

CHAPTER 21

ECONOMIC AND FINANCIAL CONSIDERATIONS

21.1 INTRODUCTION

Solid Waste Management (SWM) is a part of public health and sanitation and according to the Indian constitution, falls within the purview of the State list. Since this activity is nonexclusive, unrivalled & essential, the responsibility for providing the service lies within the public domain, The activity being of local nature is entrusted to the municipal government.

To carry out this essential activity an annual provision for the recurring and capital expenditure is made in the municipal budget. The municipal budget is based on the total income from various revenue sources and other funds including the grants from Central and State Government. The provision of funds for solid waste management is commonly observed to be made on adhoc basis and is not related to the requirement.

Solid Waste Management receives a comparatively inadequate share out of the total municipal budget as the municipal agencies assign a low priority to this work resulting in poor services.

The Solid Waste Management activities would be governed by the norms of Public Finance-namely the Principles of Maximum Social Advantage. In principle the burden of tax for financing Solid Waste Management should fall the least on the lower income groups and progressively on the middle and higher income classes. The distribution of benefits of Solid Waste Management on the other hand should be such that each additional investment/expenditure makes the poorer section of the population better-off without making anyone worse-off in the bargain.

Being a “public utility” and an essential service, investments in Solid Waste Management do not require a justification in terms of “positive returns on investment” or “minimum profits”. Such an investment however needs to be justified on the grounds of being “the least cost technologically feasible option” for achieving the required degree of efficiency.

21.2 PRESENT FINANCIAL PROVISION

Municipal agencies have to manage various civic services. The number of activities managed by these agencies increase with the size of city. It is observed that smaller towns where the main activity is Solid Waste Management spend up to 70% of their budget on Solid Waste Management. Metropolitan cities on the other hand due to wider resources base and responsibility of provision of larger number of services spend only around 10% of their budget on Solid Waste Management. A majority of urban centres however spend 5-40% of their budget on Solid Waste Management. This is approximately Rs.50-250 per capita per year. It is observed that a large proportion of this expenditure is incurred on salaries and only a limited amount is spent on Operation & Maintenance (O&M) and development works.

Funds for this activity are assigned in the general budget. Since this activity is given a low priority, these funds are often inadequate, and consequently, whenever additional expenditure has to be incurred for specific renovation/replacement or as fresh capital expenditure, the municipal agency has to depend on financial support from the State Government.

Since most of the work is presently carried out manually, the cost of collection is considerably high (collection of solid waste refers to collection from the generation area and its transfer to the community bin). Since citizens tend to throw the waste on the adjoining road and outside the bin instead of depositing the same within the community bin, the work of the collection staff is increased. Hence, the cost of collection increases considerably. As the expenditure on processing and disposal is meagre, the cost of collection is disproportionately high as shown in Fig.21.1.

As the collection work is labour intensive, greater than 90% of the expenditure is incurred on labour, a bit lesser on capital items & minimal on O&M. In the case of transportation, expenditure on manpower still accounts for more than 50% of the total cost while O&M followed by capital expenditure form a comparatively significant proportion of total cost. Presently disposal is mainly through landfilling where after the initial cost, major expenditure item relates to O & M (>70%) followed by labour and a very small proportion as capital cost. Fig.21.2 indicates the distribution of the expenditure on different items for Municipal Corporation of Delhi (MCD) in 1995-96.

Presently a large proportion of the total expenditure is incurred on collection, a bit lesser on transportation & a meagre amount on disposal. In Municipal Corporation of Delhi, 70-85% of the total expenditure on solid waste management was spent on collection, 26.45% on transportation and only 2.7% on disposal. When the system is properly designed, the proportion will be 75% of the total expenditure on collection, 21.4% on transfer and transportation and 7.6% on disposal. In absolute terms the present costs/tonne in Delhi are Rs.642/tonne(t) for collection, Rs.240/t for transportation and Rs.24.5/t for disposal (The figures for another metropolitan city i.e. Greater Bombay, in 1992-1993 are Rs.632.4/t, Rs.211.95/t & Rs.73.2/t for collection, transportation and disposal respectively).

The table 21.1 gives the costs for existing system as well as that will have to be incurred for providing proper services involving source specific collection of waste at desired frequency, transportation of all the collected waste and disposal by adopting sanitary landfilling with biogas recovery.

Table 21.1 : Expenditure on different aspects in MCD for 1995-96

	Present Rs.	Desirable Rs.
Collection/t	642.85	1049
Transportation/t	240.0	238
Disposal/t	24.5	106*

- **When the whole of the waste is landslide, cost will range between Rs.200 - Rs.300/t**

The estimated expenditure on various components for different population ranges are given in Table 21.2.

21.3 EXPENDITURE AND COST OF SWM

Commonly only the expenditure directly incurred by the municipal agency is considered while calculating the cost of solid waste management. However, rationally the “Cost of SWM” should also include the expenditure actually incurred by the voluntary/informal sector – e.g. wastepickers, intermediary agents and sellers/buyers involved in the recycling, recovery and reuse of materials either at source or at the refuse dumps/disposal sites, the costs which are “non-paid” – the opportunity cost of land where refuse is dumped illegitimately, the cost of waste disposal which should legally be borne by the industrial units, but which is presently being passed on irresponsibly to society by either dumping it in non-authorized open plots, or water-bodies etc. In other words, the concept of “Full-Cost” should be used so that all directly paid costs and the indirect costs (non-paid externalities) borne by the society at large are reflected. While calculating the full cost of SWM, the expenditure incurred by organizations other than the municipal agency (externalities such as the efforts of wastepickers, etc.) have also to be included in the Total Cost figure. The social and environmental costs should be included so that municipal agency has at its disposal the necessary finances for organizing and institutionalizing these activities. It is desirable that municipal agencies adopt the accrual basis of accounting and correctly calculate all their costs. Without such provisions the occupational health and hazard situation of the non-organized sectors will remain abysmally poor.

Solid Waste disposal costs may be defined for our purpose as total costs incurred by society in disposing off its wastes. Environmental damage costs are understood to be indicated by the decline in environmental quality. Such costs are assumed to be incurred when nothing is done to prevent the solid waste from causing damage to the environment. Environmental management cost

Table 21.2

COST ESTIMATES FOR MODERNIZATION OF SOLID WASTE MANAGEMENT PRACTICES IN URBAN AREAS

	Item	1 lac population			5 lacs population			10 lacs population			20 lacs population		
		Quantity Number	Unit cost (Rs.)	Total cost (Rs.)	Quantity Number	Unit cost (Rs.)	Total cost (Rs.)	Quantity Number	Unit cost (Rs.)	Total cost (Rs.)	Quantity Number	Unit cost (Rs.)	Total Cost (Rs.)
1.	Containerized handcrafts	150	3000	450000	750	3000	2250000	1500	3000	4500000	3000	3000	9000000
2.	Containerized tricycles	10	6000	60000	50	6000	300000	100	6000	600000	200	6000	1200000
3.	Community bins for slums	50	150	7500	500	150	75000	1500	150	225000	4000	150	600000
4.	Seamless handcraft for silt removal	20	2000	40000	100	2000	200000	200	2000	400000	400	2000	800000
5.	Small vehicle for direct collection of waste	0	0	0	4	125000	500000	8	125000	1000000	16	125000	2000000
6.	Closed trailers for waste storage depot	40	20000	800000	0	0	0	0	0	0	0	0	0
7.	Closed dumper placer types containers 4.5 cu.mtr. Volume	0	0	0	200	25000	5000000	200	25000	5000000	300	25000	7500000
8.	Closed dumper placer containers of 7cu.mtr. Volume	0	0	0	0	0	0	140	35000	4900000	333	35000	11655000
9.	Containers for domestic hazardous waste	5	20000	100000	15	25000	375000	25	25000	625000	50	25000	1250000
10	Tractors	5	200000	1000000	0	0	0	0	0	0	0	0	0
11	Dumper placer machine for 4.5 + 7 cu.mtr containers	0	0	0	15	750000	11250000	25	750000	18750000	45	750000	33750000
12	4.5 cu.mtr. Skips for construction waste	0	0	0	10	25000	250000	20	25000	500000	40	25000	1000000
13	Skip filters	0	0	0	2	750000	1500000	3	750000	2250000	5	750000	3750000
14	Small van for hospital waste collection	2	0	400000	3	200000	600000	5	200000	1000000	10	200000	2000000
15	Incineration plants	2	0	2000000	2	1000000	2000000	2	2000000	4000000	3	2000000	6000000
16	Bull dozers / Wheel dozers	0	0	0	1	4000000	4000000	1	4000000	4000000	2	4000000	8000000
17	Asphalt / concrete of flooring at the waste storage depot	40	0	240000	200	6000	1200000	340	10000	3400000	633	10000	6330000
	Total			5097500			29500000			51150000			94835000
18	Composting of waste			2000000			15000000			50000000			10000000
19	Landfill site development	This may be done as per site conditions, permeability of soil, etc. The cost may vary depending on the factors shown in Chapter 17 on landfills. The cost may vary between Rs. 200 to Rs. 300 per metric tone of waste reaching the landfill											

Assumptions

1. An average of 500-meter road length will be assigned to the sweepers for house to house waste collection and street sweeping.
2. Only a few sites will necessitate use of containerized tricycle looking to longer distance between the primary collection / sweeping area and the waste storage depots.
3. About 5 % population may be living in slums in the cities under 5 lacs population. About 10 % in cities under 10 lacs population and about 20 % in cities under 20 lacs population.
4. Semi-mechanized composting will be restored to small cities and higher mechanization will be adopted in big cities for handling huge quantities of waste.
5. Waste generation criteria assumed as 250 - 350 grams (gm)per capita in cities up to 1 lakh population and 50 - 600 gms in cities above 1 lakh.

represents the amount of money spent by public bodies or private parties to prevent some of the damaging obnoxious effects of solid waste. Theoretically the optimum ratio (equilibrium point) of environmental damage costs and the environmental management cost is reached when the marginal environmental damage costs equal marginal environmental management costs.

An accurate estimate of costs of environmental damage requires an impact analysis of solid waste collection and its disposal on an on going basis in future. Such an analysis can be made for any project in two phases :-

- (a) Assessment of the technical, physical effects of solid waste collection and disposal.
- (b) The economic evaluation and quantification of physical effects of solid waste collection and disposal.

The quantified money values obtained by following the above mentioned procedure should be represented in the analysis. The cost of SWM arrived at is, though, not exhaustive but tries to reach the closest approximation of the "social-cost" or final cost.

21.4 PROJECT LIFE CYCLE ANALYSIS

While comparing various alternatives, a different procedure has to be adopted in solid waste management, where the equipment has a shorter life as compared to that in other municipal service such as water supply and sewerage. Hence, in addition to a large initial capital investment, a large capital expenditure has also to be incurred at frequent intervals for replacement of the old equipment. This frequency of replacement varies in different alternatives. In all the alternatives a large operating cost has also to be incurred. Hence, for assessing the best possible alternative the cost of the alternatives over the project life has to be calculated and compared.

Decision making about public investment in critically important areas like solid waste management requires a careful analysis of all the alternatives available for achieving this objective. Besides the technical criteria and constraints like alternative equipment, machinery, vehicles, land sites, factor combinations etc. the project which is finally implemented should also be viable in economic and financial terms. The economic viability in most public investment decisions is based on a cost-benefit-analysis. This is possible in case of projects where the benefits are tangible to a certain extent, and/or have market values determined demand and supply interaction. In case of public utilities like water supply, imputed or correlated prices are available for benefit calculations. This enables the

economic quantification of benefits to an intuitively acceptable degree of approximation.

Solid waste management, although a very critical utility having enormous potential, is of a very special class. It does not lead to any value which is either tangible or marketed in any remote way. In the absence of objective criteria for quantifying the benefit stream emanating from SWM, a benefit cost analysis becomes meaningless. The technique of quantifying the "NET PRESENT VALUES" (NPV) of the alternatives available, over their entire life cycle has to be adopted. Since the impact of inflation, and the interest burden is assumed to be the same for all alternatives, the net present value analysis is conducted at constant prices.

21.5 NON-MARKET EXTERNALITIES IN SWM

As a public utility solid waste management is characterised by non-market attributes. There is for example no "market-demand" for a cleaner environment. Similarly, the service is universal and cannot be consumer specific, and therefore, it does not exclude non-taxpayers. On the other hand "waste-generators" can either bear the cost of minimising/treating the wastes, or they can externalise the cost by practicing irresponsible dumping or non-compliance with waste treatment regulations.

Many industries and construction companies are often known to be evading laws related to waste disposal and avoiding taxes. The greater the proportion of such externalization, the higher will be the burden on the society in general. Illegal disposal of construction and demolition debris is a typical example of externalised cost-burden. Similarly, industrial units which produce toxic and hazardous chemical waste are at present dumping it illegally on open plots, or mixing it up along with the general municipal wastes which create potential danger-spots within the disposal sites which by themselves, are relatively less harmful. However, if the 1989 Rules on the generation and disposal of hazardous and toxic wastes are implemented forthwith, then the generation of such wastes may get reduced due to recovery and recycling. Further, such wastes would have to be disposed off in "special-facilities" and sites further away from population concentrations.

21.6 LACK OF FINANCIAL PLANNING FOR SWM

The volume of solid wastes generated over time is related to the variables such as the population size, its growth, levels and growth of income and its distribution, the changes in the modes of production, nature of consumption,

trends in marketing & packaging of consumer goods. The other important reason for this situation is the fact that the Perspective Development Plans of the Urban centres do not give sufficient importance to this aspect and therefore, the decisions to invest in the up-gradation or improvement of the system are often "ad-hoc" and apologetic. Today, there is an urgent need to overhaul the system by making substantive changes in management & technology, which would inevitably require capital investment far beyond the current budgetary capacity of the municipal agencies.

21.7 FINANCIAL MANAGEMENT PLAN

Any proposed solid waste management system will require provision of financial resources for its smooth running. Various elements involved in the financial planning are described below.

21.7.1 Principle Elements of the Financial Management Plan

It is recommended that SWM be treated as a specific exclusive development project, which requires a large dose of capital investment and continuously increasing operation and maintenance costs over the next few years. The inadequate provision of funds over a very long period has led to inadequate and improper solid waste management system. A large dose of funds has, hence, to be given to improve the existing system. It is necessary that solid waste management is treated as a specific and exclusive project which requires a large capital investment as well as large operation and maintenance cost. As the equipment in use in solid waste management has a shorter life as compared to that in the other municipal services such as water supply and sewerage, a large capital investment is continuously required. Hence there has to be a specific plan for raising the necessary funds for this purpose. It is therefore, necessary to appreciate that a well developed financial plan which anticipates a predetermined stream of fixed and variable expenditure be prepared, so that it is possible to make a concomitant plan for raising the necessary stream of revenues/funds for this purpose. In other words, one has to find out ways and means by which the required finances are raised to operationalise the SWM project over the design period. This becomes necessary because the present structure of revenue does not contain any instrument specifically dedicated to the needs of SWM. It is also obvious that in future the municipal agency will find it increasingly difficult to draw the required amounts from the existing revenue resource.

The annual requirement of funds for efficient SWM reveals that when the principle of Full Cost Pricing is applied the Total Annual requirements are often 2-3 times the amount being allocated at present. Thus if the SWM system in the municipal agency is to be upgraded to a minimum level of norms applicable to

metropolitan health, hygiene and environment, then a large dose of capital investment will be necessary. Since the initial requirements will be large the investment would have to be based on capital borrowed either from the open market or financial agencies in India or abroad. The SWM project will have to provide SWM Tax/Cess, and to cover not only the annual cost of operation, required to be repaid but also the indirect costs. This procedure alone assures the financial viability of the Recommended SWM Project.

The financial requirements vary substantially from year to year. However, since a revenue instrument cannot be made to adjust to annual requirements it is proposed to raise the financial resources through

- i) introduction of SWM benefit tax/cess and
- ii) loans especially for capital investments from appropriate agencies.

The 74th amendment to the Constitution has resulted in devolution of powers and responsibilities upon municipalities in relation to matter listed in the Twelfth Schedule. Thus the municipalities can impose taxes and raise funds for public health, sanitation, conservancy and solid waste management.

21.7.2 Determination of Tax/Cess Rates

Rational Tariff Structure

The present solid waste cleansing tax is charged as a percentage of property tax. It is observed that this proportion cannot be raised further due to legal restrictions. The revision of property tax is also carried out only infrequently. It is hence desirable to provide for levying of an additional dedicated tariff for solid waste services. It should be based on the frequency of service, volume/weight of the waste or combination of both or on family basis. It can be multiplied by a factor based on assessment of location, building value and income of occupant. However, provision of cross subsidy for slum areas is desirable. Separate structure of tariff will have to be specified for community bin system and for house to house collection system. It should also lay down the method of charging and recovery of charges for transportation of acceptable industrial solid waste and demolition waste. There should be a provision for revision of the rates at specific intervals. For specific identified occupations, contracting out of work should be considered. However, such contracts should be appropriately framed with in built monitoring and penalty mechanisms.

The desired level of environmental quality can be attained through the imposition of a fiscal instrument - a pollution charge on the generation of waste which involves the levying of a tax equal to the "marginal

waste-disposal-cost". In case of households the cess would be determined by the average per capita generation of waste as calculated by the waste characterization study in the different income classes. This would lead to the "internalization" of external costs. The tax instrument would be applied by using the per capita income as a basis for deciding the tax rate differentials. The low income earners who stay in slums would pay a nominal token charge, while the gap would be made good by charging progressively higher rates on the middle, and higher income classes. The element of "subsidisation" would have to be worked out carefully so that the marginal revenue recovered (MRR) is equal to the marginal cost of disposal (MCD).

21.7.2.1 *Determination of the Rate of SWM Tax*

The rate of taxation can be based on any one or more of the following principles :-

(i) *The Marginal Cost of Solid Waste Disposal:*

The rationale behind this principle is that the household/commercial establishments pay as much as the marginal cost of solid waste disposed off. However, this principle would tend to be unjust to the generators of least per capita waste and favourable to the generators of larger quantities of per capita waste. In spite of this problem the marginal cost principle can form the first approximation for determining a tax, which can then be differentiated by income levels.

(ii) *The Ability to Pay:*

This principle assumes that the marginal satisfaction derived from an efficient SWM every unit of tax paid falls with every increase in income. By similar logic, the ability to pay increases with increase in income because the marginal sacrifice experienced for every rupee of tax paid falls with the increase in income. The principle would be useful for determining the degree of differentiation between higher and lower income earners.

(iii) *Willingness to Pay:*

The percentage of tax recovery/tax evasion or avoidance depends on the citizen's subjective perceptions about the benefits/consumer surplus enjoyed by him. In practical terms it may be possible to conduct a detailed survey of households and other establishments for finding out the willingness to pay among different income groups. Such a long term consumer survey would help the authorities to determine the optimal structure of tax rates. It is suggested that all the principles would have to be applied jointly for framing the tax policies, because each principle is essential but not exclusively sufficient.

21.7.3 Solid Waste Management Benefit Tax

The SWM benefit tax rate be worked out in such a manner that it covers the annual average requirements over the period under consideration. It must be stressed that matching the annual requirements with the annual revenues from the proposed tax would be difficult because the total revenue collection would depend upon factors which are greatly variable over time. For example, the total population of the urban area and therefore, the total number of households willing and able to pay will change over the plan period. The per capita income of the households, and the incomes of the establishments such as hotels, industries, etc. will also change from year to year. Similarly, the proportion of households living in the slums is also expected to change from year to year. It may be also pointed out that the rate of taxation would have to be differentiated and progressive in nature, i.e. lower rate for the low income population and higher rates for middle and higher incomes. The tax rate for commercial establishments could be related to the nature of economic activities performed/the amount of waste they generate and their profit-making potential (ability to pay). The experience in Public Finance suggests that a new tax instrument should be introduced gradually so that there is no unnecessary resistance or evasion. The tax could be then increased gradually as the citizens appreciate the benefits of an efficient and well-planned SWM system. The rationale behind a differentiated SWM tax is that solid waste generation is clearly known to increase with increasing income and expenditure. It must be noted that the increase in waste generation does not necessarily increase in proportion to the income levels, but that the ability to pay certainly does.

The rate of tax would also have to be periodically adjusted to the rate of inflation so as to accommodate the changing financial requirements. Experience in other areas of Public Revenue & Expenditure suggests that the gap between Revenue and Expenditure increases over time if tax rates are not revised, and this automatically results into less and less efficient discharge of services. The revision of the tax rate every 3 to 5 years is important because in its absence matching revenue and expenditure becomes impossible.

21.8 ACTION PLAN

Various measures should be taken to make the system self supporting. These involve both short term as well as medium term action outlined below :-

Short Term

- For mobilising financial resources for SWM, the

percentage allotment for SWM from the total annual budget of municipal agency may be immediately increased by necessary budgetary reallocation

- For increasing budgetary allocation, the top priority should be given to SWM among the essential services. Simultaneously action should be taken to improve efficiency of tax collection, by introducing incentives for increased tax collection and penalising the defaulters
- Different commercial establishments like hotels including kiosks, eating houses, restaurants, star hotels and retail markets are presently charged at flat rate basis. The charge should be based on weight basis and the rates should vary depending on the size of establishment and its grade
- Solid waste management is a public utility service and should preferably be managed on a "no profit no loss" basis.
- Industries which are within the municipal limits should be permitted to dispose of their non – hazardous waste on municipal sites of on cost recovery basis.
- To reduce the financial burden on the municipal agency, the feasibility of involving the private sector should be explored. However, the ultimate responsibility should lie with the municipal agency.
- In case it is necessary, the municipal agency should be permitted to raise requisite capital, either by borrowing from open market in terms of tax free municipal bonds, or raising loans from State, Central Government or from State, national/international financing institutions.
- To enable the municipal agencies to take up specific development work, a proportion of the revenue received by the State/Central Government should be earmarked for solid waste management.
- For an efficient recovery of solid waste user charge, combined bills along with the other municipal services like, electricity/water supply should be raised as is practised in other countries.

Medium Term

- Municipal bodies should raise the financial resources through all available means to meet both direct and indirect costs of solid waste management.
- Rationalisation of property tax structure and revision at specific interval be carried out.
- Wherever specialised services (hospitals, commercial areas etc.) or house to house collection are provided, the element of full cost recovery be introduced

- Guidelines and regulatory framework should be formulated by a Central agency for attracting and encouraging private capital into solid waste management through Build-Operate-Own (BOO), Build-Operate-Transfer (BOT), Build-Operate-Lease-Transfer (BOLT) and other arrangements.
- For an efficient management, participation of private sector should be explored. It is necessary to develop a congenial environment for private sector participation with greater transparency in the transactions than hitherto practised.
- Central/State Government may consider exemption of machineries, plants, vehicles for Solid Waste Management from customs, excise and local taxes.
- Long term plans should provide for raising of resources for capital expenditure during various years through adoption of a rational mechanism such as sinking fund.
- Tax incentives should be provided for waste recycling and processing industries by Central/State Government. As permitted by Govt. 100% depreciation should be availed of in the first year for the purchase of plant and machinery for solid waste processing.
- The local bodies should provide for a sinking fund for planned and timely replacement of vehicles and equipment.
- A suitable tax be levied from floating population for providing basic services including Solid Waste Management

21.9 ADDITIONAL SOURCES OF FUNDS

Due to the weak financial position of municipal agencies additional funds will often have to be sought from external sources for providing the funds needed for upgrading the services to the desired level.

Normally these funds are sought from the State Government. The actual funds provided by the State Governments will depend on the resource position of the State. It is hence necessary that all efforts should be made to obtain the funds from various other alternative sources also. Funding pattern from alternative sources is indicated in the Annexures 21.2(A), 21.2(B), 21.2(C) . The municipal authorities should also raise the resources by floating tax free bonds.

To reduce the financial burden on municipal agency, expenditure on

construction and operation of specific components can be assigned to private agencies on BOO and BOLT principle.

Privitisation is a potential source of finance and helps in reduction of financial burden on a municipal agency. It also enables provision of service delivery at lower costs. Privitisation does not take away the responsibility of local Government who should develop, manage, monitor and enforce a compact contract instrument. Privitisation can be carried out either by contracting or franchising or through open competition.

Contracting is feasible when the anticipated output from the contractor can be accurately described. It is hence suited for discrete activities, viz. collection, transportation, operation of transfer station, processing unit, landfill.

Private collection gives better service at lower cost but it needs proper contract specifications and monitoring. Contracting of transportation can also be preferred provided the contract is given for a reasonably long period to enable the contractor to purchase vehicles satisfying the specifications in the contract. The payment should be rationally based on the distance and the quantities to be transported.

The private firms can be awarded a contract on build-operate-transfer basis for transfer stations. The payment can be on the basis of the quantity transported at the transfer station.

Many times the processing and disposal facilities are also given to private agencies on build-operate-transfer basis.

Civic agencies while contracting out collection may also consider giving exclusive franchise to individual private firms to provide services to customers in various zones of a city. The firm can charge appropriate user charge to the customer for the services provided and will have to pay fees to the municipal agency for the franchise given to it. The municipal agency will have to monitor the performance, specify the limits to the users charge and has the right for renewal or revocation of the licence. Different firms can be given franchise for different zones and care should be taken so that they do not form cartels, monopolies or do not work in collusion.

The open competition is often preferred for the maintenance and repairs services.

The state financial institutions as well as the central financial institutions should be approached for raising the necessary funds. Considering the weak

financial position of municipal agencies, a mechanism similar to that in the centrally sponsored scheme for infrastructural development in mega cities scheme will have to be evolved. Presently user charges are not being recovered for this essential service and a complete cost recovery may not be feasible at least in the initial phase. Hence soft loans will have to be arranged to provide funds for the required capital expenditure. In the case of metropolitan cities the requirement of funds is quite large and even the above arrangement may not serve the purpose. It will hence be desirable to approach the national and international financial agencies.