



INSTITUTING SUSTAINABLE SOLID WASTE MANAGEMENT BY LOCAL AUTHORITIES

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1. Human Resource Requirement and Allocation
2. Roles and Responsibilities
3. Monitoring and record keeping
4. Contracts and Tenders

**Optimization of resources is equivalent to creating
new resources**

HUMAN RESOURCES REQUIREMENT

Admin & Management Staff

Position	ULB – Population			
	Up to 50,000	50,000 – 1,00,000	1,00,000 – 5,00,000	Above 5,00,000
Public Health Engineer	1	2	3 to 4	5+
Sanitary Inspector	1	2	3	4+
Health Officer	1	2	3 to 4	5+



Sanitary Sub- Inspector: 1 per 25,000 population
Sanitary Supervisor: 1 per 12,500 population

Source: CPHEEO Manual on Sewerage & Sewage Treatment (2019 Edition), Chapter 9, Section 9.1 & MoHFW Guidelines for Urban Health, 2015

HUMAN RESOURCES REQUIREMENT

Sweeping Staff Allocation

High density roads:

1 person per 300–350 running meters of road length

Medium density roads

1 person per 500 running meters of road length

Low density roads

1 person per 500 running meters of road length

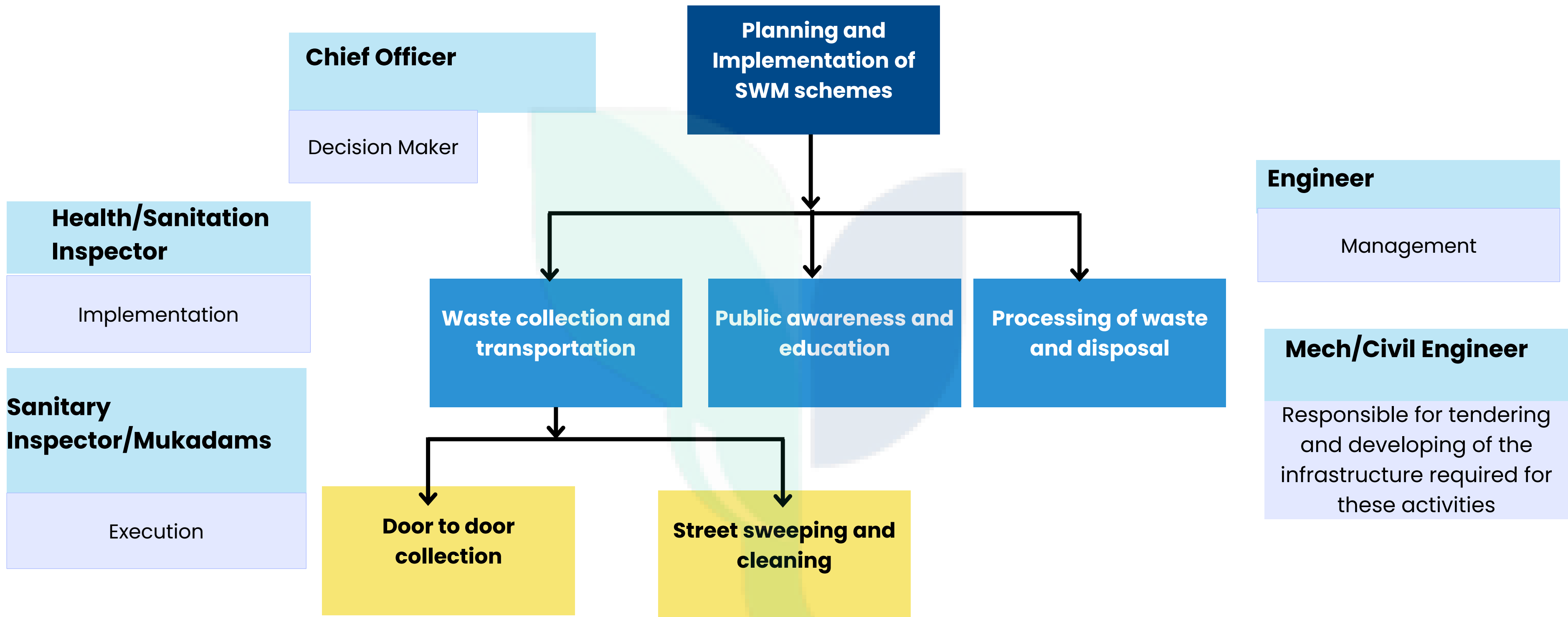


Push carts, Tricycle : 1 person per pushcart

Light Commercial Vehicles having 500 to 700 kg+ capacity: 1 driver and 2 labour per LCV

Source: CPHEEO Manual on Sewerage & Sewage Treatment (2019 Edition), Chapter 9, Section 9.1 & MoHFW Guidelines for Urban Health, 2015

ROLES AND RESPONSIBILITIES



Authorities as per Maharashtra Municipal Councils, Nagar Panchayats and Industrial Town Boards (Solid Waste Management and Handling) Byelaws, 2008 - Section 5(1) & 5(3)

Activity

EXTERNAL RESOURCES AVAILABLE

Resource	Benefits	Challenges
Contract Labour	Additional manpower, specialized skills, flexibility of work scope	Needs clarity in contracts drafting and structured monitoring processes
Private Contractors:	Better efficient and skilled resource, Ease of Management	Transparent selection, strong regulation needed; may lack local context understanding.
Wastepickers/SHGs (Self Help Groups):	Valuable skills, social inclusion, cost-effective.	Supportive environment required; clear roles to avoid conflicts; may lack capacity for large waste volumes.
NGOs	Technical assistance, advocacy, bridging gaps.	Varying expertise, clear goals needed; Needs to be eligible for long term financial sustainability



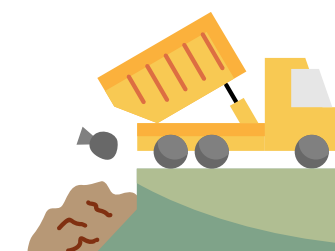
MONITORING AND RECORD KEEPING

GENERAL ULB INFORMATION

Once in every 3 year

- Area of the ULB,
- ward wise population,
- No. of HHs,
- Slum,
- Commercial,
- Institutes, Markets,
- Health care facilities,
- Industries

Parameters	Daily	Weekly	Monthly	Quarterly	Annually
Generation, segregation and coverage	Number of HHs covered per ward. GVPs	Inspection of colln pts,	Segregated qty collected per ward	Qty collected per source thru DTDC per ward	
Transportation	No of vehicles, staff reporting	No of trips per vehicle Nature and duration of breakdowns Alternate arrangements			
Street Sweeping	Attendance of staff Silt removal duty	Number of litter bins cleared	Human resource requirement, backlog		
Processing	Quality of Compost	Total operating hours	Qty and quality of end product No of staff per plant Qty of rejects Any irregularities noticed per Plant		Average Operating Capacity of the processing facility versus installed capacity.
Disposal	Qty of waste landfilled. Rejects going to landfill	Appropriate process followed	Capacity of Landfill versus waste deposited.		Capacity of Landfill versus waste deposited.



MONITORING AND RECORD KEEPING



Record keeping	Daily	Monthly	Quarterly
Complaint Redressal	1.Number of MSWM related complaints received (Daily) ULB 2.Types of complaints received (Daily) ULB 3.Time taken for issues to be resolved and appropriate actions taken (Daily) ULB		Number of defaults for which penalties are collected Quarterly (once in three months)ULB
Financial Aspects			1.Cost of collection, transportation, and disposal per ton per day 2.Human Resource cost 3.Cost recovery for MSWM service through tax, user fees, etc
Legal Matter		<ul style="list-style-type: none"> • Number of cases filed in the courts each month for violation of provision of rules and applicable laws • Corrective measures taken 	

CONTRACTS AND TENDERS

PRE REQUISITES

Identification of services to be outsourced

Based on internal capacities and available external resources services to be outsourced have to be identified.

Cost Benefit Analysis

Cost benefit analysis of the existing solid waste management system is necessary.

Waste Composition/ Audit

Characterization and physicochemical analysis of municipal waste should precede tendering of any waste processing, treatment, and disposal facilities



Detailed Project Report

Detailed project development is the key to successful implementation. Project definition and key performance indicators have to be established

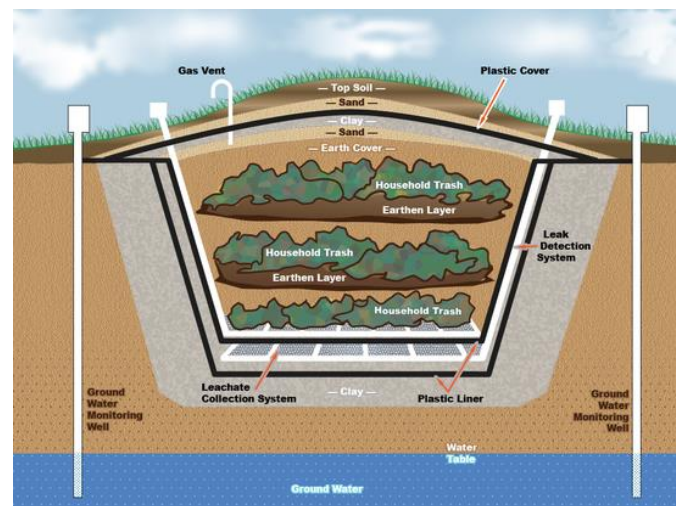
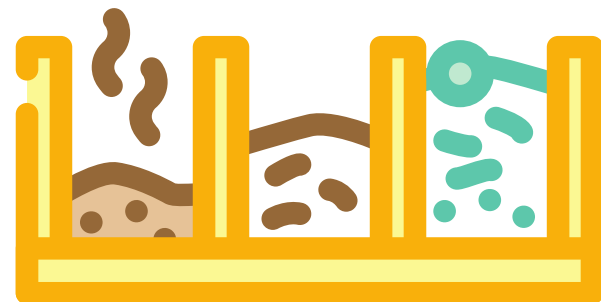
Land Requirement

Land requirements for 20–25 years for proposed facilities shall be assessed and identified.

Monitoring and Evaluation

Resources available inhouse to monitor, tools that can be used, biometric attendance, GPS system. Weighbridges, etc. and penalty clauses

CONTRACTS AND TENDERS



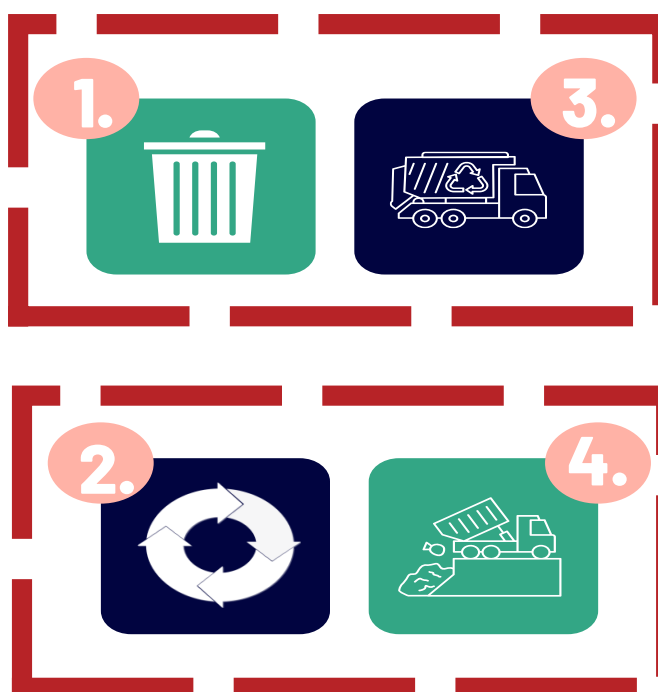
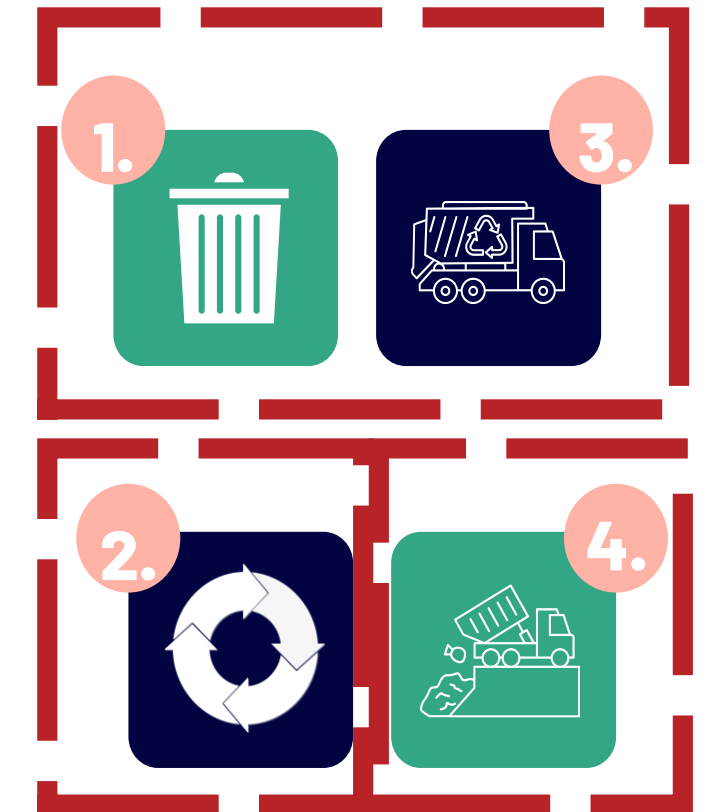
Waste management system	Type of contracts
Door to Door collection And Transportation	Service contract, Management contract
Secondary storage, and Transportation of waste	Management contract
Transfer Station	Build and transfer
Compost Plant,	Build-Operate-Transfer (BOT),Build-Own-Operate (BOO)
Biomethanation,	Build-Operate-Transfer (BOT)
RDF plants, incineration	Build-Own-Operate (BOO)
Sanitary landfill	Build and transfer,Build-Operate-Transfer (BOT)
Construction and demolition [C&D] waste collection	Management contract



Model 1 – One contractor for all four.

Model –3 Three contractors

1. Colln and Trn
2. Processing
3. Sanitary landfill and disposal.



Model –2 Two contractors

1. Colln and Trn
2. Processing and disposal.

Model –4 Four contractors

1. Colln
2. Transportaion
3. Processing
4. Sanitary landfill and disposal.

