

CHAPTER 5

NORMS FOR CORE CIVIC SERVICES

3.5.1. Fixing up of norms for civic services has been an extremely sensitive issue. Several studies in the past have fixed-up a National Minimum, notwithstanding the fact that some States have already crossed this level and that should not act as a disincentive in further improving the services. Any effort to arrive at the norm should take into account the existing levels of services. In Chapter 3, SFC has already analyzed the existing situation as have emerged from the sample study through the questionnaire and through the Indepth study. In fact, in certain cases, the universal data pertaining to the existing service level is available, for example, in cases of water supply (except in Village Panchayats), Roads, Storm Water Drains (except in Village Panchayats) and Street lighting. In all these cases, they have been utilized to arrive at service gaps and investments. In other cases like sanitation, solid waste management, water supply and storm water drain for the Village Panchayats, the sample data have been universalized. Norms have been fixed for 2002 bearing in mind the existing service levels, what is achievable within the constraints of resources and technology and ofcourse a desirable level as assessed by various studies. Based on the norms and forecast of population by year 2002, the quantum of service required has been estimated. Then comparing with the existing level, the service gap has been assessed. Depending on the technology used, the related unit cost has been arrived at and by multiplying the same with gaps in services, the investment requirements have been assessed.

(A) WATER SUPPLY:

i) Existing situation:

3.5.2. While assessing the existing situation, the per capita supply as suggested by the Sector Policy Study of TWAD Board has been taken into account and not the sample survey except for the Village Panchayats. Similarly for mode of supply, persons per standpost and source dependency, the samples have been expanded to universe. The existing position is given below.

Table 3.25 Existing situation for Water Supply

	Source Dependency		Mode of Supply			Persons per Standpost/ Handpump	Weighted Average percapita supply	Total Population in 1995	Existing supply (1995)
	Surface/ Infiltration Wells	Ground Water	HSC	Stand post	Hand pumps				
	% of Total Supply		% Population Covered		Nos.	Litres	Lakhs	MLD	
Chennai Corporation	99	1	78	10	12	54	73	41.05	298
Corporations	82	18	57	25	18	143	73	74.39	570
Municipalities	83	17	32	44	24	184	48	75.92	364
Town Panchayats	72	28	16	56	28	164	34	91.34	311
Village Panchayats	20	80	2	62	36	170	22	346.08	761

Note:

- i. Mode of Supply : Sample expanded to Universe
- ii. Per capita Supply: For Corporations, Municipalities and Town Panchayats: Universal figures, in case of Village Panchayats: Sample expanded to Universe.
- iii. Persons per standpost: Sample expanded to Universe
- iv. Source Dependency: Sample expanded to Universe

ii) Norms:

3.5.3. The norms have been set taking into consideration the availability of source and the possibility of achieving the same in the medium term period i.e. from 1997-2002. While fixing the norms and the unit cost, detailed discussions were held with the officials of Metro Water and TWAD Boards. The supply level indicated below includes domestic, non-domestic and industrial requirements including distribution losses. HSC is suggested as a convenient mode for supply of for cost recovery.

Table 3.26 Working Sheet for Water Supply Norms

	<u>Source Dependency</u>			<u>Mode of Supply</u>			<u>Persons per</u>		Total	Estimated	Total
	Sur face	Infil- tration	Ground Water	HSC	Stand post	Hand pump	Stand post	Hand pump			
	% of Total Supply			% Population Covered			Nos.	Litres	Lakhs	MLD	
Chennai											
Corporation	100	0	0	80	10	10	30	100	90	44.87	363
Other Corporations	50	30	20	80	10	10	30	100	90	81.31	659
Municipalities	40	25	35	70	20	10	30	100	70	82.99	526
Town Panchayats	40	25	35	30	50	20	30	125	55	99.84	437
Village Panchayats	40	20	40	5	50	45	30	125	40	378.28	832

Note: Source Allocation is based on discussions with TWAD Board officials.

iii) Gaps, Unit cost and the Capital Investments required

3.5.4. The demand supply gaps in water supply are estimated in terms of quantity of water, number of public standposts and handpumps to be installed to meet the demand of the additional population by 2002.

3.5.5. The unit cost for various sources has been arrived based on costs of some of the recent projects implemented by the TWAD Board. In case of corporations, it has been presumed that augmentation from the existing local sources has been exhausted and therefore successive augmentation will cost Rs.4 crores per MLD. Investment required is arrived by the product of gap and the unit cost.

Table 3.27 Gaps for Water Supply and Additional Requirement by 2002

	Additional Quantity by source			Total quantity	Stand posts	Hand- pump	Source Development Cost			Hand- pumps cost/ unit	Capital investment Rs.Lakhs
	Surface	Infil- tration	Ground				Surface	Infil- tration	Ground		
	MLD	MLD	MLD	MLD	Nos.	Rs.lakhs/MLD	Rs.lakhs/MLD	Rs.lakhs/MLD			
Chennai Corporation	66	0	0	66	7165	0	-	-	-	0	26335.73
Corporations	73	30	4	107	12085	832	400	400	112	0.20	41623.43
Municipalities	65	40	56	161	37144	0	94	111	112	0.20	16877.53
Town Panchayats	51	32	44	127	135230	525	94	111	112	0.20	13338.87
Village Panchayats	28	14	28	70	504866	62060	94	111	112	0.20	19823.84
TOTAL	217	116	132	465	689325	63417					91663.7

SEWERAGE AND SANITATION:

i) Existing Situations:

3.5.6. Considering its size and requirements, the norms for the Chennai Corporation have been worked out separately. Except for that, the public systems are virtually non-existent and needs immediate action. The existing coverage as has been universalized from sample is given below:

Table 3.28 Existing Coverage in Public System %

Category	UGD	LCS	Public Toilets	SepticTanks/ Private	Uncovered
Percentage of Population dependent on each system					
Chennai Corporation	85	4	3	2	6
Other Corporations	9	1	0.1	20	69.9
Municipalities	3	2	5.0	13.0	77
Town Panchayats	0	13	4	24	59
Village Panchayats	0	0.10	2	0.1	97.8

ii) Norms:

3.5.7. Norms have been fixed for population to be covered by different safe disposal systems like underground drainage network, septic tanks, low cost sanitation and public conveniences. Except for UGD network, all other systems are built and maintained at the individual household levels. But, with enhanced water supply levels, such systems are not technically and

environmentally viable. UGD system has been recommended for Municipalities having more than 70 LPCD water supply. Basing on these technicalities and what is achievable, norms have been fixed as follows:

Table 3.29 Normative Coverage

Category	Percentage of Population			
	UGD	LCS	Public convenience	Private or/ Uncovered
Chennai Corporation	90	5	5	0
Other Corporations	30	10	10	50
Municipalities	25	10	15	50
Town Panchayats	0	25	10	65
Village Panchayats	0	10	10	80

Gaps:

3.5.8. Gaps in sanitation have been estimated by deducting from the total population to be covered by 2002, the existing population covered by respective disposal system.

Table 3.30 Gaps in Services:

Category	Additional Population to be covered-lakhs		
	UGD	LCS	Public Convenience
Chennai Corporation	5.6	0.7	2.2
Other Corporations	15.1	3.2	1.8
Municipalities	18.6	6.5	8.8
Town Panchayats	0.0	13.0	6.8
Village Panchayats	0.0	35.8	29.3

Table 3.31 Unit Cost

Category	UGD	Rs. Per Capita	
		LCS	Public Convenience
Chennai Corporation	2500	800	1500
Other Corporations	2500	800	1500
Municipalities	2500	800	1500
Town Panchayats	-	800	1000
Village Panchayats	-	800	1000

Table 3.32 Capital Investment

Category	Rs. in crores	
	Category	Amount
Chennai Corporation		156.82
Other Corporations		540.44
Municipalities		414.74
Town Panchayats		100.97
Village Panchayats		257.46
Total		1470.43

SOLID WASTE MANAGEMENT**i) Existing Situation**

3.5.9. The samples taken during the survey have been universalized to arrive at the existing position.

Table 3.33 Existing Position in Solid Waste Management

Local body	Waste generated per capita Grams	Collection ** Performance %	Vehicle capacity to waste %	Households per dustbin No.
Chennai Corporation	695	85	68	84
Other Corporations	366	82	41	271
Municipalities	365	70	39	102
Town Panchayats	153	46	27	363
Village Panchayats	NA	0	0	3568

** Note: Apparently the Collection Performance is very high. This is under suspect as revealed by the field position and may be on account of small and unrepresentative samples.

ii) Norms:

3.5.10. In the target year (2002), the total waste generated per day in local bodies is assumed to be 20 to 25% higher than the existing level due to changing consumption pattern. In Corporation and Municipalities, the collection will be done every day except for the internal roads, where it has to be done every alternate days. In Town Panchayats, there will be alternate day of collection and in Village Panchayats, once a week. Similarly, number of households per dustbin is arrived on the assumption that there are 50 houses on a 100 metre stretch of road and the vehicles are assumed to be making 2 to 3 trips a day, carrying 50% of its normal capacity.

$$\text{Capacity of Dust bin} = \frac{(\text{Waste generated per capita} \times \text{HH size}(5) \times \text{No. of Hhs/dustbin})}{\text{Collection frequency in days}}$$

Table 3.34 Normative Level

Local body	Waste generated per capita Grams	Collection Performance %	House holds per dustbin Nos.	Capacity of dustbin Kgs.	No. of trips per vehicle Nos.
Chennai Corporation	750	90	50	200	3
Other Corporations	500	90	50	100	3
Municipalities	450	90	50	100	3
Town Panchayats	200	50	50	50	2
Village Panchayats	100	15	50	25	2

iii) Gaps:

3.5.11. For Panchayats, atleast one vehicle per Panchayat Union is recommended. In Corporations and Municipalities, it is expected to make 3 trips a day and in Town and Village Panchayats 2 trips per vehicle a day.

Table 3.35 Additional Requirements

Local body	Dustbins required	Vehicle capacity	Nos. of vehicles		
			5 tonne capacity	3 tonne capacity	1.5 tonne Tractor
			Nos.	Tonnes	
Chennai Corporation	8258	1045	146	105	0
Other Corporations	12119	926	130	93	0
Municipalities	18322	1699	170	283	0
Town Panchayats	34911	794	0	132	265
Village Panchayats	149372	567	0	0	384

iv) Unit Cost:

3.5.12. The unit cost of dustbins have been arrived at on current market rates evolved in consultation with officials of Chennai Corporation. The vehicle costs are actual market prices as in 1995-96.

Table 3.36 Unit Cost

Dustbin		Vehicles	
Capacity-kgs	Unit Cost-Rs.	Capacity-Tonnes	Unit Cost-Rs.lakhs
25	600	5	6.00
50	1200	3	4.00
100	2400	1.5 tractor	3.50
200	6000		

v) Capital Investments:

3.5.13. The investment suggested is for collection and disposal only. In addition, the sanitary land fill system would cost Rs.120 per tonne. Other methods of disposal are discussed later.

Table 3.37 Capital Investment

Rs. Crores	
Category	Amount
Chennai Corporation	17.91
Other Corporations	14.39
Municipalities	25.91
Town Panchayats	18.75
Village Panchayats	22.40
Total	99.36

5. ROADS AND STORM WATER DRAINS:

Storm Water Drains play an important role in maintaining the condition of Roads. Hence they are taken together.

i) Existing Situation:

3.5.14. Existing situation of roads has been analysed in terms of percentage of existing BT/WBM/other surfaces. Existing BT roads have not been taken into account in estimation of capital investments required as the improvements and maintenance forms part of revenue expenditure. It may be noted that the Road length and surface types are universal figures and in case of Village Panchayats, for Storm Water Drains, samples have been expanded to universe.

Table 3.38 Existing Situation of Roads & Storm Water Drains

Category	Road length Km.	BT % of Total Road Length	WBM	Metal/ Others	Drain Length Km.	% Road covered	% of Roads Coverage		
							Kutcha	Pucca open	Pucca closed
Chennai Corporation	2159	99	0.1	1	628	29	0	0	100
Other Corporations	2484	65	17	18	636	23	11	89	0
Municipalities	6052	69	16	15	4760	53	33	67	0
Town Panchayats	13312	29	24	47	5152	23	41	59	0
Panchayat Unions	45504	19	45	35	-	-	-	-	-
Village Panchayats	105252	15	16	69	2175	2	0	100	0

Note: Kutcha Drains are not considered in calculating % roads covered.

ii) Norms:

3.5.15. All roads have to be upgraded to BT in stages i.e. Earthen to WBM and WBM to BT. Similarly for Storm Water Drains, covered or open Pucca drains, are recommended basing on hierarchy of the road. In bus route roads, which carry major portion of traffic, pucca covered drains are recommended. In case of Town and Village Panchayats, open pucca drains are suggested for a portion and other roads do not really need drains.

Table 3.39 Roads and Drainage Coverage Recommended

Category	Roads			Drains	
	BT	WBM	Gravel/Other % of total Road Length	Pucca Open	Pucca Covered
Chennai Corporation	100	0	0	20	40
Other Corporations	100	0	0	40	10
Municipalities	100	0	0	70	10
Town Panchayats	40	40	20	40	0
Village Panchayats	20	25	55	10	0
Panchayat Unions	30	40	30	-	-

Note: In Municipalities existing situation in drains is better, hence norms set to maintain the existing levels. In-case of certain Municipalities with a very low service level, at least main roads are to be provided with drains.

iii) Gaps:

3.5.16. Gaps in roads and storm water drains have been estimated based on the existing situation and the levels to be achieved as per the norms given below:

Table 3.40 Upgradation

	Road to be upgraded			Drainage Works		
	WBM to BT	Earthen to BT	Metal to WBM	Kutchra to Pucca Open	New Pucca Open	New Pucca Covered
Chennai Corporation	3	25	0	0	432	236
Other Corporations	423	437	0	70	358	497
Municipalities	375	0	555	1564	0	303
Town Panchayats	1479	0	2139	945	0	0
Village Panchayats	5119	-	9293	3684	0	0
Panchayat Unions	2361	2493	0	-	-	-

iv) Unit Cost:

3.5.17. The roads may be assumed to fall into 3 categories of width - single lane (4 metres), intermediate lane (5.5 metres) and two lane (7 metres). The unit cost for each category has been worked out basing on designs. The same has also been discussed with H&RW/PWD officials to ensure that they reflect existing schedule of rates. Presuming that higher width roads are in greater proportion in higher grade of local bodies and that their upgradation cost is higher, the weighted cost of upgradation has been worked out as follows:

Table 3.41 Cost of Upgradation (Rs. in lakhs)

	Weighted Cost of Upgradation per Km. of Road			Capital Cost/Km. of Storm Water Drain		
	WBM to	Metal to	Earthen to	Kutcha to	New Pucca	New Pucca
	BT	WBM	BT	Pucca Open	Open	covered
Chennai Corporation	9.30	10.0	25	9.30	10.0	25
Corporations	4.05	6.98	8.49	9.30	10.0	25
Municipalities	3.88	6.70	8.98	9.30	10.0	20
Town Panchayats	3.00	5.10	7.61	5.20	6.0	-
Rural Areas	2.95	5.04	7.85	5.20	6.0	-

v) Total Investment:

3.5.18. The total capital investment required for upgradation of roads is estimated at Rs.1858.17 crores and for the storm water drain, it is estimated at Rs.666.51 crores in the next five years as given below:

Table3.42 Capital Investment required for roads and storm water drains

Category	Rs. Crores	
	Roads	Drains
Chennai Corporation	174.99	102.08
Other Corporations	54.23	166.47
Municipalities	99.43	157.28
Town Panchayats	153.34	49.12
Village Panchayats	619.39	191.56
Panchayat Unions	756.79	---
Total	1858.17	666.51

5. STREET LIGHTING

i) Existing Situation:

3.5.19. Street light forms another important infrastructure associated with roads. The levels of service of the street lights depends on the spacing between lamp posts and type of lamps. It also depends on the road hierarchy. Narrow spacing and Sodium Vapour lamps are required on primary network, while distanced spacing and other regular bulbs may be sufficient in tertiary roads. The existing situation as obtained from universal figures is given below:

Table 3.43 Existing Scenario in Street Lights

	Road	Total No. of lights	Average Distance between posts	Distribution of Lights %		
				Tube lights	Sodium Vapour/ Mercury	Ordinary
	Kms.	Nos.	Metres			
Chennai Corporation	2159	78990	27	66	34	0
Other Corporations	2484	79006	31	83	15	3
Municipalities	6052	177874	34	89	10	1
Town Panchayats	13312	214069	62	92	4	4
Village Panchayats	105252	869980	121	94	1	5

ii) Norms:

3.5.20 It will depend on the importance of the road and density of population. Hence, in case of Corporations and Municipalities, the norms will be on higher side. In Corporations, 15-20% of the roads are bus-route roads, 15 meter wide, where lights are to be provided on both sides. It is also recommended to replace ordinary lamps atleast by tube-lights wherever they exist.

Table 3.44 Normative Spacing in Street Lights

Category of Local body	Spacing Metres	Distribution of lights %	
		SodiumVapour	Tube lights
Chennai Corporation	25	40	60
Other Corporations	25	30	70
Municipalities	30	20	80
Town Panchayats	40	10	90
Village Panchayats	80	2	98

iii) Gaps:

3.5.21. Additional number of lights required to be installed is estimated as the difference between the requirements as per the norms and the existing number of lights as given below:

Table 3.45 Additional Requirements

Category of Local body	Additional lights needed - Nos.	
	Sodium Vapour	Tube Lights
Chennai Corporation	8004	0
Other Corporations	18151	4289
Municipalities	21687	3607
Town Panchayats	23839	103065
Village Panchayats	13232	153513

iv) Unit Cost:

3.5.22. SFC has arrived at the unit cost of lights based on the discussion with Chennai Corporation and Tamilnadu Electricity Board Officials. In case of Town Panchayats and Village Panchayats, the costs are based on the charges levied by Tamilnadu Electricity Board per tube-light. The weighted cost per lamp has been worked out basing on the use of 70 watts or 150 watts.

Table 3.46 Unit Cost

Category of Local body	Rs.	
	Unit Cost of lights - Weighted Sodium Vapour	Tube lights
Chennai Corporation	7340	4100
Other Corporations	7340	4100
Municipalities	7075	4100
Town Panchayats	5800	3500
Village Panchayats	5800	3000

Capital Investment:

3.5.23. The total capital investment required for street lighting is estimated at Rs.238.20 crores as shown below:

Table 3.47 Capital Investment

Category	Rs. Crores
Chennai Corporation	5.87
Other Corporations	15.08
Municipalities	16.82
Town Panchayats	49.90
Village Panchayats	150.52
Total	238.19

3.5.24. The capital investment for all the six core civic services to be delivered at the desired (normative) level in the local bodies has been worked out at Rs.5249.32 Crores for 1995-96. Providing for 12% escalation annually, it is Rs.6584.73 crores at 1997-98 price level. It may be noted that the Corporations and Municipalities which are primarily urban in character, come nearly 48% of the proposed investments. However, the percentage of increase over the existing level is much higher in the local bodies where infrastructure are not adequate at the moment.

Table 3.48 SUMMARY OF TOTAL COST

(Rs. Crores)

Service Sector	Chennai Corporation	Other Corporations	Municipalities	Town Panchayats	Village Panchayats	Panchayat Unions	Total (Base year 1995-96)
i. Water Supply	263.36	152.87	168.78	133.39	198.24		916.64
ii. Sewerage and Sanitation	156.82	540.44	414.74	100.97	257.46		1470.43
iii. Solid Waste Management	17.91	14.39	25.91	18.75	22.40		99.37
iv. Roads	174.99	54.23	99.43	153.34	619.39	756.79	1858.17
v. Storm Water Drains	102.08	166.47	157.28	49.12	191.56		666.51
vi. Street Lighting	5.87	15.08	16.82	49.90	150.52		238.20
Total	721.03	943.48	882.96	505.46	1439.57	756.79	5249.32
Recommended per Capita expenditure per year - Rs.							
A For 1997 Population	342	552	227	108	81	43	
B For 2002 Population	321	518	213	101	76	40	
Expenditure Required - Rs. Crores							
C Per Local Body (5 years)	721.04	188.70	8.49	0.80	0.11	1.97	
D Per Local Body (per year)	144.21	37.74	1.70	0.16	0.02	0.39	
E Existing Expenditure (per year)	99.5	23.05	0.56	0.04	NA	NA	
F % Increase over Existing	45	64	204	298			

3.5.25. Since the investment has to be made over a period of 5 years, it has been phased over 1997-2002 providing for 20% every year with 12% price escalation annually as given below:

Table 3.49 Phasing of Capital Investment

Investment Phasing	Capital Cost						Total
	1997-98	1997/98	1998/99	1999/2000	2000/01	2001/02	Capital Cost
	Price level	20%	20%	20%	20%	20%	100%
i. Water Supply	1149.83	230.0	257.6	288.5	323.1	361.9	1460.94
ii. Sewerage and Sanitation	1844.51	368.9	413.2	462.7	518.3	580.5	2343.57
iii. Solid Waste Management	124.65	24.9	27.9	31.3	35.0	39.2	158.38
iv. Roads	2330.88	466.2	522.1	584.8	655.0	733.6	2961.70
v. Storm Water Drains	836.06	167.2	187.3	209.8	234.9	263.1	1062.28
vi. Street Lighting	298.80	59.8	66.9	75.0	84.0	94.0	379.64
Total	6584.73	1317.0	1475.0	1652.1	1850.3	2072.3	8366.51

Note: Price Escalation Factor 12% Annually

3.5.26. The capital investment of Rs.8366.51 Crores is necessary if the service-levels have to be increased in the local bodies as suggested. In fact on this, depends the quality of life of the citizens. At this point of time, the moot question is whether it is within the scope of the SFC to look into the capital investments or confine itself only to Revenue expenditure of O&M. If gone by the words of the G.O. constituting and defining the scope of SFC, only the Revenue expenditures are to be looked into. However, there have been scores of conferences and workshops at the National level and in various other forums, where the Role of SFC has been discussed. All of them have gone on record, that the work of SFC will remain incomplete if it does not look into the levels of civic services and provide ways to improve them. Therefore assessing capital investment needs is an inseparable part. The Project Finances to raise this capital has been dealt with separately.