

PERFORMA FOR SUBMITTING INFORMATION ON SOLID WASTE MANAGEMENT

Name of City/Town:	Cochin	District:	
Name of Municipal Body:	City corporation	Division:	
Address:		State:	Kerala
Telephone:		Fax:	
Email:		Website:	
• DEMOGRAPHY			
.1	Name of Officer In-Charge	Chief Health Officer	
.2	Area of Municipal Corporation /Council (Please provide map showing legal limits of municipal body) (km ²)	94.88	
.3	No. Of wards / zones	50	
.4	Total population (as per 1991 census)	5,64,589	
.5	Total population (as per 2001 census)	7,00,000(2000)	
.6	Population		
	• Urban		
	• Slums	2,00,000	
.1	Floating population		
.2	Total no. of household		
.3	Average maximum temperature (°C)		
.4	Average minimum temperature (°C)		
.5	Average yearly maximum rainfall (mm)		
.6	Average maximum humidity		
.7	Average minimum humidity		
.8	Average depth of water table	Almost sea level (ranging 0.5to 7 mts height)	
.9	Altitude (i.e. mean sea level)		

<ul style="list-style-type: none"> • GENERATION OF MUNICIPAL SOLID WASTE 		
.1	Total MSW generation (MT/day)	375
.2	MSW generation (gms/capita/day)	380
.3	Of the total MSW generated	
	<ul style="list-style-type: none"> • Quantity of domestic MSW (MT/day) 	249
	<ul style="list-style-type: none"> • Quantity of commercial MSW (MT/day) 	
	<ul style="list-style-type: none"> • Quantity of industrial (non-toxic and non-hazardous) waste (MT/day) 	
	<ul style="list-style-type: none"> • Quantity of waste from markets (MT/day) 	38
	<ul style="list-style-type: none"> • Quantity of waste from hotels and restaurants (MT/day) 	50
.1	Composition of MSW (Attach separate sheet)	
	<ul style="list-style-type: none"> • Physical characteristics 	
	<ul style="list-style-type: none"> ○ Vegetable /putrecible(%) 	58
	<ul style="list-style-type: none"> ○ Paper (%) 	4.9
	<ul style="list-style-type: none"> ○ Plastic (%) 	1.1
	<ul style="list-style-type: none"> ○ Glass (%) 	0.30
	<ul style="list-style-type: none"> ○ Metal (%) 	0.70
	<ul style="list-style-type: none"> ○ Wood coconut cell etc (%) 	6
	<ul style="list-style-type: none"> ○ Stones,earth ,etc (%) 	14
	<ul style="list-style-type: none"> ○ Textiles (%) 	2
	<ul style="list-style-type: none"> ○ Miscellaneous 	13
	<ul style="list-style-type: none"> • Chemical characteristics 	
	<ul style="list-style-type: none"> ○ Carbon (%) 	
	<ul style="list-style-type: none"> ○ Nitrogen (%) 	
	<ul style="list-style-type: none"> ○ Phosphorous as P₂O₅ (%) 	
	<ul style="list-style-type: none"> ○ Potassium as K₂O (%) 	
	<ul style="list-style-type: none"> ○ C/N ratio 	
	<ul style="list-style-type: none"> ○ Calorific value (kCal/kg) 	
	<ul style="list-style-type: none"> ○ Density of MSW (kg/m³) 	
<ul style="list-style-type: none"> • SWEEPING 		
.1	Total length of roads (with or without footpath)	2729.89

	km	
	<ul style="list-style-type: none"> Total length of cement-concrete roads (km) 	
	<ul style="list-style-type: none"> Total length of asphalted roads (km) 	
	<ul style="list-style-type: none"> Total length of Kutchha roads (km) 	
.1	Total no. of sweepers employed	191
	<ul style="list-style-type: none"> Departmental 	647
	<ul style="list-style-type: none"> Contracted 	200(casual)
.1	Working hours of sweepers	6.30AM-12.30PM
.2	Norms of sweeping (e.g. one sweeper per ... population, or one sweeper per ... sq. m. area, or one sweeper per ... RMT road)	<ul style="list-style-type: none"> Daily sweeping 150 kms Alternate days 300 kms Twice a week 600kms The remaining roads are swepted by special occasions (1679 kms)
.3	Sweeping carried out at a location by	<ul style="list-style-type: none"> One sweepers Two sweepers Three or more sweepers
.4	Sweeping waste is put in a...	<ul style="list-style-type: none"> Box type wheel barrow Containerised handcart Cane or bamboo basket Roadside bin Open dump Directly in the vehicle
.5	Frequency of sweeping	<ul style="list-style-type: none"> All seven days a week Six days in a week Alternate days Any other frequency (Please mention)
.6	Total no. of wheel barrows provided	
.7	Total no. of containerised handcarts provided	
.8	Total capacity of wheel barrow (kg)	
.9	No. of containers and its capacity in kg	
.10	Type of broom provided	<ul style="list-style-type: none"> Long handle (No.:)
.11	Any other equipment provided (e.g. spade, shovel, tikow)	Ghamela, Spade, Collecting tray

.12	Protective gear provided (e.g. leather hand gloves, gumboots, mask)															
• COLLECTION, STORAGE AND TRANSPORTATION																
.1	Area covered for collection of MAW															
.2	No. of households covered	1,08,921														
.3	No. of households covered under door-to-door collection (bell ringing)															
.4	Is the collection carried out by municipal authority or private contractor or NGO?															
.5	Is the segregation is carried out at source?	Yes/No														
	If no, what steps have been taken?															
.6	Total quantity collected (MT/day)	528														
.7	MSW collected in mixed form (MT/day)															
.8	MSW collected in segregated form (MT/day)															
.9	Whether littering is prohibited by the municipality?	Yes/No.														
.10	Whether litterbins are provided?	Yes/No														
.11	Frequency of waste collection	<ul style="list-style-type: none"> ○ Once in 24 hours ○ Twice in 24 hours ○ Thrice in 24 hours ○ Alternate days ○ Any other frequency (Please mention) 														
.12	Is waste collected every day <i>i.e.</i> 7 days a week and 365 days a year?	Yes/No														
	If no, give details															
.13	Total number, type, size, and capacity of storage bins / container / trailers provided	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding-left: 20px;">Open waste depots</td> <td style="text-align: right;">547</td> </tr> <tr> <td style="padding-left: 20px;">R.C.C round bottomless bins</td> <td style="text-align: right;">564</td> </tr> <tr> <td style="padding-left: 20px;">Metals bins</td> <td style="text-align: right;">113</td> </tr> <tr> <td style="padding-left: 20px;">Multi packs bins</td> <td></td> </tr> <tr> <td style="padding-left: 40px;">○ 0.51</td> <td style="text-align: right;">60</td> </tr> <tr> <td style="padding-left: 40px;">○ 0.49</td> <td style="text-align: right;">299</td> </tr> <tr> <td style="padding-left: 40px;">○ 0.25</td> <td style="text-align: right;">91</td> </tr> </table>	Open waste depots	547	R.C.C round bottomless bins	564	Metals bins	113	Multi packs bins		○ 0.51	60	○ 0.49	299	○ 0.25	91
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		Containers			
		5 cmt	128		
		7 cmt	37		
.14	Whether the bins are open or closed?				
.15	Whether all bins are attended/cleaned daily? (i.e. 7 days a week and 365 days a year)				
		Yes/No			
		If no, mention details			
.16	Whether the lifting of waste from the bins is manual or mechanical?				
.17	Vehicle details				
Type	Total No.	Capacity (MT)	Daily required	At present available	Additional proposed
Lorries	18	5	-	18	-
Side loader lorry	1	10	-	1	-
Multi pack lorry	1	14	-	1	-
Open truck	-	-	-	-	-
Open truck with tipping	-	-	-	-	-
Tractor-trailer with tipping	9	-	-	9	-
Tractor-trailer without tipping	-	-	-	-	-
Auto rickshaw with or without tipping	-	-	-	-	-
Tricycle with or without tipping	-	-	-	-	-
Any other type (please mention)	-	-	-	-	-

.18 Collection details								
Type of vehicle	No. of vehicles used	No. of shifts	Capacity (MT)	No. of trips/ shift	Distance travelled / shift	Quantity of MSW carried / shift (MT)	Quantity of MSW carried out / day (MT)	No. of workers / vehicle
Compactor (mobile)								
Dumper placer (with 2.5 m ³ containers)								
Dumper placer (with 4.5 m ³ / 7 m ³ containers)								
Open truck								
Open truck with tipping								
Tractor-trailer with tipping								
Tractor-trailer without tipping								
Auto rickshaw with/ without tipping								
Tricycle with/without tipping								
Any other type								
Total								
.19 If the vehicles are open to atmosphere, are					Yes/No			

	they covered with temporary plastic sheet?	
<p>● COLLECTION SYSTEM</p>		
.1	Approximate MSW collected (MT) <ul style="list-style-type: none"> ○ Household (urban) shops etc ○ Hospital and health care establishments ○ Markets -vegetable fruit and meat ○ Hotels, restaurants, eating houses 	249 38 38 50
.2	No. of premises / establishments <ul style="list-style-type: none"> ○ Households ○ Shops, commercial establishments ○ Slums, households, population ○ Vegetable and fruit markets ○ Fish and meat markets ○ Hawkers 	2,00,000 lacs
.3	No. of hotels, restaurants, eating houses <ul style="list-style-type: none"> ○ Grade / class I ○ Grade / class II ○ Grade / class III ○ Lodges and star hotels 	1127 470
.4	Guesthouses	
.5	Marriage halls	
.6	Hostels	
.7	Cinema halls	
.8	Theatres	
.9	Stables and no. of animals	
.10	Hospitals/ clinics/ nursing homes Total no. of beds	
.11	Parks, gardens, recreation places like lakes, amusement parks	
.12	Building sites (under construction)	
.13	Slaughter houses	

• PROCESSING AND DISPOSAL OF MAW		
.1	Total quantity of MSW processed (MT/day)	
.2	Technology / technologies adopted	
	o Composting (MT/day)	
	o Vermiculture (MT/day)	
	o Pelletisation (MT/day)	
	o Waste to energy (MT/day)	
.3	Composting	
	Compost produced (MT/year)	
	Is it done mechanically?	Yes/No
	Is it the compost sold?	Yes/No
	If yes, the quantity sold (MT/year)	
	• Total revenue generated (Rupees/year)	
.1	Vermi-composting	
	Vermi-compost produced (MT/day)	
	Is the vermi-compost sold?	Yes/No
	If yes, the quantity sold (MT/year)	
	• Total revenue generated (Rupees/year)	
.1	Pelletisation	
	Pellets produced (MT/day)	
	Are the pellets sold?	Yes/No
	If yes, the quantity sold (MT/year)	
	• Total revenue generated (Rupees/year)	
.1	Waste to energy	
	• Energy produced (MW/MT/day)	
	Incineration	
	Pyrolysis	
	Bio-methanation	
	Any other (Please mention)	
	• Revenue generated (Rupees/year)	
.1	Dumping grounds/landfill sites	

<ul style="list-style-type: none"> MSW disposed off by open dumping (MT/day) [mixed/inert] 	
<ul style="list-style-type: none"> MSW disposed off by controlled dumping (MT/day) [mixed/inert] 	
<ul style="list-style-type: none"> MSW disposed off by sanitary landfill (MT/day) [mixed/inert] 	
<ul style="list-style-type: none"> No. of dumping grounds/ landfill sites 	1
Whether municipality legally owns them?	
<ul style="list-style-type: none"> Area of each dumping ground/ landfill site 	5 Hectares
<ul style="list-style-type: none"> Whether the area will be sufficient for next 25 years 	Yes/No
<ul style="list-style-type: none"> If no, then what steps have been taken to acquire land? 	
<ul style="list-style-type: none"> Distance (in km) of dumping ground / landfill site from ... 	14 kms away from the centre of Ernakulam
<ul style="list-style-type: none"> o Habitation 	
<ul style="list-style-type: none"> o Drinking water source 	
<ul style="list-style-type: none"> o Religious or monument places 	
<ul style="list-style-type: none"> Distance from airport or airbase 	
<ul style="list-style-type: none"> Has it been designed scientifically 	Yes/No
<ul style="list-style-type: none"> Has the existing dumping ground been upgraded as required by MSW Rules, 2000 	Yes/No
If no, what steps have been taken (provide details)	
.1 Whether the following facilities are provided	
<ul style="list-style-type: none"> Weighbridge 	Yes/No
<ul style="list-style-type: none"> Fencing 	Yes/No
<ul style="list-style-type: none"> Approach roads/ internal roads 	Yes/No
<ul style="list-style-type: none"> Lighting facility 	Yes/No
<ul style="list-style-type: none"> Site office with monitoring equipment 	Yes/No
<ul style="list-style-type: none"> Managerial staff and manpower 	Yes/No
<ul style="list-style-type: none"> Covering material used daily as per Rules 2000 	Yes/No
Is it available in sufficient quantity?	Yes/No

• Gas venting arrangement	Yes/No
• Leachate collection system	Yes/No
• INSTITUTIONAL ARRANGEMENTS	
.1 SWM services provided in the city/town by	Municipality/ Private contractor/ NGO
.2 Total no. of Supervisory Staff provided (e.g. Health officer/ Assistant Health officer/ Chief Sanitary Inspector/ sanitary Inspector/ Sanitary Supervisors, etc.)	647
.3 Total no. of sweepers	191
.4 Organisational structure	(Furnish separate sheet)
• PRIVATISATION	
.1 Whether any of the following service is privatised?	
• Sweeping	Yes/No
• Door-to-door collection	Yes/No
• Community collection	Yes/No
• Transportation	Yes/No
• Processing of MSW	Yes/No
• Sanitary landfilling	Yes/No
If yes, provide details	
If no, whether any future plans for privatisation	
• Details of NGO/ CBO/ Residential groups involved in any schemes/ projects initiated by municipal body in SWM/ clean city program	
• COST IMPLICATIONS IN SWM	
.1 Expenditure (in Rupees/Year)	

	<ul style="list-style-type: none"> Total cost of SWM services under various heads 	
	<ul style="list-style-type: none"> Establishment including salaries, uniforms, <i>etc</i> 	
	<ul style="list-style-type: none"> Tools, equipment, and consumables including disinfectant 	
	<ul style="list-style-type: none"> Operation and maintenance of garbage vehicles including fuel, oil, spare parts, tyres, batteries, <i>etc</i> 	
	<ul style="list-style-type: none"> Hiring charges for contractors' vehicle & machinery, bulldozers, JCBs, <i>etc</i> 	
	<ul style="list-style-type: none"> Other miscellaneous expenses 	
.1	The above total cost in terms of following activities (Rupees/Year)	
	<ul style="list-style-type: none"> Sweeping cost 	
	<ul style="list-style-type: none"> Collection cost 	
	<ul style="list-style-type: none"> Transportation cost 	
	<ul style="list-style-type: none"> Processing cost 	
	<ul style="list-style-type: none"> Disposal / sanitary landfill cost 	
.1	Cost recovery	
	<ul style="list-style-type: none"> Tipping fee or trade refuse charges (Rupees/Year) 	
	<ul style="list-style-type: none"> Revenue generation (by sale of compost, vermi-compost, energy/ gas, <i>etc.</i> (Rupees/Year) 	
	<ul style="list-style-type: none"> Annual expenditure for SWM services 	
	Cost of SWM services in Rupees per capita per year	
	Cost of SWM services in Rupees per tonne of MSW	
	<ul style="list-style-type: none"> OTHER FACILITIES 	
.1	What facilities are provided for the following?	

• Biomedical waste	
• Diary related activities	
• Slaughter house and unauthorised slaughtering	
• Construction, demolition, debris and silt	
• Encroachments on footpaths, in parks	
• How many slums have been identified and whether there are provided with sanitation facilities?	
• Is there any enforcement wing for taking renal actions?	Yes/No
Recovery of administrative charges	
Fines under Municipal/Police Act	
Recourse to Municipal Act bye-laws	
• Whether any cases are registered and settled during last three years?	Yes/No
No. of cases registered during last three years	
No. of cases settled during last three years	
Total recovery during last three years	
• SPECIAL/ UNIQUE SCHEMES OR INITIATIVES¹	
.1 Recycling schemes for plastic, PET bottles	Yes/No
.2 Encouraging community activity such as ALM ² formation	Yes/No
.3 Encouraging people's participation by building-wise or building complex-wise waste segregation and processing of organic waste by vermi-composting or composting	Yes/No
.4 Training needs for sanitary workers on health and safety issue	Yes/No
.5 Development of tools and implements	Yes/No
.6 Please provide list of potential NGO for implementing any of the initiatives (any association registered with municipal body/	

¹ Details of schemes can be provided on a separate sheet

² Advance Locality Management

	unregistered local area management)	
	• AWARENESS	
.1	Are you aware of the various notifications of the Ministry of Environment and Forests, Government of India	
	<ul style="list-style-type: none"> • Municipal Solid Waste (Management and Handling) Rules, 2000 	
	<ul style="list-style-type: none"> • Recycled Plastics Manufacture and Usage Rules, 1999 	
	<ul style="list-style-type: none"> • Biomedical Waste (Management and Handling) Rules, 1998 	
	<ul style="list-style-type: none"> • Coastal Regulatory Zones Rules, 1991 (amended up to 2002) 	
	Place:	
	Date:	Signature of the Municipal Commissioner / The Health Officer/ The Chief Engineer (SWM)
		Stamp

Note: Please provide small note on the geographical and historical background of the city, tourist places, monuments, pilgrimage places, main industrial areas, industries, GNP, GDP, Airport, Airbase, main events and main people of national and international importance, *etc.*