



**SOLID WASTE MANAGEMENT
POLICY AND STRATEGY FOR
WALAJAPET MUNICIPALITY**
(Following the SWM Rules 2016)



**COMMISSIONERATE OF
MUNICIPAL ADMINISTRATION
TAMILNADU**

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CHAPTER 1

BACKGROUND

1.1 INTRODUCTION

Managing waste properly is essential for building a sustainable and liveable habitat but remains a challenge for any urban local body in India today. Rapid urbanisation and changing lifestyles have led to the generation of huge amounts of garbage and waste in the urban areas, so much so, over the past few years, just handling this Municipal Solid Waste (MSW) has assumed the proportion of a major organizational, financial and environmental challenge.

Recognising this Ministry of Environment, Forests and Climatic Changes (MoEF & CC), Govt. of India had notified Municipal Solid Waste (Management & Handling) Rules, 2000 which was subsequently revised into Solid Waste Management Rules 2016. The above rule mandates each Urban Local body to frame Policy on Solid Waste management and Solid Waste Management Action Plan to address the growing concern of waste management in the concerned town.

1.2 SOLID WASTE MANAGEMENT RULES 2016

The responsibilities of various Ministries, Departments and local bodies for sustainable solid waste management have been highlighted in the SWM Rules 2016.

1.3 DUTIES OF LOCAL BODIES

It has been emphasised that it is the Duty of local bodies (as the prime responder for Solid waste management) to carry out the Collection, Transportation and Disposal of Solid waste in a scientific manner on day to day basis. The rule further facilitates the local bodies to apply penalty clause for the effective enforcement of the rule apart from the user charges. Accordingly by-laws framed by the Walajapet Municipality and published in the District gazette on 21.07.2017.

1.4 DUTIES OF WASTE GENERATORS

Moreover, the Duty of Waste generators to segregate the waste at source as Biodegradable & Non-biodegradable and handing over the same to waste collectors authorised by the local bodies has also been prescribed. In a bid to encourage this and improve stakeholder participation for achieving zero littering (in open public spaces, drains, and water bodies) and to slash open burning, extensive awareness programs have been directed to be carried out by local bodies.

1.5 DECENTRALISING THE WASTE MANAGEMENT PROCESS

Further the rule reduces the burden of local bodies by introducing the concept of Bulk waste generator and Decentralising the waste management process. Considering this, Government of Tamil Nadu has adopted a holistic State policy on 24th August 2008, towards sustainable waste management and local bodies are now engaging in the preparation of action plan for the same. In accordance with this, Action plan for Walajapet Municipality is framed.

1.6 STATE POLICY ON SOLID WASTE MANAGEMENT GOVERNMENT OF TAMIL NADU

The changing urban life style has resulted in both positive and negative effects. While the standard of living condition has considerably improved, a large volume of solid waste has become it's by product. Many new approaches have been adopted to process these wastes in a sustainable manner.

1.7 ZERO-WASTE CONCEPT

The Government of Tamil Nadu has felt the necessity to frame a State policy to cater to the needs of Solid waste management covering from Primary collection to scientific processing and disposal of the Municipal Solid Waste in an eco-friendly manner. The policy is drafted in such a way that it provides necessary guidance to dispose all type and nature of waste generated scientifically to achieve the zero-waste concept. Every category of waste such as Bio & Non-biodegradable waste (both recyclable and Non-recyclable), Domestic Hazardous waste, E-waste, street sweeping waste, highly littered public places with mixed wastes etc., are to be considered. The policy focuses on the technology suitable for the urban local bodies based on the Quality and the Quantity of waste that is being generated.

1.8 INFORMATION EDUCATION AND COMMUNICATION (IEC) ACTIVITIES

Apart from this, Bulk waste generators are activated to develop onsite facilities for handling the waste generated by them. Moreover, Continuous and rigorous IEC programs are emphasized to inculcate behavioral changes among the public to encourage Source segregation.

The state policy envisages and mandates the following:

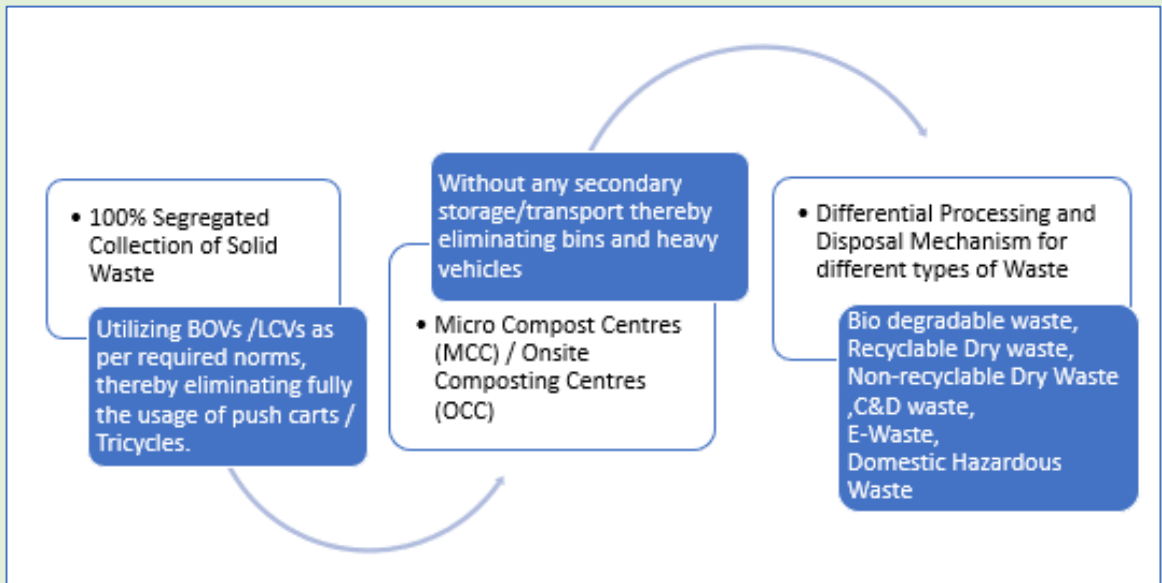


Figure 1: Approach of Waste Management - Government of Tamil Nadu

CHAPTER 2

PRESENT STATUS OF SOLID WASTE MANAGEMENT IN WALAJAPET MUNICIPALITY

2.1 DOOR TO DOOR COLLECTION AND SEGREGATION

Walajapet Municipality comprises of 24 wards with a population of 32001 as per 2011 census. The current population on 2018 is 42479. It consists of 10263 residential households with 646 commercial establishments. The town is spread over an area of 2.64 Sq. km.

- ✓ The wet waste are collected at the Door step of all houses every day
- ✓ The dry waste is being collected once in a week i.e Wednesday
- ✓ The Domestic Hazardous wastes such as Napkin, Diaper are collected along with wet waste in separate.
- ✓ E Waste, other domestic hazardous waste and C&D waste collection is to be practiced.
- ✓ Animators are involved in imparting the practice of Source segregation among household through Behavioral change.

Table 1: % of Door to Door Collection & Source Segregation

Waste Generation	14 TPD
Door to Door Collection %	72 %
Source Segregation %	52 %

2.2 QUANTITY OF WASTE GENERATION

Walajapet Municipality generates a total of 14 MT of solid waste per day with per capita generation of 300 g/day. The Sources and types of waste were obtained by conducting random sample survey in three different areas namely, Residential, Commercial and Slums at three different occasions viz. Week days, holidays and festival occasions and the result is illustrated in Table 2.

Table 2: Waste Generation in Walajapet Municipality

Source of Waste	No. of HH/Assessment	Per Capita Waste generation (in grams)	Waste Generation in TPD			Inert Waste & Silt (TPD)	Total Waste Generated in TPD
			Wet Waste	Dry Waste	Total		
Domestic	10263	300	7.40	3.90	11.30	1.00	14.00
Commercial	642	-	0.68	0.62	1.30		
BWG	4	-	0.24	0.16	0.40		
Total	10709	300	8.32	5.68	13.00		

Note: 1. BWGs are handling their waste themselves, as discussed in section 2.3

2. C&D Waste not to be considered as Solid waste

2.3 COLLECTION AND TRANSPORTATION

- BOVs (Battery Operated Vehicles) are used at 400 HH/Vehicles/day (covering 3 Trips)
- LCVs (Light Commercial Vehicles) are used at 1200 HH/Vehicles/day (covering 3 Trips)
- Pushcarts are used at 100 HH/Vehicles/day (covering 3 Trips)
- Primary collection at door steps is being done and wastes collected are directly transported to processing centres. This is being done using
 - ✓ 22 Pushcarts, 10 BOVs and 3 LCVs for 10263 Households
 - ✓ 1 Dumper Placer for 646 Commercial establishments
 - ✓ Secondary collection and Transportation is fully achieved.
 - ✓ 1 Tipper lorry for Market waste and 1 Tipper lorry for C&D waste collection
- 4 BWGs have been identified in Walajapet Municipality comprising 2 Marriage Halls and 2 Private organisations.
- Register related to the BWG are being maintained as per the guidelines provided in the SWM Rule 2016 and CPHEEO manual.
- Total waste generated by BWGS of about 0.4 TPD is being handled by the BWGs themselves with the establishment of own facilities. In this way about 3% of waste

is reduced by the Municipality at the collection stage itself as per the provisions of SWM Rule 2016.

2.4 PROCESSING STATUS ON DISPOSAL OF SOLID WASTE

- ✓ Partially handled, processed and converted as compost
- ✓ Micro composting centres of 4 TPD processing capacity are being established on Decentralized basis by dividing the town into 3 segments (covering 5 to 13 wards) in 3 Locations
- ✓ Onsite composting centres of 0.05 TPD processing capacity were established in 6 Locations
- ✓ Saleable Dry wastes such as Recyclable plastic waste are sold to recyclers and the workers are permitted to share the monetary benefits.

CHAPTER 3

ISSUES AND SHORTFALL

The Major issues such as (i) Inadequate planning (ii) Inhouse capabilities (iii) Lack of Public awareness and Community Participation in segregation of Waste and handling of Waste (iv) Inadequate processing facilities (v) Improper implementation strategy have been considered and accordingly the gap analysis in each activity of Solid Waste Management is done for Walajapet Municipality

3.1 ISSUES IN COLLECTION AND TRANSPORTATION

- ✓ Requirements of primary collection vehicle are arrived based on the type of vehicles, capacity of the vehicle and number of trips per vehicles based on the types of source from where the waste has to be collected. Finally the “Gap” is analyzed to take action to procure adequately.
- ✓ Route chart and Trip chart for each vehicle with designated sanitary workers are to be planned and followed.
- ✓ Adequate awareness among the citizen has to be done sustainably

3.2 ISSUES IN SCIENTIFIC PROCESSING AND DISPOSAL

- ✓ Insufficient manpower with inadequate knowledge in processing at compost yard
- ✓ Wet waste disposal technology has to be finalized based on the quantity, quality and characteristic of solid waste at Walajapet Municipality.
- ✓ Dry waste disposal mechanism has to be derived

3.3 ISSUES IN IN-HOUSE CAPABILITIES

- ✓ All the staff involving in SWM have to be periodically provide with training on methodology and technology to keep them with updated skill knowledge
- ✓ Walajapet Municipality is entitled to engage 116 sanitary workers as per the provisions of GO (Ms) No. 101, Municipal Administration and Water Supply Department, Dated: 30.4.97.
- ✓ At present, only 72 sanitary workers (37 Permanent and 35 outsourced workers) are engaged in the collection process.
- ✓ Permission has been accorded for 44 sanitary workers to be engaged by outsourcing.
- ✓ Action has to be taken to have adequate sanitary workers and supervising staff

CHAPTER 4

VISION, GOALS, OBJECTIVES ON SWM FOR WALAJAPET MUNICIPALITY

4.1 VISION

To provide quality of life to the people of Walajapet Municipality and to make the town livable through sustainable Solid Waste Management strategy

4.2 GOAL

- (i) To have high standard of cleanliness in Walajapet Municipality
- (ii) To ensure 100% Door to Door collection of the waste and abolition of unhygienic system of disposal by the households
- (iii) To ensure 100% waste segregation at source
- (iv) To promote the practice of Reduce, Reuse, Recycle, Refuse and Recover
- (v) To have “No Landfill Concept”
- (vi) To achieve “Zero Waste Concept”

4.3 POLICY OBJECTIVE

Objectives shall endeavor to

- (i) Protect public health and environment
- (ii) Make the citizen to realize the responsibility and accountability on SWM
- (iii) Minimizing the generation of Solid Waste through sustainable IEC (5R's)
- (iv) Involving the community groups RWA, CBOs, SHGs to ensure community participation in Managing and minimizing the municipal solid waste locally.
- (v) Conduct periodical meeting and discussion to dispose the wet waste through composting process and to promote bio Manure
- (vi) Provide integrated solution to dispose the solid waste (both wet and dry waste) with cost effective and efficient delivery of service
- (vii) Dispose the dry waste through the vendors
- (viii) Build in capacity of Municipal staffs through periodical training.
- (ix) Promote “green cross” society at educational institution to impart the necessity of SWM to keep the town with livable condition.
- (x) Promote the town to have better star rating in SWM
- (xi) Make the SWM services self-sustaining by collecting user charges to cover Operation and Maintenance cost of the services and levy taxes to meet out the cost of capital investment.
- (xii) Follow the polluter pay principle to bear the cost associated for damaging the environment to realize the responsibility of concern to keep the pollution free environment
- (xiii) Culminate the practice of throwing the waste in to the water bodies and culminate the practice of burning the garbage on road sides

CHAPTER 5

IMPLEMENTATION STRATEGY

5.1 IMPLEMENTATION STRATEGY

Door to Door Collection	<ul style="list-style-type: none">• Wet waste collection on daily basis• Dry waste collection on weekly basis (every Wednesday)• Domestic Hazardous waste such as napkins, diapers and etc., will be collected separately during wet waste collection on daily basis• E waste collection on monthly basis• C & D waste collection on need basis• Waste will not be collected from the Bulk waste generators
Source Segregation	<ul style="list-style-type: none">• 100 % at Source Segregation ensured through sustainable IEC activities engaging Animators (Green Ambassadors)
Transportation	<ul style="list-style-type: none">• Primary collection at door step using Battery Operated vehicles and Light commercial vehicles with proper route chart and trip chart• Eliminating Secondary storage Bins on roadside• Minimizing secondary transportation
Scientific Disposal of Waste	<ul style="list-style-type: none">• Disposal of wet waste through composting and Establishing Micro level Compost Centers , On Site Composting Centers on Decentralized approach for processing and disposal of wet waste and green waste• Bio gas technology for food waste and slaughterhouse• Disposing the dry waste to the identified vendors for recycling• Plastic waste and other recyclable waste to dispose to the recyclers• Other non-recyclable but combustible to dispose to the vendors who need it use as furnace fuel or to dispose through Pyrolysis plant through PPP mode• Other non-recyclable and non-combustible waste and silt are disposed along with C & D waste• Dead animals disposed scientifically through burial method in the earmarked site

	<ul style="list-style-type: none"> • Hazardous waste and E waste to collect and store at Resource Recovery Center by Municipality and periodically dispose the same to PCB for further process. • C & D waste to collect and store in the earmarked location and to use on needy basis.
IEC activities, Capacity building and motivation	<ul style="list-style-type: none"> • Periodical meeting with RWAs , NGOs, elected body members, Bulk Waste Generators and periodical training to sanitary workers • Updating the knowledge of the personnel involving in SWM

5.2 SWM MONITORING CELL

The Municipality will constitute a SWM Monitoring Committee with Chairmanship of Municipal Chairman comprising the Commissioner as Member secretary and five other members including Health officer/ Sanitary officer, Engineer, Town planner, and two elected representatives. This committee will meet once in a month and discuss the implementation strategy and facilitate the ULB for implementation of SWM

5.3 HOME COMPOSTING

Municipality will take all effort to promote the Home Composting practice among the citizen through the intensive campaign

CHAPTER - 6

DETAILED ACTION PLAN

The infrastructural facilities pertaining to the solid waste management shall be considered as two categories:

- (1) Immovable infrastructure is the land and the facility developed based on the desirable technology to process and dispose the Solid waste being generated on daily. This has to be developed considering the future vision and population projection for a period of minimum of 10 years.
- (2) Movable infrastructure is the vehicles need to be determined based on the life of the vehicle and quantity of waste to be transported on daily basis without stagnation and accumulation for long period.

Considering the projected population for the year 2030 the requirement of the processing facilities is determined and the gap is analyzed for future development. Whereas the movable infrastructure, the vehicles requirements are determined for the present population and garbage quantity and the gap analysis has to be done as a continuous process in every year.

At present, the total quantity of waste generated is 14 TPD. In the next 5 years i.e., 2025, with the increase in population, quantity of waste will obviously increase by 15% (16 TPD). The capacity of the Micro Composting Centre and Onsite Composting Centers available at present is sufficient to handle the increased generation of waste in the next five years and the Municipality is insisting home composting and in the residential areas to process the generated waste.

The normal practice of analyzing the requirement of vehicles based on the increase in population and quantity of waste on a sustainable basis will be followed. In the same manner, sufficiency of workers will be analyzed and action will be taken to fill the gap either through engaging Self Help Groups or by engaging workers through Outsourcing agency.

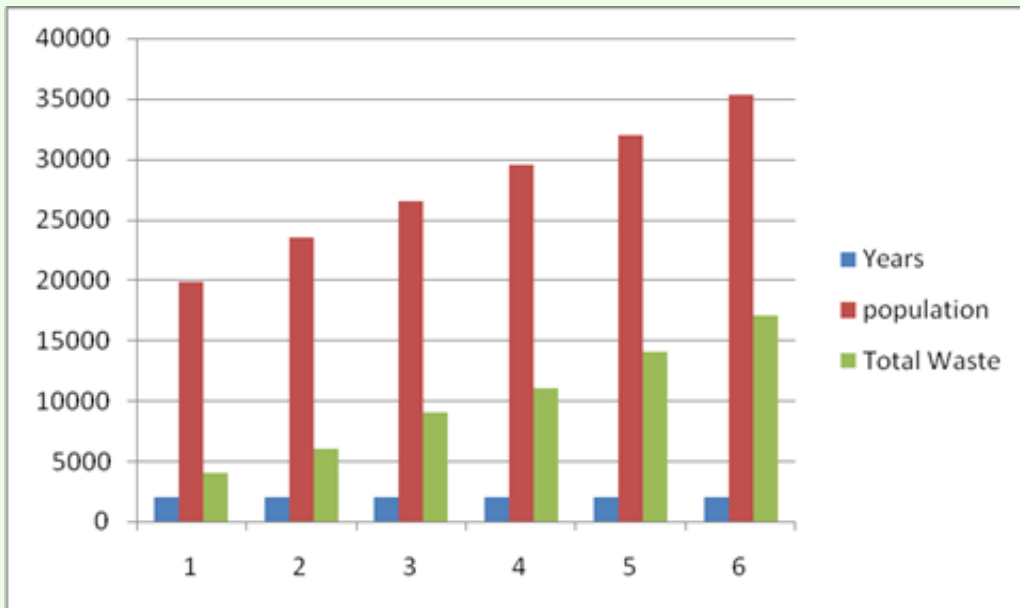


Figure 2 : Projection of Population & Waste Generation Chart

6.1 DOOR TO DOOR COLLECTION AND SEGREGATION AT SOURCES

- ✓ Presently D2D collection of generated waste is achieved 100%, However in-anticipation of Population growth, expansion of households and vertical expansion of town, Continuous IEC activities is planned to have sustainability in maintaining 100% D2D Collection.
- ✓ For source segregation, awareness is given by Animators/SHGs to citizen/waste generators to insist the need of continuous effort on segregation of waste as Wet (Bio-degradable) and Dry (Non Bio-degradable / Recyclable / Inert) Waste and Home Composting which will considerably reduce the quantity of collection.

6.2 COLLECTION MECHANISM OF DIFFERENT TYPES OF SOLID WASTE

The Solid Waste Management Rule 2016, waste generators/citizens are responsible for the management of their waste at the source of its generation. They should be responsible for segregating waste into biodegradable and non biodegradable (recyclable and inert waste). The segregated waste will be collected properly by the sanitary workers every day.

In Walajapet Municipality quantity of solid waste both wet waste and dry waste (biodegradable & non bio-degradable waste) is generated daily only 14 TPD. Hence it is decided to have Decentralized Processing Centre for both wet and dry waste at local level without exceeding 4500 households per processing centers which will pave a path to achieve 100 % Door to Door collection sustainably with minimum transportation cost by avoiding the secondary transportation and secondary storage bins. Accordingly, route chart with earmarked vehicles for collection, deputation of waste collectors, prescribed time for each trip are finalized and all the households in the Urban Local Body have been educated for behavioral changes through an effective IEC Program by engaging Animators.



Figure 3 : D2D Collection and Segregation of Domestic Solid Waste

At present, primary collection of waste on Door to Door basis is being effectively done by utilizing 22 pushcarts. Further 18 Battery Operated Vehicles (BOV) and 2 Light Commercial Vehicles (LCV) will be purchased. The entire collection is being carried out with the engagement of 72 sanitary workers at present. Walajapet Municipality is entitled to engage 116 no. of sanitary workers as per **GO Ms. No. 101. Dated 30.04.97**, sanction for the outsourcing of 44 more sanitary workers has been obtained and they will be employed before the end of march 2019.

Considering the burden of primary collection of waste using push carts, purchase of BOV and LCV was proposed and after completing the purchase of 8 BOV and 1 LCV, the use of push carts will be totally eliminated which will infuse a sense of pride among the sanitary workers besides easing their burden. The pushcarts will then be used for transporting silt collected from drains and for transport of compost generated in the MCCs. Safety equipment such as hand gloves, face masks, reflected jackets, gumboots, helmets and raincoats are issued to all sanitary workers to handle the waste hygienically and safely.

6.3 WET WASTE COLLECTION (Biodegradable waste)

Wet Waste includes all items that are considered Biodegradable where include kitchen waste such as stale food, fruits and vegetables. The details of disposal mechanism of wet waste are discussed below.

- At present 10 BOV purchased, domestic waste is being collected on day to day basis using the 22 Push Carts. After completing the purchase of 8 BOV and 1 LCV before 30.03.2019, collection process will be effected using only BOV and LCV with the total elimination of pushcarts.
- Route chart are prepared for each vehicle, each waste collectors with designated streets, households and trips.
- Wet waste from the commercial area is collected by using the earmarked Light commercial vehicles.
- Market waste is being collected using the available tipper lorries.
- Domestic Hazardous waste such as Diapers, Napkins, blood stained cottons etc., are separately collected during the wet waste collection and sent for incineration on daily basis to the located at the existing incinerators in dump yard.

6.3.1 Existing Processing Mechanism of Wet Waste in Walajapet Municipality

At present, 0.35 MT capacity of wet waste is being processed in the existing compost yard by Home Composting (Land available households) and Onsite Composting Centers. The detailed processing mechanism is given in Table 3

Table 3. Wet Waste Processing Mechanism in Walajapet Municipality.

S.No.	Methods of Composting	Capacity of Composting in MT
1.	Home Composting (3Nos. HHs Practicing)	0.003
2.	Onsite Composting (OCC Municipal Park)	0.320
Total		0.323

The existing methods of processing of wet waste followed in the ULB Home Composting are detailed.

A. HOME COMPOSTING

Walajapet Municipality is steadily moving towards promoting home composting with the involvement of citizen. IEC activities are carried out to encourage home composting among the households so as to motivate them to process the wet waste generated by them. This is done by utilizing the services of Animators. At present 3 Households are practicing Home composting, processing about 3 Kg/day of wet waste (biodegradable waste).



Figure 5: Home Composting

C. MICRO COMPOSTING CENTRES:

The MCCs are proposed to be established in 3 locations with the capacity of 8 MT covering 10263 households respectively with total of 24 wards.

The location details are tabulated in below Table:

Table 4. MCC Details

S.no	MCC Location	No.Of Wards Covered	No of Household	Population	Wet waste Quantity	capacity of the wet waste processing Facility(MT)	Present Status (Proposed/ongoing)
1	Subramani Layout	13	4228	19922	3.90	4	Construction to be Started
2	Municipal Quarters	5	2900	11106	1.93	2	Construction to be Started

3	Gandhi Nagar	6	3135	11451	1.93	2	Construction Ongoing
Total		24	10263	42479	7.76	8	



Figure 7 : Processing of Organic waste at Micro Composting Centres

D. Onsite Composting Center (OCC) For Garden Waste Collection

The waste generated at parks, horticultural waste and cut down tree branches are addressed by developing Onsite composting facility wherein the above wastes along with the daily collected waste from the nearby households are processed. Walajapet Municipality had established 6 Nos. of Onsite Composting Center with a handling capacity of 0.32 TPD as detailed below:



Figure 8: Onsite Composting Centres

Table 5. Details of onsite Compost Centres.

S. No	On site Compost centre Location (Name of the park)	Capacity of the wet waste processing facility(TPD)	Present Status
1	TNHB East Side	0.06	Functioning
2	TNHB West Side	0.06	
3	Vasantham Garden	0.05	
4	Rajiv Gandhi Street	0.05	
5	Arcot Thethu street	0.05	
6	Gandhi Park	0.05	

6.4 ROUTE MAPPING AND TRIP CHART MECHANISM

The Route chart for collection and disposal of wet waste to the earmarked decentralized Micro composting centers and onsite composting centers is prepared by classifying the collection areas into areas adjoining the processing centers, nearer to the collection centers and farther distance from the collection centers.

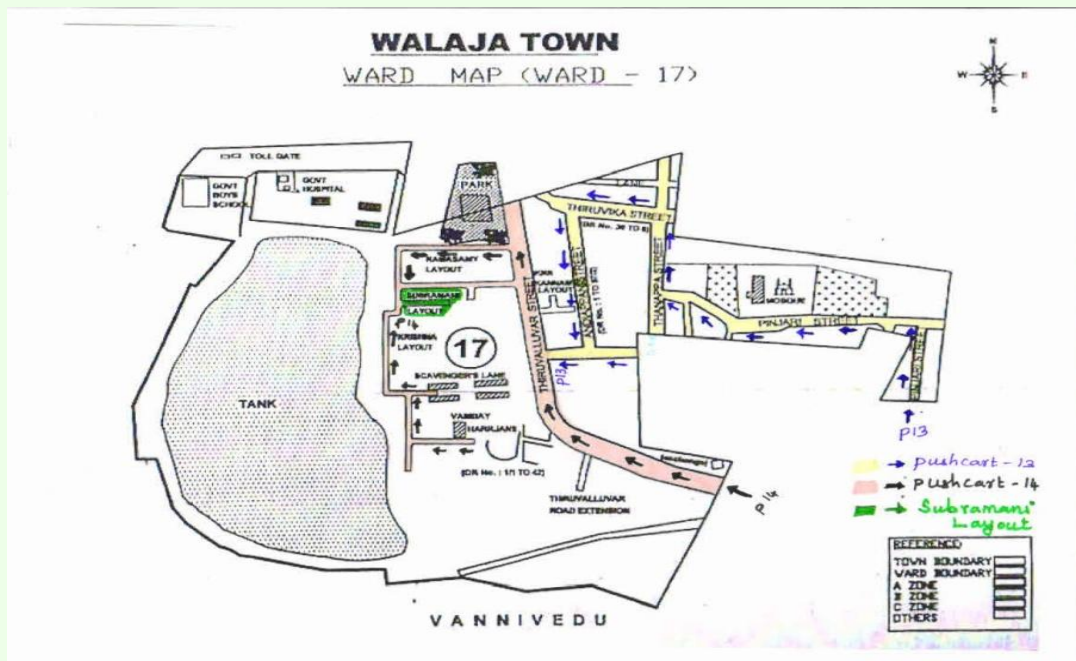


Figure 9 : Route map of Walajapet Municipality

Table 6: Route chart of Walajapet Municipality

WALAJAPET MUNICIPALITY							
SUBRAMANI LAYOUT- MICRO COMPOST CENTRE-WARD-17							
S.No	Ward no	Vehicle No	No:of Housel ds	Name of the Sanitary worker	Street Name	Garbage Collection Time	
						Startin g Time	Ending time
1	17	Pushcart-13	150	Jayanthi W/o Nagalingam Cell:83448848	Pinjari Street	6.00 AM	7.30 AM
2			27	87	Thanappan Street	7.40 AM	8.35 AM

3			64		Thiru.V.K Street	8.40 AM	9.25 AM
4			10		Andiyappa n Street	9.30 AM	9.50 AM
5			35		Andiyappa n Street Virivu	9.55 AM	10.20 AM
6			6				
7			12		Thiruvalluvar Street	6.00 AM	6.30 AM
8			25		Ramasamy nagar	6.40 AM	7.35 AM
9			45		Indhira Nagar	7.40 AM	8.25 AM
10			42		Thuppuravu Colony	8.30 AM	8.50 AM
11			61	Jamuna W/o Srinivasan	Periya Masuthi Street	8.55 AM	9.20 AM
12	17	Pushcart-14	32	Cell:9094895539	Krishna Nagar	9.30 AM	10.00 AM
			509				
Name of the Sanitary Supervisor - N.Arumugam – 9629984748							
Name of the Sanitary Officer - M.M.Palanichamy – 9677074799							

The trip chart, the workers in charge, supervisors in charge are also finalized for each decentralized Micro composting centers covering the details of number of households are disclosed to the Residential Welfare Association (RWA) and the public for awareness and cooperation with the Municipality.

6.5 BULK WASTE GENERATORS (BWG)

According to the Solid Waste Management Rules 2016, Bulk Waste Generators contribute substantial amount of waste-nearly 1% of the daily waste. Bulk Waste Generators are responsible for managing their own waste. Walajapet Municipality has identified 4 BWGs comprising 2 Kalyana Mandapams and 2 Companies in accordance as defined in SWM Rules 2016.

Register related to the BWGs are being maintained as per the guidelines provided in the SWM Rule 2016 and CPHEEO manual.

Total waste generated to the tune of 0.24 TPD is being handled by the BWGs themselves 1 kalyana mandapam processing their waste by barrel composting method and 3 Educational Institutions are processing their waste by on site composting method. In this way about 1 % of waste is reduced by the Municipality at the collection stage itself as per the provisions of SWM Rule 2016.

Hence entire wet waste generated in the ULB is addressed by disposing it scientifically.



Figure 10 : Bulk Waste Generators – On site facilities

6.6 DRY WASTE (Non-Biodegradable) COLLECTION

Dry Waste includes all items that are not considered Wet (Biodegradable) or soiled items. This includes both recyclable and non-recyclable materials. The details of composition of dry waste such as Recyclable waste and Non-recyclable waste is given below.

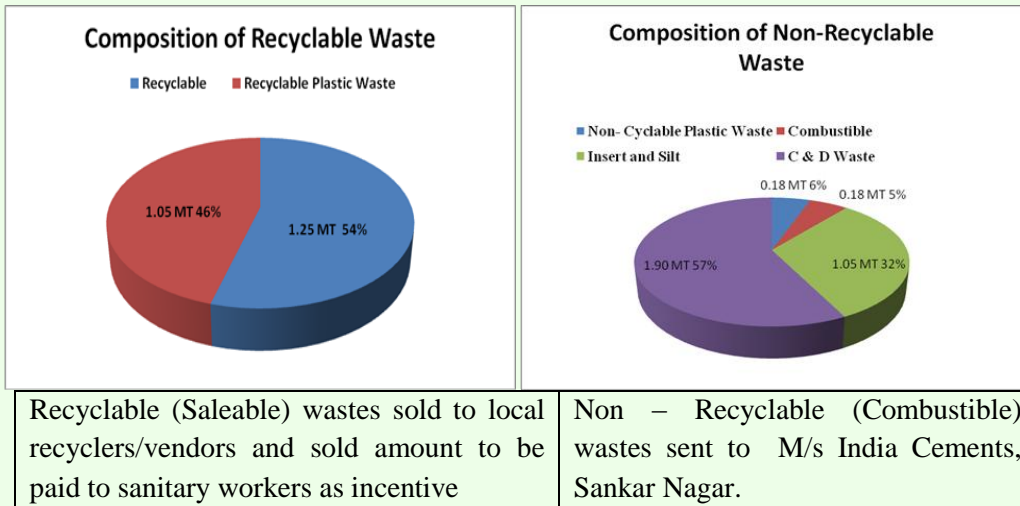


Figure 11 : Composition of Dry waste

- Dry Waste is being collected on Wednesdays of every week,
- About 5.68 MT of collected recyclable waste is sold to the authorized vendors/Recyclers available in and around Walajapet Municipality every week. The sold amount is distributed to sanitary workers who involved in the collection task, to motivate the workers to play a key role in this collection mechanism.
- A separate register is being maintained for getting necessary acknowledgement from the sanitary workers for the receipt of amount by them.
- The non-recyclable/non-saleable fraction of waste is stored in vannivedu compost yard and MOU has been signed for transporting the waste to M/s Ultra tech cements, Ariyalur for usage as fuel.
- Also, the ULB has a plan to use the plastic and combustible fraction of waste in the Pyrolysis plant that will be established in Walajapet Municipality to achieve a sustainable solution for disposal of this fraction of waste.



Figure 13: Collection of Dry waste from residential area

6.7 DOMESTIC HAZARDOUS WASTE & E-WASTE COLLECTION

- ✓ Domestic Hazardous waste generated daily such as Diapers, Napkins, blood stained cottons etc. are being collected during the wet waste collection on daily basis and the same is disposed by incineration process through the incinerator installed at Micro Composting Centre and Resource Recovery Centre.
- ✓ Action is being taken to collect the other domestic hazardous waste such as discarded Paint containers, Garden Pesticides, Chemical Agents, Detergent Containers etc. on monthly basis particularly on every fourth Saturday. Citizens are being informed in this regard. It is proposed to store the collected domestic hazardous waste at Resource Recovery Centre and will be handed over periodically to Pollution Control Board (TNPCB) for further processing and disposal and the relevant register and accounts for this disposal will be maintained for reference and record. This will be practiced from 01.06.2019.
- ✓ Storage facilities for E-waste is also planned to be provided in the proposed Resource Recovery Centres. It is also planned to collect the E-waste once in two months from doors steps and will be stored in the earmarked in the Resource Recovery Centres and the same will be disposed to Pollution Control Board periodically by keeping registers for record. This will be also be practiced from 01.06.2019.
- ✓ The citizens are being continuously informed to handover the domestic hazardous and E-Waste on a specific day mentioned by the Municipality or to deposit the same directly E-Waste Collection Centre / Hazardous Waste Collection Centre established at Resource Recovery Centre.

6.8 BIOMEDICAL WASTE

- ✓ The bio medical waste is handed over to the authorized facilitator. Register Containing the Name, Location, and the name of disposal facilitators of Nursing homes and Hospitals are maintained by the ULB for reference and information.
- ✓ The clinics and Nursing homes have been sensitized to prominently display the name of authorised facilitator in their place for the awareness of the public at large.

6.9 CONSTRUCTION & DEMOLITION WASTE

- ✓ An earmarked location will be identified for the deposit and storage of C&D waste.
- ✓ Transport Mechanism is planned through the private lorry operator for conveying the C&D waste to the earmarked location by paying a minimum charge as approved by the ULB. The citizens are to be sensitized periodically. It is also planned to allow the people to get back the C&D waste for filling basement and

low lying area with the permission of ULB by engaging private lorry operator as there is no C & D waste processing facility at present.

- ✓ Municipality shall also utilized the stored C&D waste for filling pot holes during the rainy season and road laying etc.

6.10 DISPOSAL OF LEGACY WASTE AND RECLAMATION OF DUMPSITE

In Walajapet Municipality the solid waste collected has been dumped for the past three decades at Sholingur Road dump yard which is spread over 3.20 acres. Since, the municipality has now started to handle and dispose the Municipal Solid Waste scientifically, action is being taken by the municipality to remove 20,000 cu.m of legacy waste dumped at this site and to reclaim the land of around 3.20 acres through the process of Bio mining at an estimated cost of Rs. 1.32 crores. It has been proposed to dispose the material retrieved from the legacy waste to the identified vendors. After completion of biomining process and reclamation, the land will be utilized to Parks and Waterbody is taking adequate steps to notify this municipality as a “**Dumpsite Free Municipality**” in district gazette.



6.11 PLANNING FOR VEHICLE AND TRANSPORTATION

- ✓ Minimizing the secondary collection
- ✓ Bin free town

- ✓ Eradication of Pushcarts and Tricycles
- ✓ Encouraging Primary collection on door step in house holds
- ✓ Utilizing high capacity vehicle for collection of Garbage/Solid waste at commercial, Market area, De-silting the Drain and collection C&D waste.

A. SHORTFALL IN PRIMARY COLLECTION VEHICLES:

- At present, primary collection of waste on door to door basis is being effectively done by utilizing 22 Push carts.
- 10 Battery Operated Vehicles and Light Commercial Vehicles will be purchased before 30.03.2019 and the entire collection process will be mechanized.
- The following norms scientifically suggested by the Commissioner of Municipal Administration are followed to determine the required number of vehicles for primary collection of solid waste at door step accordingly; adequacy is verified for further plan of action.

Battery Operated vehicles	Payload capacity is 0.75 cu. m /400kg	400 households shall be covered using one vehicle with minimum of three trip per day (@150 households per trip)
Light Commercial Vehicles	Payload capacity is 2cu.m /800 kg	1200 households shall be covered using one vehicle with minimum of three trip per day (@400 households per trip)

The requirements and gap are determined as per the norms discussed above and the shortfall or the gap is justified:

VEHICLE GAP ANALYSIS

Type of vehicle	House hold covered	Required (including standby 10%)	Available	Balance	Remarks
BOV (for 65 % of HH)	6671	18	10	8	8 BOVs will be procured before 31.3.2019. The waste is currently transported using push carts, tricycles and LCV.
LCV (for 35 % of HH)	3512	1	1	-	1 LCV Available
LCV (for Commercial)	646	2	1	1	1 Number LCV will be received before 31.03.2019

Table 7: Vehicle gap analysis

ADEQUACY FOR SECONDARY COLLECTION VEHICLES

The present mechanism followed for processing the wet waste to bio manure is localized cum decentralized approach. Hence the need of secondary storage (bins), collection and transportation is eliminated.

6.12 PLANNING FOR MANPOWER

- ✓ All the staff involving in SWM have to be periodically provide with training on methodology and technology to keep them with updated skill knowledge.
- ✓ The shortfall in man power to address the SWM has to be determined to conducting GAP analysis
- ✓ Walajapet municipality is entitled to engage 116 no.ofSanitary workers asper GO Ms.No.101. Dated30.04.97.
- ✓ At present, only 72 no. of sanitary workers (37 permanent and 35 outsourced) are engaged in the collection process.

- ✓ Action has to be taken to have adequate sanitary workers and Supervising staff.

Table 8: Planning for Manpower

S. No	No of HHs	Required sanitary workers	Sanctioned strength	As on date available	Shortfall	Outsourcing permission obtained	Remarks
1	10263	116	116	72	44	44	Balance 44 sanitary workers will be recruited through outsourcing before March 2019

Also the ULB has a proposal engaging outsourcing Sanitary Workers exclusively for undertaking day to day functionality of MCC

6.13 PROCESSING AND DISPOSAL

- ✓ Decentralized approach
- ✓ Micro composting the wet waste
- ✓ Identify the sufficient site / Land and keep in reserve to address the future requirement.
- ✓ Storing the recyclable waste and disposing the same to the identified vendors.
- ✓ Establishing Pyrolysis Plant to dispose the non-recyclable waste (Except inert and C&D waste)
- ✓ Keeping Hazardous waste/E-waste at RRC and disposing the same to PCB periodically by maintaining register.
- ✓ Domestic Hazardous waste such as Napkin, Diaper is to be incinerated separately in daily basis.
- ✓ Improving the facility to handle the increased quantity periodically towards dump yard freecity.
- ✓ Curbing the practice of throwing the Garbage into Water bodies/ Drain and eradicate the burning practice.

- ✓ Disposing the End product after processing the waste that is compost and other materials to the identified vendors by maintaining the registers.
- ✓ The existing Non-recyclable waste stored in Resource Recovery Centre, subsequently the waste will be sent to Private Mill.

Table 9:Adequacy of Wet Waste Processing Facility

Source of waste	Quantity of wet waste (TPD)	Total quantity of wet waste (TPD)	Processing method	No. of facilities available	Capacity of Facilities (TPD)	Total Capacity of processing facility (TPD)	Shortfall (TPD)
Domestic	8.08	8.08	MCC	3	0	0.32	8
Park			OCC	6	0.32		
Commercial			Barrel method	0	0		

Note: 1.Bulk Waste Generators are processing their own waste capacity of 2 MT by onsite composting

Table 10: Adequacy of Dry Waste Disposal Mechanism

Source of waste	Quantity of dry waste (TPD)	Total quantity of dry waste (TPD)
Domestic and Park	4.90	5.68
Commercial& Industrial	0.78	

Table 11: Adequacy of Recyclable & Non-recyclable Disposal Mechanism

Disposing method	Recyclable (TPD)	Non-recyclable (TPD)	Total Quantity of dry waste (TPD)	Shortfall (TPD)
Recyclers	2.50	0	4.68	1.00
Local processing mill	-	0		
Stored in Municipality	-	2.18		

** Note: Non-recyclable waste stored in division office, subsequently the waste will be sent to cement plant on every week.

6.14 INTEGRATION OF INFORMAL SECTOR

SWM Rules 2016 prescribes establishment of a system to recognize organizations of waste pickers or informal waste collectors to promote and establish a system for integration of these authorized waste-pickers and waste collectors to facilitate their participation in solid waste management including door to door collection of waste. Accordingly, measures have been taken to integrate the authorized waste pickers to address the shortfall of sanitary workers. Identification cards have been distributed for successful inclusion of them into sustainable handling and disposal of solid waste.

6.15 POLLUTER PAYS PRINCIPLE

SWM Rules 2016 authorizes to prescribe user fee from time to time as deemed appropriate and collect the fee from the waste generators. Accordingly, Walajapet Municipality has framed a bye-law and published in District Gazette following procedure for the enforcement of the same. Criteria for levying of spot fine for persons who litter or fails to comply with the provisions of these rules have also been highlighted in the Bye-law.

6.16 CAPACITY BUILDING OF SANITARY WORKERS

To attain the system sustainability in solid waste management periodical refreshment training is planned and training given to 72 sanitary workers and the balance will be given in a phased manner.



6.17 COMMUNITY AWARENESS

- ✓ The more the participation, sooner we accomplish any mission. Recognizing this, Community participation and awareness has been given high priority in the SWM Rules-2016. Public awareness through Information, Education and Communication (IEC) campaign thru inculcate of the citizen/waste generators on the following is being undertaken:
- ✓ Not to litter i.e. throw or dispose of any waste such as paper, water bottles, liquor bottles, soft drink canes, tetra packs, fruit peel, wrappers, etc., or burn or burry waste on streets, open public spaces, drains, water bodies.
- ✓ Minimize the generation of waste and insist to reuse the waste to the extent possible.
- ✓ Practice segregation of waste into bio–degradable, non-biodegradable (recyclable and combustible), sanitary waste and domestic hazardous wastes at source.
- ✓ Storage of segregated waste at source in different bins;
- ✓ Handover segregated waste to waste pickers, waste collectors, recyclers or waste collection agencies
- ✓ Pay monthly user fee or charges to waste collectors or local bodies or any other person authorized by the local body for sustainability of solid waste management.
- ✓ Additionally giving awareness for plastic ban and motivate public to go green.

Towards Zero Waste Target to be achieved through practicing the concept of reduce, reuse, recycle and recover in a concerted manner



TIME FRAME ON ACTION PLAN

Sl.No	Action Plan	Timeline
1.	100 % Door to Door Collection	Achieved
2.	100% Source Segregation	Continuous process
3	Prevention of burning and throwing the waste to the water bodies	Achieved to prevent SWM rules 2016 Byelaw framed and continuous monitoring
4.	Communicating the Reduce Reuse Recycle to the community	Continuous process
5.	Bye law pertaining to the Solid waste Management Rule 2016 and Plastic waste management Rule 2016	Framed and notified in district website on 28.09.2017
6.	Identification of suitable sites for setting up solid waste processing facilities	At present 8.32 MT of the wet waste are processed in the existing composting mechanism and after commencement of all 3 MCC's the total wet waste will be processed in decentralized system. Discussed in section 2.4.2.
7.	Processing the saleable dry waste	Achieved. Discussed in section 2.6
8.	Processing the non-saleable dry waste	Achieved. Discussed in section 2.6
9.	Identifying the storage facility for domestic hazardous waste and E waste	Achieved. Discussed in section 2.7
10.	Identifying the storage facility and disposal mechanism for construction debris	Before March 2019. Discussed in section 2.9.
11.	Biomining	Before Dec 2019. Discussed in section
12.	Manure sales to local formers/TANHODA	Achieved. Discussed in section 4.8.
13.	Battery Operator Vehicle (8Nos) (reducing the secondary collection)	Before March 2019.
14.	Light Commercial Vehicle (1 No) (reducing the secondary collection)	Before March 2019.
15.	Bin Free City	March 2019.
16.	Dump Free City	31.12.2019

**Commissioner
Walajapet Municipality**