

CHAPTER 2

PREVIOUS STUDIES

3.2.1. Being a major determinant of quality of life of the people, the levels of Civic services in the local bodies have engaged the attention of many experts and committees. It has been commonly held by them that fixing norms for basic services is an extremely complex task as it depends on a number of variables such as the fiscal capacity of the local bodies and users, topography and geology of the area, technology opted for use and various other factors. Therefore, a given set of norms is at best a guideline and cannot be used in all situations.

3.2.2. There have been several studies by the Expert Groups but they are mostly in urban areas. Foremost among them is the Zakaria Committee (ZC) in 1963 in which an attempt was made to evolve the physical standards, the possible cost implication including O&M cost in water supply, sewerage, storm water drain and roads in small, medium and large towns. The National Institute of Urban Affairs (NIUA) studies in 1986, 1987, 1992, and 1995 on water supply, sewerage, sanitation and solid waste collection and disposal focused on O&M. The National Master Plan (NMP) India, International water supply decade, 1983, the 8th Five Year Plan (1992-97) study by the Government of Gujarat, 1989, Report on Rural Sanitation 1993-94 and Working Group (III) on Expenditure norms, Ministry of Urban Affairs and Employment, November 1995 headed by noted economist Dr. Raja Chelliah did highlight the service levels in Rural areas. Comparative levels of supply suggested by these studies for Water-supply, sewerage sanitation and solid waste management is given in Tables 3.1, 3.2, and 3.3 below:

Table 3.1 Norms and Standards for Water Supply

Expert Group	Physical Standard	Cost of provision (Rs.per capita/annum at 1994-95 prices)	Cost of O&M (Rs.per capita /annum at 1994-95 prices)
a. Zakaria Committee on Augmentation of Financial Resources of Urban local Bodies, 1963	Urban: Small Towns:45 lpcd Medium Towns:67.5-112.5 lpcd Large Towns:157.5-202.0 lpcd Super Metropolitan: 270 lpcd	Urban: Small Towns:Rs.227.34 Medium Towns:Rs.277.86-378.90 Large Towns:Rs.492.57-593.61 Super Metropolitan:Rs.820.95	Urban: Small Towns:Rs.93.71 Medium Towns:Rs.95.48-109.12 Large Towns:Rs.123.77-128.83 Super metropolitan:Rs.136.40
	Rural: Not Suggested	Rural: Not Suggested	Rural: Not Suggested
b. Committee on Plan Projects for Industrial Townships (COPP), 1973	Urban: 180 - 225 lpcd	Urban: Not Suggested	Urban: Not Suggested
	Rural: Not Suggested	Rural: Not Suggested	Rural: Not Suggested
c. Report on Norms and Space Standards for Planning Public Sector Project To Sws, TCPO, Min. of Works and Housing, Govt. of India, 1974	Urban: 180 lpcd	Urban: Not Suggested	Urban: Not Suggested
	Rural: Not Suggested	Rural: Not Suggested	Rural: Not Suggested
d. National Master Plan (NMP), India, International Water Supply and Sanitation Decade, 1981-90 Ministry of Urban Development, 1983	Urban: House Connection: 70-250 lpcd with average of 140 lpcd Public Stand posts: 25-70 lpcd with average of 40 lpcd	Urban: Not Suggested Rural: Not Suggested	Urban: Not Suggested Rural: Not Suggested
	Rural: Piped supply:25-70 lpcd with average of 40 lpcd Spot Source Supply: 40 lpcd		
e. Planning Commission (PC) Task force on Housing and Urban Development (Financing Urban Development), 1983 High:Rs.1042.00	Urban: Not Suggested	Urban: Surface System Low:Rs.850.15 High:Rs.1214.50	Urban: Not Suggested
	Rural: Not Suggested	Groundwater:Low: Rs.694.00	Rural: Not Suggested
		Rural: Not Suggested	

Expert Group	Physical Standard	Cost of provision (Rs. per capita/annum at 1994-95 prices)	Cost of O&M (Rs. per capita /annum at 1994-95 prices)
f. NIUA: Maintaining Gujarat Municipal Services - A Long Range Perspective, 1987	Urban: Small Towns: 95.125 lpcd Medium Towns: with industrial-base - 150 lpcd Problem areas: 90 lpcd; Average: 80-150 lpcd Large Towns: with Industrial base - 170-210 lpcd Problem areas: 120-125 lpcd Average 115-210 lpcd Rural: Not suggested	Urban: Problem Areas Rs.1254-1463 Average: Rs.627-731.50 Rural: Not Suggested	Urban: Small Towns: Rs.22.99 Medium Towns: Rs.25.08 Large Towns: Rs.45.98-60.61 Rural: Not Suggested
g. Operation Research Group (ORG), Delivery and Financing of Urban Services, 1989	Urban: Small Towns: 80 lpcd Medium Towns: 80-150 lpcd Large Towns: 180 lpcd Rural: Not Suggested.	Urban: Small Towns: Rs.603.15 Medium Towns: Rs.319.03 - 680.28 Large Towns: Rs.804.26 - 1108.09 Rural: Not Suggested	Urban: Not Suggested Rural: Not Suggested
h. Government of Gujarat (GOG) 2005 (papers on Perspective Plan), 1989	Urban: Small Towns: 100 lpcd Medium & Large Towns: 140 lpcd Scarcity Season: 13 lpcd Rural: 40 lpcd	Urban: House Connections: Rs.825 Problem areas: Rs.1072.50 Augmentation/Extension: Rs.412.50 Rural: Simple Well: Rs.288.75 Handpump: Rs.99.00 House Connection: Rs.412.50 - 495.00 Regional Water Supply: Rs.495.00 - 990.00	Urban: Not Suggested Rural: @ 3% of Capital Cost
i. Manual on Water supply and Treatment, CPHEEO, Ministry of Urban Development, Government of India, 1991.	Urban: Small Towns: 70-100 lpcd Medium Towns: 100 - 150 lpcd Large Towns: 150-200 lpcd Public Standposts: 40 lpcd Rural: Not Suggested	Urban: Not Suggested Rural: Not Suggested	Urban: Not Suggested Rural: Not Suggested
j. 8th Five Year Plan, Government of India, 1992-97.	Urban: With Sewerage 125 lpcd Without Sewerage: 70 lpcd Public Stand posts: 40 lpcd Rural: 40 lpcd.	Urban: Not Suggested Rural: Not Suggested	Urban: Not Suggested Rural: Not Suggested

Expert Group	Physical Standard	Cost of provision (Rs.per capita/annum at 1994-95 prices)	Cost of O&M (Rs.per capita /annum at 1994-95 prices)
k. NIUA: Costs of Urban Infrastructure, 1995 (Based on DWSSDU, HUDCO & CIDCO estimates)	Urban: Not Suggested Rural: Not Suggested	Urban:Small Towns:Rs.485.76 Medium Towns:Rs.390-403.97 Large Towns:Rs.569.98 Metropolitan:Rs.203.48 Rural: Not suggested.	Urban: Small Towns:Rs.141.24 Medium Towns:Rs.108.42-119.55 Large Towns:Rs.172.64 Metro: 76.41 Rural: Not Suggested

Table 3.2 Norms and Standards for Sewerage/Sanitation

Expert Group	Physical Standard	Cost of provision (Rs.per capita at 1994-95 prices)	Cost of O&M (Rs.per Capita/annum at 1994-95)
a. Zakaria Committee, 1963	Urban: Small Towns: Low cost sanitation methods Medium Towns: Public sewers with partial coverage by septic tanks, and partial treatment to sewerage. Large Towns: Full coverage by sewerage with proper treatment facilities. Super Metro: Same as above. Rural: Not suggested.	Urban:Small Towns:Rs.353.64 Medium Towns:Rs.429.42-568.35 Large Towns:Rs.694.65 - 820.95 Super Metro:Rs.947.25 Rural: Not Suggested.	Urban:Small Towns:Rs.103.37 Medium Towns:Rs.109.88-117.46 Large Towns:Rs.136.40 - 150.30 Super Metro:Rs.154.09 Rural: Not Suggested.
b. The Manual on Sewerage and Sewage Treatment, CPHEEO, 1980.	Urban: Not suggested in terms of population/area coverage, type of system, etc. However, it said that sewers should be designed for a minimum of 150 lpcd water supply level. Rural: Not suggested.	Urban: Not suggested Rural: Not Suggested	Urban: Not Suggested Rural: Not Suggested

Expert Group	Physical Standard	Cost of provision (Rs.per capita at 1994-95 prices)	Cost of O&M (Rs.per Capita/annum at 1994-95)
c. National Master Plan, India, 1983	Urban: 100% population coverage by sewerage system with treatment facilities in class I cities, and low cost sanitation for other urban centers.	Urban: Not suggested	Urban: Not Suggested
	Rural: Low cost sanitation	Rural: Not Suggested	Rural: Not Suggested
d. Planning Commission, Task Force on Housing and Urban Development, 1983.	Urban: Not Suggested	Urban: Water borne system with treatment: Low:Rs.1214.50 High:Rs.1735.00	Urban: Not Suggested
	Rural: Not Suggested	Septic tank: Low: 694.00 High:Rs.780.75 Pit Latrines: Low:Rs.416.40 High:Rs.520.50 Rural: Not Suggested.	Rural: Not Suggested
e. NIUA (1987)	Urban: 100% coverage by Sewerage excluding slums in class I urban centers and cities already have sewerage system. Low cost sanitation methods for other urban centers.	Urban: Sewerage: 836.00 - 940.50 Low cost sanitation: 627.00 - 731.50	Urban: Medium Towns: 12.54 - 20.90 Large Towns: 37.62 - 39.71
	Rural: Not Suggested.	Rural: Not Suggested.	Rural: Not Suggested.
f. ORG, 1989	Urban: 100% population coverage by sanitation services by using different technological options.	Urban: Small Towns: 934.99 Medium Towns: 383.41-857.64 Large Towns: 604.27 Metro: 587.45	Urban: Not Suggested
	Rural: Not suggested.	Rural: Not Suggested	Rural: Not Suggested
g. Govt. of Gujarat, 1989.	Urban: 100% coverage by sewerage with treatment facilities in class I cities and cities already having sewerage systems. Low cost sanitation methods for other urban centers.	Urban: Average:Rs.825.00 Problem areas:Rs.990.00-1155.00 For extension of service Rs.495.00 - 577.50 Low cost sanitation as per design standard of UNDP/ World Bank:Rs.4455.00	Urban: Not Suggested
	Rural: Low Cost Sanitation.		Rural: Not Suggested

Expert Group	Physical Standard	Cost of provision (Rs. per capita at 1994-95 prices)	Cost of O&M (Rs. per Capita/annum at 1994-95)
h. Report on Rural Sanitation (1993-94)	Urban: Not suggested	Urban: Not suggested	Urban: Not suggested
	Rural: Low cost sanitary methods as per the models given below: a. Rural concrete plate (without lining) b. Square concrete plate (without lining) c. Single pit (Brick lined) d. Single pit (with provision of double pit in future) e. As above f. As above (with concrete lined and brick flooring) g. Double pit - brick lined (without super structure) h. Double pit - concrete ring - lined (without super structure) i. Single pit (with provision for double pit in future) j. Single pit - concrete lined with honey comb (with provision for double pit in future) k. Double pit - brick lined (with super structure) l. Double pit - concrete lined (with super structure) Average: Rs.2500/latrine	Rural: a. Rs.321 b. Rs.357 c. Rs.714 d. Rs.881 e. Rs.1309 f. Rs.1607 g. Rs.1785 h. Rs.2321 i. Rs.2678 j. Rs.2975 k. Rs.3094 l. Rs.3630	Rural: Not suggested
i. NIUA (1995)	Urban: Not suggested Rural: Not suggested	Urban: Small Towns:Rs.149.98 Medium Towns:Rs.207.82 -442.35 Large Towns:Rs.117.36 Metro:Rs.124.99 Rural: Not suggested	Urban: Small Towns:Rs.25.95 Medium Towns:Rs.35.37 - 35.75.85 Large Towns:Rs.20.12 Metro:Rs.21.43 Rural: Not Suggested

Table 3.3

Norms and Standards of Solid Waste Collection and Disposal

Expert Group	Physical Standard	Cost of provision (Rs. per capita at 1994-95 prices)	Cost of O&M (Rs. per Capita/annum at 1994-95 prices)
a. TCPO, 1970	Urban: Suggested basic guidelines for provision of dustbins, collection centers, disposal of solid waste, etc. Rural: Not suggested	Urban: Not Suggested Rural: Not Suggested	Urban: Not suggested Rural: Not Suggested
b. Planning Commission, 1983	Urban: Not Suggested Rural: Not Suggested	Urban: Rs.87-139, depending upon the standards and size of cities. Rural: Not Suggested	Urban: Not Suggested Rural: Not Suggested.
c. ORG, 1989	Urban: Suggested average waste generation level 380 grams/capita per day Rural: Not Suggested	Urban: For waste collection: Rs.33-100, depending upon the quantity of waste collected For transportation Rs.90 Rural: Not suggested	Urban: Not Suggested Rural: Not Suggested
d. NIUA (1986 & 1992)	Urban: Suggested waste generation level in the range of 250-450 grams/capita per day, depending upon the size of cities, their functions etc. Recommended 100% collection of generated waste in a city. Staff norms: i. 62.78 scavengers per 10,000 population as per UP Health Manual ii. 2.8 sanitary workers per 1000 population as per report of the committee on 'urban wastes', 1973. Rural: Not suggested.	Urban: Not suggested Rural: Not suggested	Urban: Not Suggested. However report mentioned that on an average, 80% of the total revenue expenditure spent on account of salaries and wages of sanitation staff. Rural: Not suggested.

3.2.3. On the lines of decision at the National Workshop of State Finance Commissions in July 1995 at Mussoorie, five Working Groups were constituted. Group III, under the Chairmanship of Dr.Raja J.Chelliah, was entrusted to evolve the 'working guidelines' for setting out the minimum norms of expenditure and suggest method of adjusting these norms to specific state or region. The Working Group presented its report in November 1995. It considered Primary education and Primary health also as core functions of the local bodies in addition to water supply, sanitation,sewerage, solid waste collection and disposal. However, for the purpose of this study SFC will confine itself to the last three and the findings are given below in Table 3.4.

Table 3.4 Minimum Physical Standards of Services

Service	Sector	Minimum levels of services to be obtained in next 5 years		Remarks
		Population/Area target	Service level target	
Water Supply	Urban	100% population to be covered	Piped water supply with sewerage - 150 lpcd Piped water supply without sewerage 70' lpcd (*including wastage of water - roughly 20%)	Public stand posts in the low income settlements. One source for 20 families within a sources/stand posts walkingdistance of 100 meters.
	Rural	100% population to be covered including 'No Source' hard core problem villages in some states.	40 lpcd safe drinking water Additional 30 lpcd in DDP/DPAP areas for cattle needs.	One hand pump/spot source for 250 persons in a walking distance of 1.6 km. or elevation difference of 100 mt. in hilly areas.
II.Sanitation/ Sewerage	Urban	100% city area to be covered by sewerage system with treatment facilities in large urban centers.	Large city: full coverage by sewerage with treatment. Medium town: Public sewers with partial coverage by septic tanks. Small town: Low cost sanitation methods.	In low income areas of large cities community latrines may be provided.
	Rural	All households to be provided access to safe sanitation. Elimination of manual scavenging by using low cost sanitary methods.	Low cost sanitary methods of disposal:- Sanitary latrines of different models may be used such as round concrete plate with lining (single pit)	

Service	Sector	Minimum levels of services to be obtained in next 5 years		Remarks
		Population/Area target	Service level target	
III.Solid Waste Collection Disposal	Urban	All the solid waste generated should be collected and disposed	square brick/concrete plate with/without lining (single pit with provision of double pit), etc. 100% collection of generated waste with its proper disposal. Hazardous wastes such as hospital wastes must be incinerated in all cases. Whereas mechanized composting and incinerated is recommended for large urban centers, sanitary land fill method of disposal may be used in small and medium towns.	Keeping in view the refuse generation level and its composition, each local body should determine the requirements of collection bins/ collection centers, kind of transport vehicles to be used, staff deployment for various activities, type of treatment to be given to the collected wastes, etc.

3.2.4. The Damodaran Committee constituted by Government of Tamilnadu in 1990, to look into the finances of Panchayats and Panchayat Unions suggested transfer of resources to achieve minimum normative levels of service. For Road maintenance, it suggested transfer of 20% of Motor Vehicle tax proceeds. The O&M costs were worked out as follows:

Table 3.5 O&M Norms for Roads as per Damodaran Committee

<u>Road surface</u>	<u>O&M Cost/km in Rs.</u>
Mud	9733
Gravel	14724
Metalled/WBM	15369

3.2.5. Similarly, this Committee increased the maintenance cost by nearly three times to Rs.1000/- per year per hand pump and Rs.2000/- per year per power pump. It also suggested replacement of tubelights by the Panchayats twice a year, with a lineman to be deputed at Government cost from the Electricity Board.

3.2.6. The Sector Policy Study (SPS), 1994 commissioned by TWAD Board with support of the World Bank, covered both Rural and Urban areas and broadly looked into long term goals in sources development, project financing, cost recovery, quality and issues in O&M.

Table 3.6 Water Demand Estimation*

Year	Population in lakhs			Water Demand in Million cubic milli liters		
	Urban	Rural	Total	Urban	Rural	Total
1991	192	367	559	1033	759	1792
1996	231	364	595	1136	797	1933
2011	346	546	892	1703	1196	2899

*Source: Sector Policy Study, 1994, TWAD.

3.2.7. All the above studies have made an attempt to arrive at a desired level of civic service by taking into account the capital investment and annual O&M needed. The cost varied with technology options, regional variation and different methods adopted for costing. It is felt not advisable to dilute these norms. However, if there are constraints of resources, it has been suggested to phase out the investments over a number of years. For better life of assets and sustained levels of service, regular O&M must be taken up.