993-94	--	--
Tamil Nadu	Madurai	--	1989-90	Rs.1.80/kl	--	1991-92	--	--
Orissa	Bhubaneswar	Rs.0.71/kl	1989-90	Rs.0.90/kl	26.76	1993-94	0.804	0.99
Calcutta		--	1989-90	Aug. Rs.4.00/kl	--	1994-95	2.63	--
Guwahati		0.40	1989-90	Rs.3.00/kl	650	1992-93	--	--

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