



WAKE
CLEAN UP

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How to manage your wet
bio-degradable waste

A Comprehensive Product Guide

Banni. Nodi. Maadi.



WAKE CLEAN UP



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Acknowledgements

Bangalore is going through transition and we are aware that systems and processes will take time to settle. However we would not like to lose the opportunity the crisis has provided to move the needle and embark upon a more sustainable journey of segregation and processing our waste to maximise recovery and return nutrients to our environment.

Wake Up Clean Up Bengaluru (WUCU) would like to thank the BBMP for its committed support, all partner organizations for their invaluable contributions and every other individual who has supported and contributed to this city wide movement. We would like to assure you that we are committed to assisting BBMP and the citizens of Bangalore move to a '10% waste to landfill' policy.

We also wish to express our gratitude to everyone who has contributed to creating this handbook. It is a first attempt of this sort to put together a holistic guide of the product options to handle organic waste. We hope to facilitate the process of effective waste management in the City through this handbook.

WUCU encourages all citizens of Bangalore to be responsible citizens and keep track of all developments by writing to us at wakeupcleanup@gmail.com and by visiting our website www.wakeupcleanup.com

~Kalpana Kar
Orchestrator of WUCU
April 2013



Organised by BBMP



Together with FKCCI & BCCF



Estd. 1916



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Supported by The Alternative, BWSSB, SWMRT, BDA, CREDAI, KPCB & Srishti



Reach Us

WUCU HELPLINE 080 6716 6820

The Wake Up Clean Up Bengaluru movement plans to further its reach through an all inclusive communication plan. The WUCU helpline has been established as a part of the citizen outreach initiative.

Through this dedicated helpline, WUCU aims to reach out to the public and clarify any queries one might have regarding segregation, composting and/or biogas and products available in the market that help convert the segregated wet waste into compost or biogas.

The helpline will address questions based on category of waste generator one belongs to, what is the ideal composting or biogas product to be used, technical aspects of biogas and composting, and it will also help connect you to service and solution providers for the same.

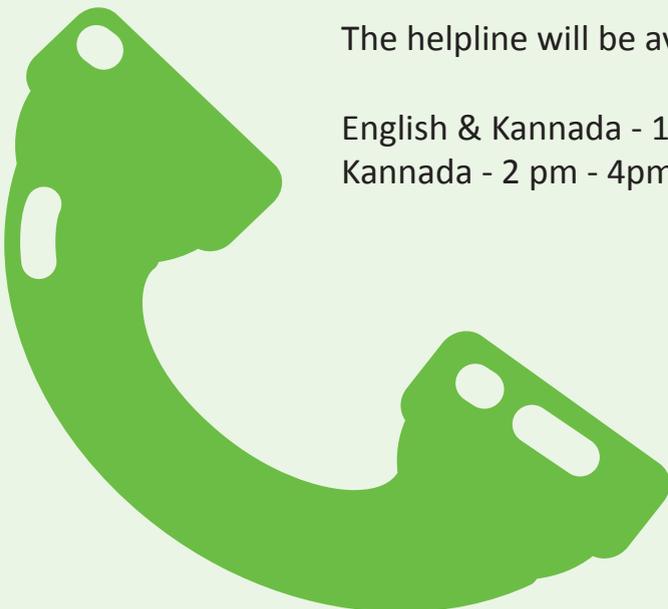
With this helpline we aim to provide linkages to recyclable waste streams and helping connect with recyclers who process and handle dry waste, bio medical waste and e-waste.

Timings

The helpline will be available in both English and Kannada.

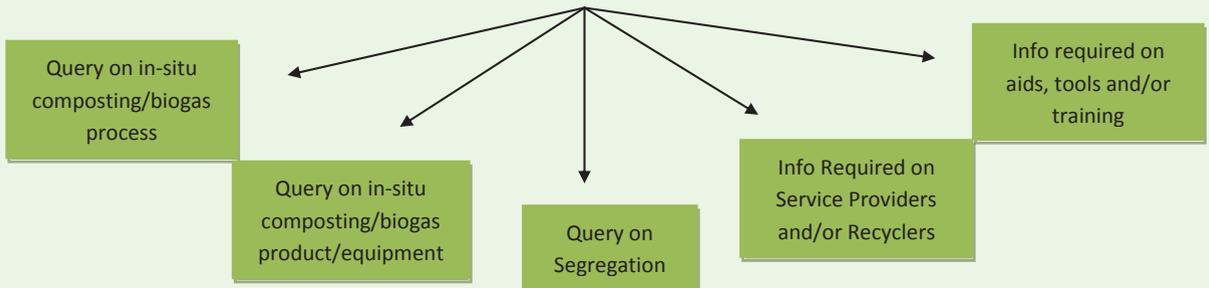
English & Kannada - 10 am - 1pm

Kannada - 2 pm - 4pm



Instructions

Once you dial the number, please choose your preferred language. After this, choose your category of concern. Once you have decided on this, you will be re-directed to a WUCU representative who will address your queries.



Please Note

If you do not get through to the helpline, do leave a message regarding your query and we will get back to you as soon as possible.

Email & Website

You can also write to us at wakeup.cleanup@gmail.com or visit our website www.wakeupcleanup.com

Disclaimer: The WUCU helpline is NOT a BBMP helpline. It only aims to clarify technical doubts for those who want to move their organizations to a zero waste to landfill approach. It can also help to connect you to the backend with service providers and recyclers. The WUCU Helpline will not be an ideal point of contact for any queries and/or complaints regarding the BBMP, Pourakarmikas, Contractors and/or Collection Vehicles.



**Bruhat Bengaluru
Mahanagara Palike**



*BBMP Commissioner H. Siddaiah at
WUCU Power Nashta*

Message from the BBMP Commissioner

BBMP is committed to converting this crisis which has enveloped our Garden City and converted it to being labelled a Garbage City over the past 6 months into an opportunity; a moment to review, take stock, create new systems and procedures, and enshrine them into a Solid Waste Management (SWM) Policy for the next 5 years that will be supported with a legal framework.

The challenges facing Bengaluru can be easily understood if we visualise a funnel – one which is taking all our waste directly from our doorstep to the landfill. The problems with that are many:

- a. There is too much waste** – approximately 3,500 TPD. The weight as mandated by the Hon’ble High Court of Karnataka has begun and is being done now
- b. It’s all too mixed** – as in most areas the waste that is collected is NOT segregated
- c. It’s got too few filters** – not enough is being pulled out for processing and recycling of resources is limited
- d. It’s not clear what the generators should do**
- e. The best practices** we have created have so far not been systemised and scaled citywide into an institutional framework



Existing Waste Funnel



Ideal Waste Funnel

Wake Up Clean Up was a response to seek consensus on strategic direction through an open, inclusive citywide dialogue between government agencies, experts, service and technology providers, and organised bulk generators of waste and the civil society by showcasing solutions and options available for everyone to do their bit for their city.

We are grateful for the overwhelming response and acceptance of the principles of segregation at source and management of waste through investing in decentralised infrastructure. BBMP has committed to construct 198 Dry Waste Collection Centres distributed across all the wards and to commence a pilot of 5 Integrated Waste Management Yards across the city. In addition, the BBMP will fast track infrastructure in all its parks to ensure that we minimise the leaf litter going to the landfills.

We are grateful to the Bangalore City Connect Foundation, CREDAI, FKCCI, Confederation of Indian Industry, and the Hospital and Hotel Associations for taking on the mandate for the reduction of 1,500 TPD from entering the BBMP funnel and mainstream by offering to:

- **Process it in situ** and walk the last mile post segregation by investing in processing facilities for bio-degradable waste and handing over their dry waste to the DWCC or the recycling industry
- **Set up shared facilities** on a PPP basis and organise for their bulk bio-degradable waste to be collected, transported, and processed

We are **committed to extending support** to all those who have offered to manage their waste in situ through economic and other incentives and also support the initiative through intensive education and awareness drives on segregation and training of our contractors and Pourakarmikas on segregation.

BBMP is committed to setting up standards for waste management and a certification system for collection, transportation, and processing so that all generators are aware of their obligations and responsibilities. BBMP is equally committed to the setting up of monitoring systems and penal action for those who do not comply and offering the citizens of Bangalore cleanliness service standards of international quality.

BBMP is planning its interventions to address some of these challenges and it is important for the citizen to also understand this better. Our city generates close to 3,500 ton of waste per day and so far it transports this waste across town to dump it in a neighbouring village. BBMP will shift gear to 'processing' and has decided to dump the word dumping from its vocabulary. The first step towards minimising waste and handling it scientifically is to segregate at source. BBMP is grateful to the Hon'ble High Court of Karnataka for its support and its noble directive mandating segregation. WE are committed to this and are making all provisions and changes to ensure that the waste is collected and transported segregated. We appeal to the citizens of Bengaluru to please extend their support and segregate at source so we can once again restore the Garden City to its glory and lead the way for Urban Local Bodies in India.



Siddaiah
Bruhat Bangalore Mahanagara Palike Commissioner
April 2013



WUCU at Freedom Park



Students at WUCU



Press Conference at WUCU



Power Nashta at WUCU



Pourakarmika Training at WUCU

Introduction

Bengaluru generates approximately 3,500 MT of municipal solid waste daily, and spends more than Rs. 400 crore annually to collect, transport, and dispose of this waste from 198 wards.

The population of the city has grown by over 48% over the last decade and is today home to close to 10 million citizens. However, the waste management infrastructure is woefully inadequate. All the waste is indiscriminately dumped in landfills in Mandur and



to deal with this challenge. A very big step has been the mandating of segregation of MSW at source into biodegradable and recyclables through a directive of the Hon'ble High Court of Karnataka. This directive to BBMP (Bruhat Bengaluru Mahanagara Palike) was further strengthened by a notification from the Commissioner BBMP, dated October 1, 2012 defining the streams of segregation into wet and dry and also that the rules are applicable across the board to Households and Bulk generators of waste. (Commercial and corporate establishments who generate greater than 20 kg of waste per day as a by-product of their commercial activity) Notification is appended in Annexure 2

Mavallipura.

On August 27, 2012, Bangalore city's landfill at Mandur stopped receiving the mixed municipal waste due to a Public Interest Litigation filed in the Honourable High Court of Karnataka. Waste spilled over from every street corner of the city onto the roads and footpaths. The Bangalore garbage crisis has made it to national and international headlines with the International Herald Tribune carrying a front-page story on it. Bangalore is no longer being identified as Garden City. It is now being branded as Garbage City.

Many initiatives have been taken

Segregation at source is the first stepping-stone to changing the way Bangalore manages its waste, and in order to spread awareness and showcase the benefits of segregation and the multiple options that emerge for processing and handling of waste a large expo, Wake Up Clean Up Bengaluru, Banni.Nodi.Maadi was conceived to bring all the generators of waste and the solution and technology providers together under one roof. The cornerstones of the expo were:

- Showcase and focus on solutions for the different categories of waste generators (hotels, hospitals, traders and business, industry and corporate campuses, and apartments and residential neighbourhoods)



- Emphasise how segregation is to be done and the role of the citizen in managing waste and the need to carry and transport segregated waste
- Structure the discussion around creating specific best practise and track based pilots and partnerships
- Involve all stakeholders – The Political representatives, Pourakarmikas, contractors supervisor, slums, waste pickers, the government, service providers, opinion makers, experts and technology and solution providers and engage with these multiple stakeholders including representatives from waste generators - to work together for sustainable solutions and enable a dialogue to create institutional processes.
- Extend and expand the footprint of these learning's at ward / zone and neighbourhood level to become a movement to spread the principles of the advantages and need for segregation.

These cornerstones were then broadened and converted into the following objectives:

- Spread awareness and educate citizens on the impact and the need to identify segregation at source as the key solution to address the problem.
- Engaging organisations and institutions as peer groups to ensure buy-in on managing their waste at source
- Engage a wide range of audience including children and youth, residents, organisations, and commercial establishments
- Showcase existing solutions

targeted at specific stakeholders to move the needle from awareness to action

- Provide a holistic engagement around waste from managing everyday waste to creative reuse of waste
- Follow up with zonal and local events over the next 3 months to take discussion and ownership around waste to local communities.

The event brought together stakeholders from across the government, industry, and the citizens to ensure a broader dialogue and commitment. Organisations such as Bangalore City Connect Foundation (BCCF), Federation of Karnataka Chambers of Commerce and Industry (India) - FKCCI, Confederation of Real Estate Developer's Association of India (CREDAI) extended all support to ensuring the smooth execution of the event as Lead Partners. The commitment and support of Wake Up Clean Up Partners - Karnataka State Pollution

Control Board, Karnataka State Bio Fuel Development Board, Srishti School of Art and Design, Solid Waste Management Round Table (SWMRT), and The Alternative played an active role in bringing on board the right stakeholders to the platform. The various government departments such as Bangalore Development Authority (BDA), Bangalore Metropolitan Transport Corporation (BMTTC), Bangalore Water Supply and Sewerage Board (BWSSB) also extended their wholehearted support towards the event. Acknowledgements are due to the Confederation of Indian Industry (CII), and BCIC, AmCham, other trade associations, and industry leaders such as Britannia Industries Ltd, Manipal Hospital, and Infosys Limited who participated actively and also ensured an active representation of industry bodies and organisations to be part of this movement. One of the key successes of the event was the promise of systemic change that was made on a



3000 tonnes of waste. EVERYDAY.
240g/per/day. EVERY HOUSEHOLD.
10% SEGREGATION at SOURCE.
90% IGNORANCE

It's time we CHANGE the numbers.



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Feb 3-10, 2013
Freedom Park

the following key priorities are essential:

- In-situ processing by bulk generators including apartments, traders, hospitals, companies, schools, and other institutions to minimize the waste they send to central waste processing infrastructure. A decentralised infrastructure of fully functional Dry Waste Collection Centres (DWCCs) setup across all 198 wards in the city to sort and recycle dry waste
- 5 Integrated Waste Management Yards at constituency levels to manage both dry and wet waste
- An active citizen engagement to ensure that we take accountability for our waste and ensure segregation at source.

While hazardous waste, E-waste, and debris are supposed to be collected by a separate network of contractors, dry waste must go to the Dry waste Collection Centres set up by BBMP, or handed over to the informal sector, but not be mixed. Here are the following ways to manage the wet waste:

- Polluter Pays model: Where the waste generator who generates less than 20 kg of waste on a service fee hands it over to a certified waste management contractor
- Shared in situ: Establishments like hotels or complexes can share common facilities to manage their wet waste of a particular kind and enable maximum resource recovery and replenishment.
- Corporate and other campuses and organisations manage their

collaborative civic society platform:

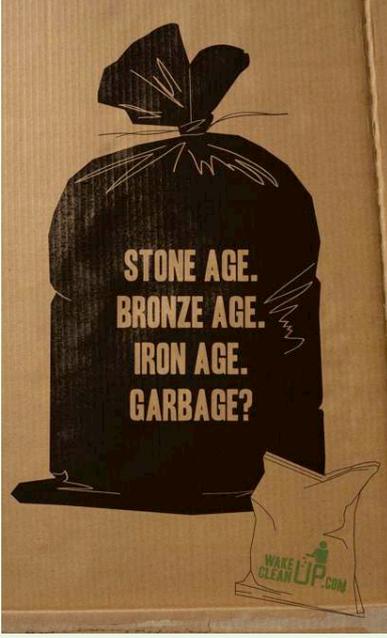
- The event was able to create a citywide and cross stakeholder focus on waste management and address the issue in a holistic manner
- The event got the buy-in from all stakeholders on the two cornerstones for a long term and sustainable solution for waste management – Segregation at source and Decentralized approach towards waste management
- The event showcased tailored solutions for organisations of all sizes, and brought the customers and the solution providers together to enable market forces to take over
- The event acted as and has built a platform for government and civil society to engage on the issue of waste. As a neutral platform that brings together various stakeholders, Wake Up Clean Up has been able to go beyond existing biases to foster a constructive conversation

- The event also encouraged political leaders and elected representatives to take ownership of the issue of waste management within their sphere of direct influence
- The event reinforced faith among citizens and institutions on the administration's intent and ability to manage the crisis.

Two major commitments were made at the end of the event:

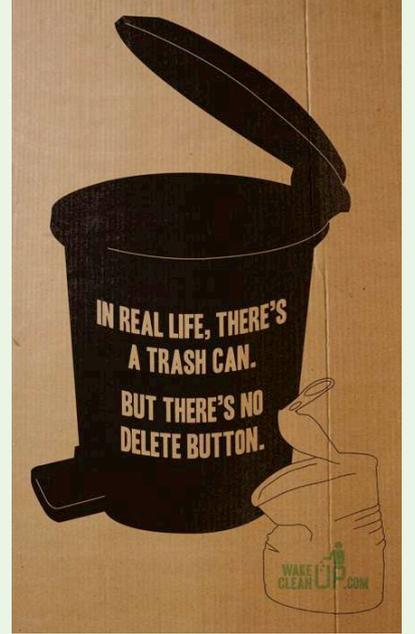
- The city committed to reducing 1,500 ton of garbage going to BBMP by World Environment Day (5 June, 2013). This can be accomplished through segregation at source and in situ processing of wet waste, while BBMP committed to collecting the inerts.
- BBMP committed to setting up a decentralised infrastructure for collecting dry waste by setting up 198 Dry Waste Collection Centres (DWCC) across the city.

In order to achieve the goal of reducing the waste to landfill by 1,500 ton per day by June 5, 2013,



waste in-situ and become ZERO WASTE TO LANDFILL Campus by investing in infrastructure to process their organic waste. Even some streams of recyclables have machinery to process and recover value from plastics and these could be in-house.

- The Door-to-Door service managed by BBMP through outsourced contractor services will collect segregate waste and the terms of engagement with the contractor will include collecting and transporting waste to defined destinations for appropriate processing as infrastructure in the City develops.



Banni. Nodi. Maadi.


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 Freedom Park

Current state of landfills at Bangalore



Prism of Waste Management - City Perspective

With new waste management practices in place, the BBMP is in the process of developing a common vision guidance plan for primary collection, transportation, management, processing, and disposal of the various categories of waste generated in and by the city.

Wet Waste

For managing wet waste, maximum emphasis has been laid on Segregation of Waste at Source.



In situ Plan

Campuses, corporates, and apartments to manage their waste in situ by investing in appropriate technology

Neighbourhood/ Ward Level Plan

Door-to-door collection, segregation, and transportation to appropriate processing facilities

Shared Facilities Plan

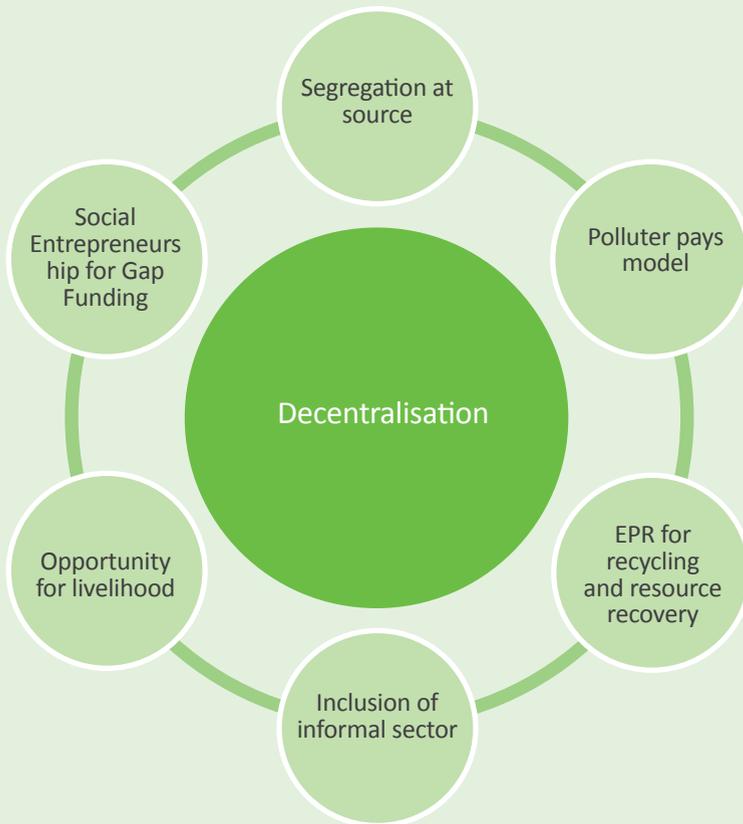
Seperate collection and management of waste from bulk generators



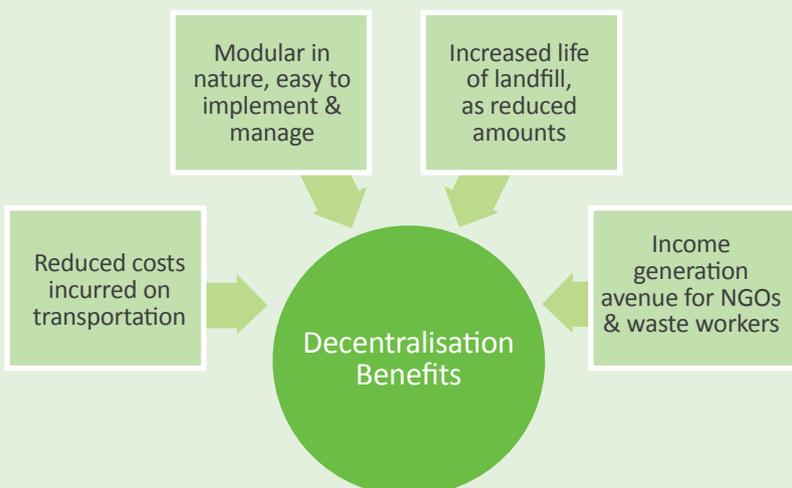
A large thrust of the city's approach is to enable resource recovery through recycling and up-cycling of dry waste generated and thereby reduce amount of waste being sent to the landfill. Another approach is to return maximum amount of nutrients to the soil through composting of wet waste to facilitate agriculture. The goal is to ensure that landfills receive only inerts and rejects.

For successful management, Solid Waste activity in the city has been broken down into smaller, achievable steps of setting up systems for Decentralisation of Waste Management.

Decentralisation of Wet Waste Management



Benefits of Decentralisation of Wet Waste Management



Dry Waste

Centralisation of Waste Management

Centralised processing centres for collecting, storing, compacting, and recycling large amounts (aggregation) of dry waste such as tetrapacks, laminates, glass, CFL tubes, etc. are also being planned to maximise on transportation costs.

Road sweeping and taking on responsibility of plastic waste, bio-medical waste, hazardous waste, and e-waste through centralised processing systems (city-wide plan).

Pilots in Progress for Other Waste Streams

Pilots are also being initiated in the following niche streams for collection, management, processing, and/or disposal of different kinds of waste, on which adequate data is not available yet. These waste streams include:

- Construction materials/debris
- E-waste
- Street leaf litter
- Household-biomedical waste
- Hazardous/toxic waste
- Street vendors, temples, places of worship, vegetable and fruit markets, slaughter houses, meat and fish market, *goshala*, and piggeries
- Exhibitions, fairs, religious assemblies, conferences, etc.

Facilitators for Solid Waste Management Activity in Bangalore

- Supreme Court guidelines on Solid Waste Management
- Yes In My Backyard Attitude
- Adequate number of litter bins
- Transfer stations
- State-of-the-art technology
- 5-year policy guidelines

How it all ties up

Collection of Waste	Role of Trader Associations	Role of Collection Vendor	Role of BBMP
Separate storage and collection of Wet, Dry, Sanitary, and e-waste	Dedicate staff to ensure SWM guidelines are followed	Ensure vehicle designation for pick-up	Map every commercial cluster in every ward and collect data
Definite waste pick up timings	Strategic placements of bins for wet and dry waste	Ensure regular service	Elicit RWAs support
Strategic and effective placements of bins	Monthly report to be prepared and submitted to BBMP	Ensure 100% segregation	Monitor training programmes, collection schedules, and waste flows
No collection of mixed waste	Ensure awareness is spread through campaigns conducted at least 4 times a year	Submit documentation for monthly payment	Develop standard templates for data capture and documentation



Separate bins for Wet and Dry waste



BBMP waste collection truck



Waste Categories

The waste in Bangalore is today classified into 6 different categories.

Cooked and uncooked food, fruits, vegetable peels, flower waste, and other organically decomposable waste



Sanitary napkins, disposable diapers, bandages, or any material contaminated with blood



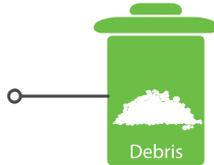
Fallen leaves, trimmed branches, lawn trimmings, weeds

Non-bio-degradable waste such as paper, plastic, wood, glass, wire, cloth, leather, rubber, metal, and fabric that can be recycled



Hazardous waste such as tube lights and bulbs, batteries, expired medicines, syringes, oils, paints, cosmetics, insecticides, cleaning agents, and aerosol cans

Construction and demolition waste such as broken bricks, mortar, dust, drain silt, ash, and broken glass



Electronic waste such as chargers, computer parts, CDs

Segregation and Processing Method

BIODEGRADABLE		NON - BIODEGRADABLE		
GARDEN WASTE (COMPOST) <ul style="list-style-type: none"> • Dry/Wet Leaves • Weeds • Branches • Lawn trimmings 	WET WASTE (COMPOST) <ul style="list-style-type: none"> • Vegetable, fruits, peels, • Tea leaves, coffee powder • Flowers • Matchsticks • Hair • Kernels, seeds • Leftover food NONCOMPOST <ul style="list-style-type: none"> • Citrus fruits 	DRY WASTE (RECYCLE) <ul style="list-style-type: none"> • PLASTICS Bags, toys, utensils, bottles, bubble wrap, milk pouches • PAPER Shredded, carton boxes, plates, newspaper, packaging material • METAL Cans, foils, caps, tetrapacks, bottles • OTHER Thermacole, styrofoam 	E-WASTE (RECYCLE) <ul style="list-style-type: none"> • Batteries • Bulbs, • Tubelight, • Chokes • CDs, DVDs. • Cartridges • A/C adapters • Audio/video cassettes, • Phones 	BIO-MEDICAL WASTE (DISPOSE) <ul style="list-style-type: none"> • Diapers • Sanitary waste, • Shaving blades, • Condoms • Ear buds • Finger nails, • Band-aids, • Animal bones



Organic Waste



Garden Waste



Dry Waste



Biomedical Waste



E-Waste

Fundamental Principles of Waste Management

Understanding and identifying waste streams helps determine what kind of storage is needed and key decisions on bin requirements. It also determines the waste flow for the next level of processes of wet waste composting, dry waste recycling, and sanitary waste disposal for incineration.



Segregation at source

The activities carried out in the course of a day are many and the type of waste generated is different. The requirement is however that different kinds of waste have to be segregated/separated so as to be able to deal with them differently



Composting

Composting is an acceleration of the decomposition process which when executed with good infrastructure does not breed mosquitoes, does not give out bad odour (in fact compost is sweet smelling earth) and also does not emit gases



Recycling

Recycling involves recovery of material for processing the used materials into new products. This prevents the waste of potentially useful materials and reduces the consumption of fresh raw materials



Managed Disposal

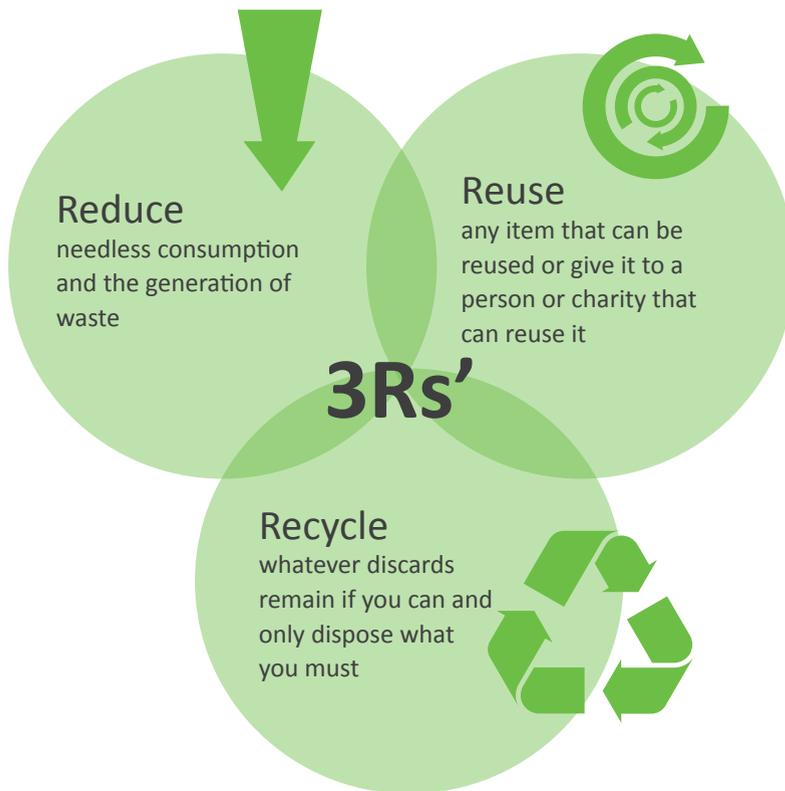
Managed disposal here refers to making sure that material is given, in the case of sanitary waste, to the authorised disposers where the disposal/incineration is done under controlled conditions



Landfill

Secure landfills are those where hazardous waste is disposed of by burial, in holes or trenches in ground lined with impervious plastic sheeting to prevent leakage or leaching of dangerous substances into soil and water supply

The 3 R's of Waste Management



Recycling Facts



Recycling 1 ton of paper saves

- 17 mature trees
- 7,000 gallons of water
- 3 cubic yards of landfill space
- 2 barrels of oil, and 4,100 kilowatt-hours of electricity

Recycling 1 ton of plastic saves

- 2 people's energy use for a year
- 1 person's water consumption in 2 months and almost 1 ton of oil

Use of compost over use of manure

- Helps increase biomass (soil quality), therefore reduced use of pesticides and fertilisers
- Reduces weed growth
- Reduces use of water through better water retention in the soil
- No pathogen presence in compost, as in manure
- Perceptible drop in rodent menace

**PROCESSING
&
MANAGING
WET WASTE**

Introduction to Hand Book

What is this guide all about?

This guide aims to support the sustainability commitment by bulk generators, corporate and apartment campuses for setting up waste management on the premises. The guide aims to enable the bulk generators to set up the necessary arrangements in place to reduce, recycle, and process waste as much as possible. It provides an overview of the existing solutions in the market for in situ processing classified by size of the organisation based on the quantum of waste generated. The guide also provides case studies of organisations that have successfully implemented waste management practices on their premises.

This guide specifically addresses the management of wet waste – organic waste for individuals and bulk generators. We have provided an overview of how other types of waste are managed in the section - **What Happens to My other Waste?**

Who should this read this guide?

This guide is aimed at both individuals and organisations who are interested in in-situ management of waste. So, if you are a resident and want to manage the wet waste in your home, check out the small size solutions that are listed as part of this guide.

If you are looking to manage the waste in your apartment either as a member of the management committee or as a waste champion in your apartment, if you are responsible for waste management in your company, institution, or trade establishment, this guide is a ready reckoner for you to understand the various products and solutions available and the cost, effort, and infrastructure requirements to operate the same.

One should note however, that the waste requirements of hospitals and other establishments such as clinics and nursing homes which require special considerations given the high amount of bio-medical waste or other special categories are not covered here. This guide does not specifically cover all types of special waste streams. Hospitals and Nursing homes could use this to begin handling their MSW or waste that comes from their canteen, dietary departments and OPD.

How should you use this guide?

The best way to use this guide is for you to read through the technical section and decide the technology you want to adopt to process your waste.

The next step is for you understand that the guide defines solutions by size, and hence please move to the assessment metrics and identify yourself. This is an easy exercise by quantity of waste generated.

It's important to do this, because the solutions and machinery available is by quantum of waste. We are largely focused here on wet organic waste either through composting or bio-gas.

For ease of use and understanding of this guide, the different categories of in-situ can be identified as follows:

 = composting

 = Biogas

 = Bio-energy

The different categories of waste generators are also color coded.

 Purple - Extra Small (XS)

 Red - Small (S)

 Yellow - Medium (M)

 Light Blue - Large (L)

 Dark Blue - Extra Large (XL)

In addition to this, every product listed in the guide has additional information provided at the bottom under the following symbols:

 - Time taken for the first batch of compost/biogas to be produced/generated

 - The investment required to set up a composting/biogas unit, if there any additional costs apart from cost of purchasing the equipment

 - It tells you whether the company offers any technical maintenance, how often it offers and how much it costs.

The other aspects of assessment are further detailed in the **Assessment Metrics** section. We urge you to use this handbook as a guide to keep yourself informed on what happens to your other waste, what your role as proactive waste generator would be and to identify existing products and solutions to manage all types of waste. And once you have all the information you need, all that is left is to do!

Assessment Metrics

Need for Assessment

This product guidebook is focused on supporting citizens at Household Level, Corporate Campuses and Bulk generators of waste to process their waste in-situ and hence support the City and the BBMP by reducing waste to the landfill. Thus, we are limiting this edition to that end and moving the needle on segregation and processing and managing wet organic bio-degradable waste at length.

To initiate in-situ processing of wet and biodegradable waste, every waste generator must first assess the quantum and category of waste generated. Amount of wet waste depends on multiple factors such as nature of business and presence of food preparation units (canteens, kitchens).

To simplify this process, an easy-to-follow assessment form is attached to this guide, (See Annexure 1) that will help one understand and determine what category of waste generator he/she belongs to. Once this has been determined, it will be simpler to choose from the appropriate form of in-situ processing technique/equipment.

The objective of using the self assessment form is to audit the daily waste generated by your organization/ apartment/campus by category - XS, S, M, L & XL.

Sl. No.	Size	Category	Quantity of Waste Generated	Area Needed (Sq.Ft.)
1	XS	Household Level (Houses)	1-10 kg/day	<50
2	S	Small Sized Establishments (Apartments/Campuses)	10-50 kg/day	50-200
3	M	Medium Sized Establishments (Complexes -apartment & office, Parks)	50-150 kg/day	200-500
4	L	Large Sized Establishments (Choultries, Restaurants, Hotels)	150-500 kg/day	Up to 1000
5	XL	City Wide (Centralized Municipal Waste Management)	500 kg/day and above	Above 1000

This is the first step to planning. An estimate of waste by category - wet (organic), dry (paper, plastic, metal, glass), green (leaf & litter), sanitary (toilet) is important to shortlist optimal solutions. Post assessment, WUCU can support you through intervention by policy suggestions to reduce the quantum but in-house collection, storage and processing of green is also essential.

Assessment Criteria

- Amount of wet waste generated: to understand whether they are household, small scale or bulk generators of waste as determined by the quantum of organic bio degradable waste they generate.
- Size of household (apartments)/organization- This will help determine if waste processing can be carried out in-situ or if they need to share a common facility or if they need centralised assistance.

Once the quantum of waste generation and size of generator has been determined, appropriate solutions can be easily figured based on 3 criteria - source of wet waste, investment required and area/space required to set up infrastructure.

- 1) Source of wet waste generated: The in-situ processing techniques for which products are listed in the guide are composting and biogas. Therefore identifying and understand source of wet waste generated will help one understand and finalize on processing options that range from composting to conversion to bio gas.
- 2) Investment - Financial and Time: A lot of composting products and machinery require constant effort and labour to monitor the process. Composting will require someone to turn the heaps of degrading waste every once in a while. Collection of compost will also require effort and time. Likewise biogas digesters also require constant monitoring. Some products may also require technical maintenance, offered annually or bi-annually by the provider.
- 3) Space - Most composting equipments are outdoor units and require a small amount of space at least in the garden or backyard. Composting thippes require quite a lot of space in the garden and biogas units require a space dedicated to them.

Service Providers

In this guide not only have we addressed in-situ wet waste processing products, but also provided solutions for other services one might need. Incorporation of in-situ waste management will definitely have hurdles, given existing waste management practices. Hence we have listed a directory of service providers and recyclers who provide tools, aids and training to facilitate this process. All one needs to do is identify problem areas and contact service providers and recyclers (listed in the directory, at the end of this guide) to address these problems.

Thus, through the product guide we aim to thoroughly address all forms of wet waste, all categories of waste generators and all forms of wet waste processing. Our aim is to provide extensive information on in-situ wet waste processing and offer solutions no matter what limitations one might have.

This internal assessment is crucial to using this handbook as the products in this guide are categorized first based on the process they are designed for and second based on the amount of waste they can process.

Please Note:

- *Garden Waste, Leaf Litter and Debris have to be quantified on a case to case basis.*
- *This guide addresses only wet waste processing issues and does not address wet waste collection facilities or dry waste collection, storage and/or processing facilities.*
- *An example of internal assessment form is attached to this handbook as an annexure and this can be tweaked to suit requirements of a particular establishment.*

Introduction to Composting & Biogas

Composting

Composting is nature's way of recycling nutrients into organic manure.

Composting is nature's way of recycling nutrients into organic manure. Carbon dioxide and water vapour are released, so waste volumes go down by about 40%.

Composting has been identified as a key option for managing organic content in municipal solid waste. It is also recognised as a significant contributor influencing environment conservation and hence is being promoted as 'best practice' in waste management. Composting can be done on a small scale at home as well as in large-scale facilities. However, both methods require careful control and regular upkeep and monitoring.

The objective of this technical guidance is to provide general information on best practices in the operation and regulation of composting facilities, the principle behind the concept and technology, composting process and products currently available, output, upkeep and maintenance of products, and the role of composting in integrated waste management for the waste management industry. All products and maintenance aspects in the handbook are guided by this.

Composting process

Composting is a process involving bio-chemical conversion of organic matter into humus (Lignoproteins) by mesophilic and thermophilic organisms. A composting process

seeks to harness the natural forces of decomposition to secure the conversion of organic waste into organic manure.

There are two main groups of organisms which decompose organic matter:

- a. **Anaerobic bacteria** which perform their work in the absence of oxygen
- b. **Aerobic bacteria** which perform their work in the presence of oxygen

1. The process is a lengthy one extending over a period of 4 to 12 weeks
2. It is a low temperature process and the destruction of pathogen is not fully accomplished
3. The gaseous product of reduction such as methane, hydrogen sulphide, etc. produce offensive odours
4. Nutrients are lost

In anaerobic compost pits, foul-smelling leachate (liquid) forms, with a high oxygen-consuming concentration of organic matter which can kill plants if not sufficiently diluted before irrigation. Leachate is like the liquid formed when a rotting tomato is kept inside a closed plastic bag rather than in the sun to dry to powder. It can permanently pollute groundwater if not properly managed. But leachate



From Garbage

to

Organic Compost

is rich in decomposing microbes and can be usefully re-circulated onto above-ground waste heaps to speed up decomposition.

Aerobic composting is speeded up when waste piles are at least 1-2 metres high and generate their own internal heat of decomposition, up to 65°C in the centre of the heap. This kills pathogens and weeds seeds and rapidly speeds up the composting process. But such heaps need weekly turning or rotation to provide enough oxygen to aerobic bacteria and to avoid the smell from the anaerobic centre, where nitrogen and sulphur become ammonia and hydrogen sulphide instead.

Most home composting solutions are designed for aerobic composting with different and convenient ways of turning and aeration. In order to accelerate and control the aerobic composting a specially formulated biological inoculum is used to treat the organic waste. This is a key element which can improve the quality of compost, reduce composting time, and

control odours. The addition of old compost or cow dung-solution or commercial bio-cultures provides concentrated numbers of

Aerobic Composting

1. Rapid decomposition normally completed within 8-10 weeks
2. During this period, high temperatures are attained leading to speedy destruction of pathogens, insect eggs, and weed seeds
3. Production of foul-smelling gases such as methane, hydrogen sulphide is minimised

microbes to speed up the process. Most products with solutions adopt the route of aerobic composting. In order to accelerate and control the aerobic composting a specially formulated biological inoculum is used to treat the organic waste, which is the key element and the differentiator in quality of compost, reduction in turn around time and the odour and emission control.

Factors Affecting Composting Process

Following factors affect the rate of successful composting:

Moisture content

Moisture content of the waste should be between 50-55%. Lesser moisture will lead to mortality of microbes. Whereas more moisture will lead to anaerobic conditions making the inoculated microbes ineffective in the process of composting and emission of greenhouse gases with foul smell.

Temperature

Thanks to the exothermic biological activities of aerobic bacteria temperature rise to 65-70°C within a couple of days. This temperature has to be maintained throughout the biological cycle.

Proper aeration

Since aerobic bacteria are used in the biological process, proper aeration is required to ensure availability of oxygen is very important. Regular turning of the heaps will provide adequate aeration.

Carbon & Nitrogen Ratio (CN Ratio)

CN Ratio should be maintained below 50 for speedy composting. If it is high, the decomposition process will be slow. If CN Ratio is very high, nitrogenous material like cow dung may have to be added to bring down the CN Ratio to the desired level. At the end of biological process, the CN Ratio should come down below 15.

Importance of Close Monitoring

Mechanical screening follows the biological process. The screening system will be screening whatever is fed on the basis of size and specific gravity. The texture and quality of the end product as well as recovery percentage solely depend on completion and perfection of the biological process. Hence, it is very important to closely monitor the biological process so as to have maximum output of desired quality. Unit cost of the end product heavily depends upon the recovery percentage. Hence, slight reduction in recovery percentage can increase cost of production substantially. The whole economics of the project depends on unit cost of production which is dependent on the recovery percentage. The screening system will not be able to

correct and cover up omissions in the biological process to improve recovery process and quality. Hence biological process is the critical element in this technology, and has to be clearly understood, closely monitored, and optimally controlled. Properly trained and fully devoted team should be engaged for windrow management. The Success of the project wholly depends upon perfect windrow management.

Biological activity is a batch process. Hence micro level monitoring of each batch is very essential to find out abnormality if any, and to take remedial action soon on observation. In this case each day's arrival is to be considered as a batch. Such batch should be given a code for reference.

Following factors are to be closely monitored:

- Quality and quantity of incoming garbage
- Treatment with inoculum
- Windrow formation
- Moisture level
- Leachate formation
- Temperature
- Timely turning
- Maturity
- House keeping

What CAN go in your composter

- Fruits and Vegetables
- Dried flowers and Puja flowers
- Citrus fruits with baking soda
- Mango and tamarind seeds take long
- Bones of fish, chicken, meat need to be buried deep into the pile.
- Corn cob, sugar cane, watermelon, stalk of cauliflower all need to be cut into smaller pieces
- Shred newspaper, old envelopes, paper tissues and cloth
- Leftover cooked food and rotten vegetables
- Coffee powder, coffee decoction, tea leaves, tea bags, tamarind pulp and egg shells
- From the garden - Garden litter, weeds and diseased plants

What CANNOT go in

- Coconut husk and shell
- Paper plates with plastic lining and paper cups
- Foil wrappers and shiny packaging of chocolates, sweets, biscuits, gutkha, chewing gum
- Medicines
- Dead animals
- Animal Hair
- Human excreta and animal droppings
- Batteries and cigarette butts





Pic Courtesy : www.dailydump.org

Traditional Do It Yourself (DIY) Composting Methods

Composting can be carried out in one's own home with daily kitchen waste that is generated. Instead of sending this out to polluting dumps in nearby villages, the kitchen waste can be composted to obtain homemade compost that can in turn be used as fertilizer for a kitchen garden or a flowerbed.



Village Pit Composting

If there is enough garden area, dig a pit (*thippe*) and add a little waste into it daily, in maximum 2" deep layers every day. Add 5% cow dung solution to facilitate the process. One can also add pet animal droppings to speed up composting and enrich it. Readymade composting bio-cultures which reduce odour can also be used. Cover the pit with stone slabs with a small covered opening for adding daily waste in small quantities.

One pit of size 1m (l) x 1m (b) x 2 (h) can last one family of 4 for one year.



One Tree Trench Composting

In the presence of only one tree or bush, a shallow trench can be dug around it. A day's kitchen waste can be piled into it till ground level, in one spot. The excavated soil can be used to cover this. Continue this process of piling and covering with the next day's waste as well. After 10 days, water the spot lightly and cover the most recently buried waste with a piece of weld mesh to keep dogs or cats out.

A 1 ft wide 1 ft deep trench of 6 ft dia is ~20 ft long. One day's waste will occupy less than 2 ft of trench length. You can dig up the same spot as early as 10 days later.



Compound Wall Composting in Group Housing

If a narrow strip of plants or hedge exists along a compound wall, then a short, shallow and narrow trench can be dug between the plants and the wall. Waste collected from one or more homes can be used to fill up a portion of the trench and heaped with soil. The next day's waste can be placed right next to the first and should again be covered with soil. Water only the hedge/plants but not the trench. Let the trench remain undisturbed. This process may take weeks or even 2 months before one can return to the same spot in the trench. The hedge gets automatic fertilizer at no cost.

A trench 1 ft deep x 1 ft wide needs 40 ft of length for 20 families.



High Rise Terrace Composting

This can be carried by using bio-bins which can compost 40 kg of plastic-free kitchen waste (from about 40 families) within a month.

40 apartments need two bio-bins. Area required is about 12 ft x 15 ft. One-time cost of Rs 1,500 per apartment + roofing, tools, and 6 months supply of bio-culture + compost starter. In Kochi, high-rise buildings use bio-bins on the terraces of each block for zero-waste apartments. See www.credaicleancity.in



Group Composting in Slums

A perforated plastic drum with small holes in its bottom and sides and a rainproof lid can be used for this technique of composting. The drum needs to be raised on blocks 1 ft off the ground to allow air circulation. 5-6 families can share 1 drum by adding their day's kitchen waste in a thin layer, maximum 2" deep. Air can reach the surface layer and no stirring is necessary. The compost is ready in 6-8 weeks to share. It can be used to fill plastic pots (hanging or on ground) to grow daily needs of *kothmir*, *methi*, etc. When emptying the drum, one must ensure to leave behind it at least 1/3rd the amount of the old compost to absorb leachate and act as a starter for the next batch of fresh waste.

One 100-litre barrel can permanently serve 5 low-income families.



Home Vermiculture in Pots

Vermiculture in 1-metre dia cement rings or very large flowerpots are also an option.

Persons familiar with rearing earthworms should manage this. Ask Dr Radha Kale at Mt. Carmel for advice.



Composting Fallen Leaves

Fallen leaves can also be composted instead of subjecting them to burning. Make a heap of leaves on ground. Sprinkle with old compost or a 5% solution of fresh cowdung in water. Turn twice a month for 2 months before use.

One can make a higher and concealed heap inside a 6 ft circle of weldmesh.

Biogas is a gas produced by the breakdown of bio-degradable organic matter in the absence of oxygen.

Biogas

The need for an alternate source of energy such as biogas has never been as imperative as now. On one hand rapid growth in population, mechanisation, and urbanisation has resulted in the generation of large quantities of waste every day, which finds its way mostly into environment due to lack of treatment and proper waste management facilities, while on the other the demand for energy and the discharge of waste are also increasing day by day. To overcome the energy crisis, alternative energy sources are the only remedy. Generation of energy from waste is beneficial in many ways. It is most suitable for eco-friendly waste disposal.

In the case of biogas, two pressing issues are addressed - the need for alternate energy and the management of organic waste.

What is Biogas?

Biogas is a gas produced by the breakdown of bio-degradable organic matter in the absence of oxygen. This process is also referred to as 'anaerobic fermentation of bio-degradable materials.'

Biogas is mainly constituted of methane and carbon di-oxide and hence is also referred to as Biomethane. Apart from methane and carbon-di-oxide biogas also contains traces of hydrogen sulphide. The combustion Of these components releases energy

which allows biogas to be used as alternate fuel for cooking, and can also be converted to electricity and heat in anaerobic digesters. Also, biogas can be compressed to form a 'biofuel' which can power motor vehicles.

Raw Material

All easily degradable materials including cooked and raw food waste, fruits and vegetable waste, fish and meat waste, excreta of all domestic and wild animals and birds, and waste water containing biowaste materials can be treated with this technology. Slow degradable materials such as vegetables, green or wet plant parts can be also treated with this technology, using specialised pre-digesters designed for this purpose.

Process of Generating Biogas

The process of generating biogas is known as biomethanisation and it is anaerobic in nature and takes place in two stages:

Stage 1 - Acid Formation

In this stage the waste is acted upon by acid forming bacteria and is reduced to organic acids

Stage 2 - Methane Formation

Methogenic bacteria act upon the organic acids to produce methane. These bacteria are oxygen sensitive and photo-sensitive and do not perform effectively in the presence of oxygen and light.

Basic Operating Principle of a Biogas Generating Digester

Biogas can be produced using anaerobic digesters. These plants can be fed with energy crops such as maize silage or bio-degradable wastes including sewage sludge and food waste. During the process, as an airtight tank transforms biomass waste into methane producing renewable energy that can be used for heating, electricity, and many other operations.

The waste is covered and mechanically compressed by the weight of the material that is deposited from above. This material prevents oxygen exposure thus allowing anaerobic microbes to thrive. This gas builds up and is slowly released into the atmosphere of the landfill site and this can be captured as biogas.

Pre-Digester

Due to the accumulation of non-treated/partially treated/slow degradable and light weight waste materials in the top surface of the digester, there is a chance for formation of scum in conventional model digesters. This will reduce the free movement of the moving parts in the digester and gradually the efficiency of the plant will be reduced. In large scale waste to energy projects, specially designed scum breakers/agitators are installed inside the digester and it works continuously to prevent scum formation. But it is not viable in small and medium level waste to energy projects due to various reasons.

To overcome these scum formation problems, pre-digesters were developed. Any slow degradable and more fibrous waste can be treated through the installation of pre-digesters along with the conventional model plant. More fibrous and slow degradable materials can be fed into the digesters and the treated slurry or water is mixed with this feed material every day. The leachate from the pre-digesters is extracted through specially designed filters and channelised to the digesters for biogas production. The treated bio waste can be collected from the pre-digesters and this can be utilised as biomanure.

The function of the digester/reactor starts with the filling of digesters with cow dung with a microbial culture to cultivate the microbes in the digester. After the initial feeding, the microbes multiply in the digester and decompose the biowaste effectively without further feeding by cow dung or bacteria culture. Once microbes are cultured in the plant, it will grow, multiply, and remain in the treatment plant.

All biogas generating machines and equipments operate on this general principle. Variations may occur in size, capacity and output, and time taken to deliver output.

Social and Economic Benefits of Biogas

Biogas has evolved as a fool proof and novel system to manage organic solid wastes at source itself through different eco-friendly

treatment technologies. Visibly, multiple benefits are derived through this process.

- Biomethanisation is a universally accepted and proven technology for bioenergy generation from biowaste
- It is very simple, user-friendly, and needs no recurring expenses
- Through the adoption of biomethanisation technology any degradable waste can be treated with the help of different types of anaerobic bacteria/microbes in a concealed chamber/digester.
- It is a renewable source of energy, can be effectively used to tackle the energy crisis
- Since it is generated from organic waste or Municipal Solid Waste (MSW) it facilitates the process of decentralised waste management - the collection, transportation, and segregation of waste can be totally avoided as the wastes are treated at source itself
- Production of high-grade organic manure/liquid organic fertilizer to supplement and substitute the use of chemical fertilizer
- Can be combusted to produce energy which in turn can be used as fuel for cooking. This upgrades the environmental conditions and keeps the forest cover protected, by saving the fire wood
- Can be converted to electricity and heat in anaerobic digesters
- Can be compressed to form biofuels that are capable of powering motor vehicles
- Control of air pollution problem is ensured by quick disposal and handling of waste and thereby hygienic atmosphere will be created

- The climate change and green house gas emission can be controlled/reduced by the capturing of methane through biomethanisation
- The treated biowaste materials coming out from the digester is in the form liquid or semi liquid. This is a very good fertilizer for all types of plants. This can be mixed with equal or more quantity of water and directly be applied to plants
- Biogas plants can be installed in houses and various public and private institutions such as hostels, convents, hospitals, office canteens, colleges, schools, seminaries, markets, slaughter houses, etc.

Different models of plants for the treatment of waste, according to the requirement of the consumers and nature of waste. These models cater to the needs of different categories of beneficiaries such as domestic households, public institutions such as hospitals, schools, hostels, convents, etc. and also local body establishments such as panchayats, municipalities, corporations, etc by treating different types of waste generated from the fish and vegetable markets and slaughter houses.

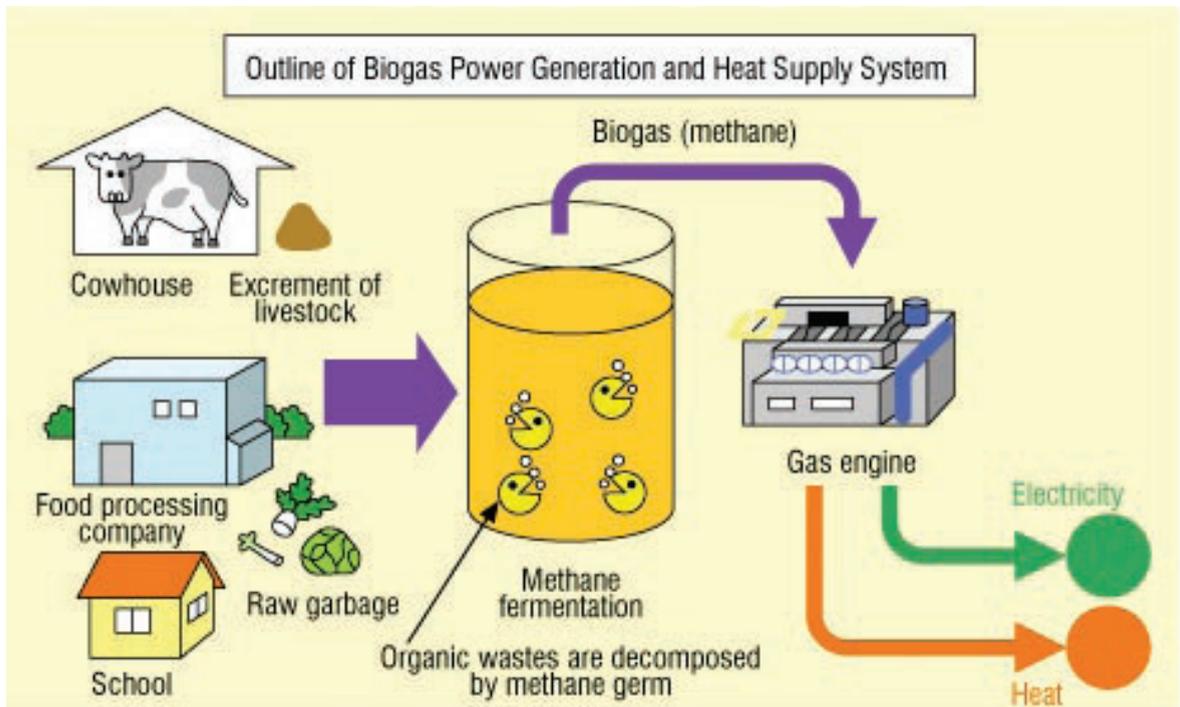
Importance of Biogas in Cooking

- The biogas produced through biomethanisation is an efficient and effective alternative source of conventional energy such as firewood, kerosene, LPG, etc.
- Smoke-free and clean kitchens can be setup by using biogas instead of firewood/kerosene

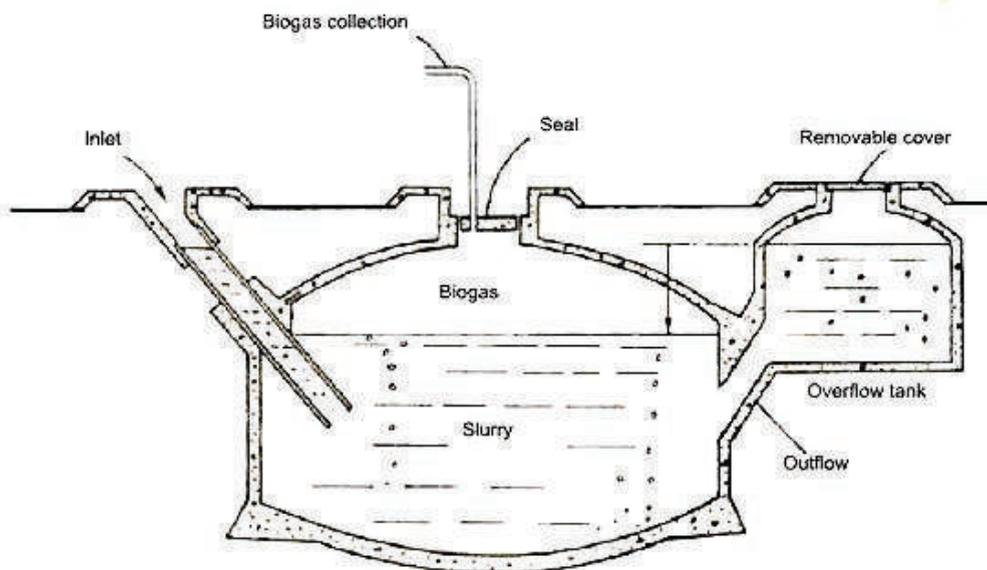
- Biogas helps to keep the vessels free of carbon, because no carbon or smoke is generated during the functioning of stoves
- Biogas is safer and less dangerous, compared to LPG and other similar fuels used for cooking
- The use of biogas is very economical. There is no recurring expense for its generation, because it is generated in the plant itself
- In public institutions such as hospitals, schools, etc., biogas can effectively be utilised for boiling water and such other purposes
- Every house having a biogas plant will be a power house with fuel and a lot of time for procuring fuel like firewood can be saved
- People especially women can be safeguarded from various diseases like bronchitis, asthma, etc. and eye diseases due to regular exposure and breathing of smoke
- The level of health and hygienic conditions of such people will be upgraded by efficient use of biogas



Biogas Generation Process



A Typical Biogas Digester



Composting & Biogas Product Guide

Disclaimer

Whilst great care was taken in preparation of the data contained in this handbook, Wake Up Clean Up Bengaluru accepts no liability for the accuracy of information supplied. The handbook provides general guidelines and information. It is not intended to be comprehensive or to address all the possible applications of, or exceptions to, the procedures described.

a) Data on Contact Info and Product Description

All data for service providers, recycling solutions providers are to the best of our knowledge and are as provided to us by the respective individuals/organizations. Wake Up Clean Up Bengaluru will not accept any claim for non-functioning of products or for consequential loss.

b) Product Rates

All product rates are subject to change. In case of approximation of rates, the values are as provided by the company. WUCU is not responsible for any misrepresentation of data or for any change in rates.

c) Correction, Omissions & Inclusions

The procedures, practices, products, and benefits described here may be modified or discontinued from time to time. WUCU will make every attempt to inform the public online, of any changes as they occur. For any corrections or omissions or if you would like your company/product/service to be included in our online version of the handbook, please write to us @ wakeup.cleanup@gmail.com or visit our website www.wakeupclean.com

Easy Indoor Composters

(GreenTech Life)

Description: Easy Indoor Composters are organic composting units that have the capacity to produce up to 35-60 litres of compost every month depending on the quantity and kind of food waste generated by the family.

Suited for: One set for independent households and apartments/flats with a family size of 4

Capacity:

- Product size: Set of two bins, 20 litres each
- Waste handling capacity: 1-2 kg per day
- Land space requirement: Replaces kitchen dustbin
- Operation requirement: NA

Operation:

- This is a two-stage method
- In the first stage, the food waste is fermented with the help of a beneficial microorganism powder (Bio Bloom composting microbes) supplied by the manufacturer. This stage will be complete in two weeks
- In the second stage, the fermented food waste is mixed with equal quantities of soil or potting mix. After this, you can either bury it in soil or keep it in-between two layers of soil or potting mix
- In 2-3 weeks high-quality compost will be ready

Successful installations:

5 years spent in R&D, product just launched

Green Tech Life

www.greentechlife.in
Phone: 080 2854 1266
Mobile: +91-94835 01361
E-mail: info@greentechlife.in



25 days for first batch of compost



Set of two bins + ½ kg of composting microbes = **Rs. 1,500**; Bio Bloom microbes = **Rs. 150**



- On-site training
- Service on call

C-03 Automatic Compact Composter (Ecoman Enviro Solutions Pvt. Ltd.)



Description: The C-03 Automatic Compact Composter is an odourless, noise-resistant composting system that can handle up to 3 kg per day and reduces volume of waste added by 90%. The machine has a stainless steel container with a life of more than 25 years.

Suited for: Independent household, Flats

Capacity:

- Product size: 4 ft x 2 ft x 3 ft
- Waste handling capacity: 3 kg
- Land space requirement: 8.75 sq. ft.
- Operating requirements: 230 V, 50 Hz; 290W Single-phase electrical supply, no water connection required, vent to outdoors or storm water line

Operation:

- When the machine is used to full capacity, the first batch of compost will be ready within 15 days. If not, it will take a bit longer
- However, the subsequent batches of compost will be ready in 24 hours
- The compost needs to be removed from the machine only once in 15-20 days

Successful installations: Several residences in Pune including the residence of Mr. Yogesh Behl (Mayor - Pimpri Chinchwad Municipal Corporation)

Ecoman Enviro Solutions Pvt. Ltd.

www.ecomanenviro.com

Phone: +91 20 3253 5122

Mobile: +91 99229 13777

E-mail: info@ecomanenviro.com



15-20 days for first batch



Rs. 27,261 + CST/VAT



- Maintenance-free product
- Service on call

Daily Dump Khambha

(Daily Dump)

Description: Daily dump Khambha is an outdoor composting unit that converts 15-20% of original waste into compost. The Khambha comes in two sizes - large and small.

Suited for: Family size of 2 or 5 members

Capacity:

- Product size: 1070 mm X 280 mm
- Waste handling capacity: 650 g-1 kg
- Land space requirement: A corner space in the backyard to house the unit
- Operating requirements: Dry leaves, Accelerator, Leave-it-pot

Operation:

- Fill the top pot daily with kitchen waste. Add dry leaves and accelerator. Mix contents once in 2-3 days
- Once the first pot is full, move the pot to the bottom and repeat the process with the second pot
- Once all three pots are full, transfer the contents to a leave-it-pot, and start the process afresh
- After 2 months, empty the leave-it-pot and sieve for top quality compost

Successful installations: 10,000 individual homes all over Bangalore

Daily Dump

www.dailydump.org

Phone: + 91 80 4115 2288

Mobile: + 91 99164 26661

E-mail: dailydumpcompost@gmail.com



3 months for first batch



Rs. 850-1,500



● Service on call

Daily Dump Leaf Composter (Daily Dump)



Description: Daily Dump Leaf Composter is a composting unit that converts 80% of original waste into leaf mulch. It has a metal and treated bamboo form with a door to remove the mulch.

Suited for: Dry leaf and garden litter

Capacity:

- Waste handling capacity: 50 kg bags x 7 numbers
- Land requirement: 3 ft x 3ft
- Operating requirements: Water

Operation:

- Collect dry leaves and add to the composter
- Add water every day to compact the pile
- Water begins the decomposition process and also protects from pile catching fire
- Ideal for large volumes of leaves, converts leaf litter into nutritious leaf mulch

Successful installations:

- 100 individual homes, Sadashivnagar, Bangalore
- Factories

Daily Dump

www.dailydump.org

Phone: + 91 80 4115 2288

Mobile: + 91 99164 26661

E-mail: dailydumpcompost@gmail.com



8 months for first batch



Rs. 4,500-9,500



- Service on call

Daily Dump Mota Lota

(Daily Dump)

Description: Daily Dump Mota Lota is a modular system with interchangeable units that produce 15-20% of original waste quantity as compost.

Suited for: Family size of 2 or 5

Capacity:

- Product size: 1070 mm X 280 mm
- Waste handling capacity: 650 g-1 kg
- Land space requirement: A corner space in the backyard of the house for the unit
- Operating requirements: Dry leaves, Accelerator, Leave-it-pot

Operation:

- Fill the top pot daily with kitchen waste. Add dry leaves and accelerator. Mix contents once in 2-3 days
- Once the first pot is full, move the pot to the bottom and repeat the process with the second pot
- Once all three pots are full, transfer the contents to a leave-it-pot, and start the process afresh
- After 2 months, empty the leave-it-pot and sieve for top quality compost

Successful installations: 10,000 individual homes all over Bangalore

Daily Dump

www.dailydump.org

Phone: + 91 80 4115 2288

Mobile: + 91 99164 26661

E-mail: dailydumpcompost@gmail.com



3 months for first batch



Rs. 600-1,200



● Service on call

Shuchira-Kitchen Waste Composting (Green Farm Innovators Pvt. Ltd.)



Description: Shuchira-Kitchen Waste Composting unit is a clean and effective bench-top composting system that is odourless and converts 40% of original waste added into compost.

Suited for: Apartments, Independent houses, Schools, Small restaurants

Capacity:

- Product size: 50 lt capacity; 13 in (dia.), 23 in (h)
- Waste handling capacity: 250 g-1 kg per day
- Land requirement: 4 sq. ft.
- Operating requirements: Bokashi powder

Operation:

- Add EM Bokashi powder to the organic waste for the fermentation process to begin
- After 2-3 weeks, add 15 cm of soil to the completely filled container
- Depending on the climate, the fermented waste will break down into a rich fertiliser within 7-14 days



Successful installations: Several residences in Girinagar, RR Nagar, Malleshwaram, and HSR Layout, Bangalore



Green Farm Innovators Pvt Ltd

Mr. Akhil Dutt Bharti - + 91 76764 12359



50-60 days for first batch



Rs. 650



- On-site training
- Service on call

T-morph

(Vijay Sindagi)

Description: The T-morph is a rotating drum model composting unit which produces a minimum of 50 kg of compost per cycle from wet waste.

Suited for: Apartments, Independent houses, Schools, Office campuses

Capacity:

- Product size: 300 lt capacity; 4 ft x 4 ft x 3 ft
- Waste handling capacity: 10 kg/day
- Land requirement: 25 sq. ft.
- Operating requirements: Dry leaves

Operation:

- Add wet waste and dry leaves to the unit every day. There is no need to add any accelerator
- Mix the waste daily 5 times in clockwise/anti-clockwise direction
- It should take 25 days to fill the drum, then take the semi-compost out and store it in a Leave-it-Pot or in the open

Successful installations:

- Innisfree High School, Bangalore
- Twin Park, HSR Layout, Bangalore
- Gold Leaf Apartments, Kaggadasapura, Bangalore
- 3 apartments in Chandra Layout, Bangalore
- More than 10 independent households in BEML Layout, Bangalore



40-50 days for first batch



Rs. 7,500 +
Transportation costs



- 6-month warranty
- On-site training
- Service on call

Daily Dump Leave-it-Pot (Daily Dump)



Description: Daily Dump Leave-it-Pot is a terracotta composting unit that can be used to store sawdust, dried leaves, or semi-done or fully done compost. It can also be used to compost organic waste and dried leaves. It converts 15-20% of original waste quantity into compost.

Suited for: 5 units in a row can manage waste from a community of 12-15 homes

Capacity:

- Product size: 2.5 in (dia.), 2 ft (h)
- Waste handling capacity: 50 kg
- Land space requirement: 6.25 sq. ft. per unit
- Operating requirement: Dry leaves, Sawdust, Accelerator

Operation:

- Add dry leaves and accelerator to the kitchen waste collected in the Leave-it-Pot. Mix contents once in 2-3 days. Once the first pot is full, repeat the process with the remaining pots
- Once all 4 Leave-it-Pots are full, transfer the contents into a sack
- After another month sieve contents and the compost is ready to use



Successful installations:

- Flats in LB Shastri Nagar, Bangalore
- Individual homes, Bangalore

Daily Dump

www.dailydump.org

Phone: + 91 80 4115 2288

Mobile: + 91 99164 26661

E-mail: dailydumpcompost@gmail.com



3 months for first batch



Rs. 1,200 each unit



- Service on call

Biogen-2

(Chempure Technologies Pvt. Ltd.)

Description: Biogen-2 Biogas unit is a cylindrical unit that is PESO certified. The gas can be used for cooking or to generate electricity.

Product output: 6 kg of LPG equiv. per month

Suited for: Independent households/ Flats with a family size of 4

Capacity:

- Plant size: 1.2 m (h)
- Waste handling capacity: 1-2 kg per day
- Land space requirement: 10-20 sq. ft.
- Operating requirements: Water- 1.5 times the amount of waste processed

Successful installations: NGOs in Chennai

Chempure Technologies Pvt. Ltd.

www.chempuretech.com

Phone: +91 44 2382 1882/83/85

Fax : +91 44 2382 1884

Email : chempure@vsnl.net/info@chempuretech.com



3 weeks as incubation period, continuous biogas production thereafter



Rs. 18,000



- On-site training
- Service on call

Biogas Unit

(Hi-Tec Fertilizers India Pvt. Ltd.)



Description: The Biogas Unit produces 2 Cubic Metres of biogas per day. Producing biogas from food, vegetable waste except citrus fruits, tomatoes, and bones; the slurry produced as a process by-product is twice the amount of input waste.

Product output: 24 kg of LPG equiv. per month

Suited for: Independent houses with a family size of 4

Capacity:

- Product size: 1.5 m (dia.), 1 m (h)
- Waste handling capacity: 2-4 kg
- Land requirement: 10-20 sq. ft.
- Operating requirements: Water-1.5 times the amount of waste processed

Successful installations: Numerous domestic installations in Kochi

Hi-Tec Fertilizers India Pvt. Ltd.

Phone: (0484) 2331991 / (0484) 2533361

Mobile: +91- 94470 33360

E-mail: hitech_biomanurals@yahoo.co.in



3 weeks of
incubation period,
continuous
production thereafter



Rs. 14,000



- On-site training
- Service on call

Synod Biogas Unit

(Synod Bioscience)

Description: Synod Biogas Unit provides 2-2.5 hrs of biogas per day. The unit produces biogas from food waste except citrus fruits and egg shells.

Suited for: Independent houses, Villas with a family size of 4

Capacity:

- Product size: 1.2 m (dia.), 1m (h)
- Waste handling capacity: 1-3 kg
- Land space requirement: 12 sq. ft.
- Operating requirements: Water-same as the amount of waste

Successful installations:

- Abhay Rajesh Krishnan's residence, Bangalore
- Sumangali Seva Ashram, Hebbal, Bangalore

Synod Bioscience

www.synod.in

Phone: 080 4166 0006

Mobile: +9 93432 94269

Email: gardencity@synod.in



3 weeks of incubation period, continuous production thereafter



Rs. 23,500



- On-site training
- Service on call

Biogen-5 (Chempure Technologies Pvt. Ltd.)

Description: Biogen-5 is a cylindrical biogas unit capable of handling up to 5 kg of waste per day.

Product output: 12 kg of LPG equiv. per month

Suited for: Independent Households, Flats; caters to 3 families with a family of size of 4

Capacity:

- Product size: 1.5 m (h)
- Waste handling capacity: 5 kg
- Land space requirement: 10-20 sq. ft.
- Operating requirements: Water-1.5 times the amount of waste processed

Successful installations: Several NGOs in Chennai

Chempure Technologies Pvt. Ltd.

www.chempuretech.com

Phone: +91 44 2382 1882/83/85

Fax : +91 44 2382 1884

Email : chempure@vsnl.net/info@chempuretech.com



3 weeks of
incubation period,
continuous biogas
production thereafter



Rs. 30,000



- On-site training
- Service on call

Bio1001 Portable

(EROEI Power Solutions Pvt. Ltd.)

Description: The Bio1001 Portable Biogas Unit produces 60 min. of gas per day. Producing biogas from food waste except citrus fruits and bone

Product output: 6 kg of LPG equiv. per month

Suited for: Independent households, Flats with a family size of 4

Capacity:

- Product size: 0.16 m (dia.), 1 m (h)
- Waste handling capacity: 3 kg
- Land requirement: 10-20 sq. ft.; pipes, valves, cleaning point, drain point, and feed point required
- Operating requirements: Water-same as amount of waste processed



Successful installations:

- Adanya Chetana NGO, Bangalore
- Army campus, Bangalore
- 200 installations all over Bangalore and Maharashtra

EROEI Power Solutions Pvt. Ltd.

www.eroeipower.com / www.eps3e.com

Phone: +91 80 2328 1931/32

Phone: +91 80 2328 1931/32



25 days of incubation period, continuous production thereafter



Rs.12,500



- On-site training
- Service on call
- Annual Maintenance Contract option available

Bio1000 Portable (EROEI Power Solutions Pvt. Ltd.)



Description: The Bio 1000 portable produces 40 minutes of biogas from food waste excluding citrus fruits and bones. The by product of the slurry is twice the amount of waste generated.

Product output: 4.8 kg of LPG equiv. per month

Suited for: Independent households, Flats with a family size of 4

Capacity:

- Product size: 0.16 m (dia.), 1 m (h)
- Waste handling capacity: 2 kg
- Land space requirement: 10-20 sq. ft.; pipes, valves, cleaning point, drain point, and feed point required
- Operating requirements: Water-same as amount of waste processed

Successful installations:

- Adanya Chetana NGO, Bangalore
- Army campus, Bangalore
- 200 installations all over Bangalore and Maharashtra

EROEI Power Solutions Pvt. Ltd.

www.eroeipower.com / www.eps3e.com

Phone: +91 80 2328 1931/32

Phone: +91 80 2328 1931/32



25 days of incubation period, continuous production thereafter



Rs. 9,500



- On-site training
- Service on call

Biogas Unit

(NIE-Centre for Renewable Energy & Sustainable Technologies (NIE-CREST))

Description: The Biogas Unit produces 0.8-1 cubic metre per day from kitchen waste and slurry produced as a process by product is twice the amount of input waste.

Product output: 10-12 kg of LPG equiv. per month

Suited for: Independent households, Flats

Capacity:

- Product size: 1.5 m (dia.), 1 m (h)
- Waste handling capacity: 2-10 kg
- Land requirement: 10-20 sq. ft.
- Operating requirements: Water-1.5 times the amount of waste processed

Successful installations:

- Pollution Control Board Office, Bangalore
- 200 domestic units in various parts of Karnataka
- Prof. Shamsundar's residence, Mysore

NIE-CREST

www.niecrest.in

Phone: +91 82140 04914/82142 50502

Email: niecrest@gmail.com



25 days of incubation period, continuous production thereafter



Rs. 9,500



- On-site training
- Service on call

Biobins

(Hi-tech BioFertilizers India Pvt. Ltd.)



Description: Biobins are a set of two bins that are most suitable for composting in apartments, and produce 20 kg of compost every month.

Suited for: Apartments

Capacity:

- Product size: Set of two bins; 4 ft X 2 ft X 3 ft each
- Waste handling capacity: 40 kg per day
- Land space requirement: 8-10 sq. ft. of terrace space
- Operation requirement: Bioculture

Successful installations: CREDAI certified apartments at Kochi

Hi-tech BioFertilizers India Pvt. Ltd.

Phone: 0484 2331991 / 0484 253 3361

Mobile: +91 94470 33360

E-mail: hitech_biomanurals@yahoo.co.in



30 days for first batch



Rs. 60,000 for a pair + AMC



- On-site training
- AMC

Saveco 100

(Saveco)

Description: Saveco 100 is a composting unit that operates on a batch mode with a two-stage process, producing 15-20% of original waste quantity as compost.

Suited for: Apartments, Institutions, Corporate offices

Capacity:

- Product size: 3.5 ft X 4 ft X 4 ft with inbuilt shredder
- Waste handling capacity: 100 kg/hr
- Land space requirement: 15 sq. ft
- Operational requirement: 2.20 Kw, 3 HP power supply

Successful installations:

- Pentagon Group, Pune
- Ethics Developers, Pune
- Tirupati Builders, Pune
- Bhandari Associates, Pune
- Bosch Ltd., Bangalore
- Britannia Industries Ltd.
- Office complex, Kolkata
- Paramount Food Nutrition, Bidadi, Bangalore

Saveco

www.savecosystems.com

Phone: 080 6560 4319

Fax: 080 4246 4013



Processes **30 kg**
in **5-7 mins, 12**
days of curing time
thereafter



Rs. 4.25 lakh



- On-site training
- 1-year warranty period
- AMC

UCM-10 Composting Machine

(EROEI Power Solutions Pvt. Ltd.)

Description: UCM 10 Composting Machine by EPS is a composter cum shredder that reduces volume of garden waste by one-fourth in 10 min and reduces the weight by 30%.

Suited for: 15-200 Apartments, Campuses, Factories

Capacity:

- Product size: 1.1 m x 0.56 m x 1.143 m
- Waste handling capacity: 40-80 kg/hr
- Land space requirement: Sheltered 6.25 sq. mt. of space with no water intrusion
- Operating requirements: 1 HP motor

Successful installations:

- HAL, Bangalore
- 15-20 apartments in Maharashtra
- 5 SMEs in Maharashtra

EROEI Power Solutions Pvt. Ltd.

www.eroeipower.com/www.eps3e.com

Phone: +91 80 2328 1931/32



10 mins to process
15 kg; Curing for 6-8
days thereafter



Rs. 1.75 lakh



- On-site training
- Service on call

Aerobic Digester/Tank composting

(Green Technologies)

Description: Aerobic digester/tank composting is a fixed type composting unit that produces compost from waste added to it.

Suited for: Apartments, Office campuses, Institutions

Capacity:

- Product size: 7 ft x 3 ft x 4 ft (l x b x h) each stack
- Waste handling capacity: 15-18 kg/day
- Land requirement: 21 sq. ft. for each stack. Facility with roof to cover built-up stacks, covered with metal trays water inlet and outlet pipes. A blower for additional aeration. Total area depends upon the number of stacks required
- Operational requirement: Dry leaves

Successful installations:

- Brigade Regency, Bangalore
- Saahas NGO, Bangalore
- Sri Kumarans Children’s Home, Bangalore

Green Technologies

www.greentechindia.in

Phone: +91 80 2669 6905

Mobile: + 91 94485 71861/+91 99009 69798

Email: greentech@gmail.com/response@greentechindia.in



3 months for first batch



Rs. 40,000 per stack



- On-site training
- Service on call

C-25 Automatic Compact Composter (Ecoman Enviro Solutions Pvt. Ltd.)



Description: C-25 Automatic Compact Composter is an odourless, noise-resistant composting machine that produces 2.5 kg of compost everyday, reducing 90% of waste added. It has a stainless steel container with a life expectancy of more than 25 years.

Suited for: Medium-sized restaurants/Apartments

Capacity:

- Product size: 110 cm (l) X 53 cm (w) X 96 cm (h)
- Waste handling capacity: 25 kg per day
- Land requirement: 49 sq. ft. of sheltered space to fit the product
- Operating requirements: Electricity-230V/50Hz or 1.35 KW single phase power supply, no water connection required, vent to outdoors or storm water line

Successful installations:

- Kalaapi Builders
- Cosmos Regency
- Sai Mangal Housing Society

Ecoman Enviro Solutions Pvt. Ltd.

www.ecomanenviro.com

Phone: +91 20 325 351 22

Mobile: +91 99 229 137 77

Email: info@ecomanenviro.com



15-20 days for first batch



Rs. 2,55 Lakh +
CST/VAT



- Maintenance-free product
- Service on call

Small Lotus Manthan 300

(Daily Dump)

Description: Lotus Manthan 300 is a composting unit that produces 15-20% of original waste quantity as compost. It has a rotating drum made of composite material placed on a stand approximately 2.5 ft off the ground.

Suited for: Apartments, Office campuses, Institutions

Capacity:

- Product size: 300 lt.
- Waste handling capacity: 15 kg per day. Additional units can be lined up to handle more volume
- Land requirement: 16 sq. ft. for the equipment. An additional 8 sq. ft. to store the half-done compost for maturing
- Operational requirement: Dry leaves, Leave-it-Pot

Successful installations:

- Britannia office campus
- 40 units at Waterwoods, Varthur, Bangalore
- Mindtree
- GE Healthcare Factory
- Mahindra Reva Factory
- Sobha Aster, 52 units
- Sobha Garnet, 82 units
- Sobha Onyx
- Harmony Homes
- City Lite Rustiqu, 162 units
- Natasha Golf View, 216 units and many more

Daily Dump

www.dailydump.org

Phone: + 91 80 4115 2288

Mobile: + 91 99164 26661

Email: dailydumpcompost@gmail.com



3 months for first batch



Rs. 29,770



- On-site training
- Service on call

100 kg Biogas Unit

(NIE-Centre for Renewable Energy & Sustainable Technologies (NIE-CREST))



Description: 100 kg Biogas Unit from NIE-CREST is suitable for small and medium institutions.

Product output: 72 kg of LPG equiv. per month

Suited for: Hospitals, Domestic purpose, Institutes

Capacity:

- Product size: 10m (l) X 5 m (d) X 2 m (h)
- Waste handling capacity: 100 kg per day
- Land space requirements: 50 sq. mt.; pipes and drains required
- Operating requirements: As much quantity of water as waste processed

Successful installations:

- KR Hospital, Mysore
- Administrative Training Institute, Mysore

NIE-CREST

www.niecrest.in

Phone: +91 82140 04914/82142 50502

Email: niecrest@gmail.com



3 weeks of incubation period, continuous production thereafter



Rs. 6 lakh



- On-site training
- Service on call

Portable Biogas Unit

(Mailhem Engineering Pvt. Ltd.)

Description: The Portable Biogas is suitable for establishments generating upto 50 kg of waste per day.

Product output: 42 kg of LPG equiv. per month

Suited for: Institutions, Factories, Hotels

Capacity:

- Product size: 3 m X 4 m
- Waste handling capacity: 50 kg
- Land requirement: 12 sq. mt.
- Operating requirements: Water-same as the quantity of waste

Successful installations:

- Hatti Gold Mines
- Several *goshalas*
- Coca Cola bottling plant
- Several Public schools package plant
- MS Ramiah campus
- Several BBMP offices

Mailhem Engineering Pvt. Ltd.

www.mailhem.com

Phone: +91 20 25650057

Mobile: +91 93733 39159

Fax No.: +91 20 2565 0047

Email: info@mailhem.com/marketing@mailhem.com



21-30 days

of incubation

period, continuous

production thereafter



Rs. 5.5-6 lakh



- On-site training

- Service on call

Arjun UV-7 Biogas Kit (Arjun Agri Tech)



Description: The Arjun UV-7 is a unique Biogas Kit that processes wet waste and stores biogas in an inflatable HDPE bag.

Product output: 18 kg of LPG equiv. per month

Suited for: Hotels, Resorts, Colleges, Factory canteens

Capacity:

- Product size: 4 ft x 4 ft x 6.5 ft
- Waste handling capacity: 20-25 kg
- Land requirement: About 4 sq. m. A sump of 2 mt. depth has to be dug as most of the biogas bag has to be below ground.
- Operating requirements: Water-same quantity as waste added

Successful installations:

- VISTHAR, an NGO near Dodda Gubbi
- A farmhouse near Devanahalli, Bangalore
- Over 1,000 installations overall
- Several ongoing projects in Tamil Nadu



Arjun Agri Tech (Arjun Energy Corporation)

Phone: +91 427 2417121/+91 4272417151/+91 427 2417191
 Mobile: +91 94422 12345/+91 94862 12345/+91 94437 77778
 Fax: +91 427 4030183
 Email: info.arjungroups@gmail.com/info.arjun@gmail.com/
 energyexperts1@gmail.com



3 weeks of incubation period, continuous production thereafter



Rs. 15,000 onwards



- On-site training
- Service on call

TEAM Process

(Enhanced WAPP Systems Pvt. Ltd.)

Description: The TEAM process is a two-stage process comprising of acidification and methanation. In the acidification phase, the organic content of the solid waste is leached out to make a high strength liquid. This high strength leachate is treated in a high rate UASB (Upflow Anaerobic Sludge Blanket) reactor to produce biogas. The digester has been successfully tested for different types of solid wastes for the generation of useful resources – biogas and manure. The promising results ensure the viability of the technology for wastes from varied sources. Based on the studies, food waste from hotels and canteens was found to have maximum potential for biogas generation. The volume of waste reduces to 40% after digestion and the sludge is dried to produce good quality manure. Due to its unique design and biphasic nature, the technology can treat any kind of organic waste within a short retention time of six days.

Product output: 72 kg of LPG equiv. per month

Suited for: Factories, Offices

Capacity:

- Product size: 30 sq. mt.
- Waste handling capacity: 50-100 kg
- Land requirement: 30 sq. m.
- Operating requirements: Water-initially required in the ratio of 1:2 (weight:volume) and then the effluent is recycled.
Electrical connected load will be within 3 KW

Successful installations:

- Teri Gualpahari, Gurgaon
- NTPC, Faridabad
- ONGC, Noida

Enhanced WAPP Systems Pvt.Ltd.

www.wappsys.com

Phone: +91 96760 16083

Email: wappsouth@wappsys.com



7 days for first batch



up to **Rs. 13.5 lakh**



- On-site training

Portable Biogas Unit (Synod Bioscience)



Description: Portable Biogas Unit from Synod is suitable for establishments generating up to 50 kg of waste per day.

Product output: 150-180 kg of LPG equiv. per month

Suited for: PGs, Hostels, Hotels

Capacity:

- Product size: 3 mt. (dia.), 2 mt. (h)
- Waste handling capacity: 50 kg
- Land requirement: 3 sq. mt.
- Operating requirements: Water: same amount as quantity of waste processed

Successful installations:

- Snehadan Community Centre, Bangalore
- Sri Ravishankar Ashram, Bangalore

Synod Bioscience

www.synod.in

Phone: 080 4166 0006

Mobile: +91 93432 94269

Email: gardencity@synod.in



3 weeks of incubation period, continuous production thereafter



Rs. 2.8 lakh



- On-site training
- Service on call

G-10 Composting Machine

(GreenNerds Solutions Pvt. Ltd.)

Description: The G-10 Composting Machine from GreenNerds can process up to 100-120 kg of waste per day, and is well suited for apartments and gated communities.

Suited for: Apartments, Complexes, Gated Communities

Capacity:

- Product size: 5 ft x 3.5 ft x 4 ft
- Waste handling capacity: 100-120 kg per day
- Land requirement: 17.5 sq. ft.
- Operating requirement: 3-phase electrical supply

Successful installations: Installations at HAL, Bangalore

GreenNerds Solutions Pvt. Ltd.

www.green-nerds.com

Phone: +91 98804 57499

Mobile: +91 96861 00788

Email: contact@green-nerds.com



15 days for first batch



Rs. 5 lakh



● **1-year warranty**

TR 200 Leaf Shredder

(MK Associates)



Description: TR 200 is proven machine suitable for shredding garden waste as well as segregated kitchen waste including tender bones and hard coconut kernels.

Suited for: Parks, Campuses with garden waste

Capacity:

- Product size: 2.5 ft (l) X 2 ft (b) X 3 ft 25 in (h)
- Waste handling capacity: 150 kg/hr
- Land requirement: 1 sq. ft. of cement hard floor
- Operating requirements: 3-phase electrical supply and 1.5 HP motor

Successful installations:

- Rajmahal Vilas Club, Bangalore
- Platinum City, Bangalore
- Mr. Shirish Gadgil, Nasik
- Vaishnavi Splendour Splendor, Bangalore
- Sri Kumaran Children Home, Bangalore
- Adarsh Residency Apartment, Bangalore
- We care for Malleshwaram, Bangalore
- Shoba Opal, Bangalore
- Scientific Handling of Waste Society, Bangalore
- Waste Management Committee, Bangalore
- Reva Institute of Engineering and Technology, Bangalore

MK Associates

www.mkassociates.net

Phone: +91 80 2358 3935

Mobile: +91 81230 11159



150 kg per hour;
10 days curing time



Rs. 40,000



● Service on call

UCM 30 Compositing unit

(EROEI Power Solutions Pvt. Ltd.)

Description: The UCM 30 Composting unit processes organic waste to reduce the volume to one-fourth of original quantity and weight by 30%.

Suited for: Campuses, Large apartments, Office spaces

Capacity:

- Product size: 1,500 mm x 800 mm x 1,100 mm
- Waste handling capacity: 80-120 kg
- Land requirement: 12.5 sq. ft.
- Operating requirements: Rs. 2-2.5 per day of electricity consumption



Successful installations:

- Seema Herbals Pvt. Ltd., Nasik
- HAL Campus, Bangalore
- Apartments in Mumbai

EROEI Power Solutions Pvt. Ltd.

www.eroeipower.com/www.eps3e.com

Phone: +91 80 2328 1931/32



Processes **15 kg** in
10 min; **6-8 days** of
curing thereafter



Rs. 5 lakh



- 1-year warranty
- AMC

Composting Shredder

(EROEI Power Solutions Pvt. Ltd.)



Description: The Composting Shredder from EPS is made of stainless steel and shreds upto 150 kg per hour, reducing the volume of waste by half.

Suited for: Apartments, Campuses, Offices

Capacity:

- Product size: 0.5 ft (dia.) X 2.5 ft (h)
- Waste handling capacity: 150 kg/hr
- Land requirement: 1.5 sq. ft.
- Operating requirements: 1.5 electrical units/hour

Successful installations:

- Goldman Sachs, Bangalore
- Total Environment, Bangalore
- SMEs in Bangalore, Belgaum
- Army campus, Bangalore

EROEI Power Solutions Pvt. Ltd.

www.eroeipower.com/www.eps3e.com

Phone: +91 80 2328 1931/32



150 kg per hour;
10-12 days of curing
thereafter



Rs. 38,000
approximately



- 1-year warranty
- AMC

Saveco 200

(Saveco)

Description: Saveco 200 is a composting unit with an in-built shredder. The unit shreds organic waste and reduces it to 15-20% of the initial quantity added.

Suited for: Malls, Corporate campuses, Municipalities

Capacity:

- Product size: 1.2 m x 1.5 m x 1.6 m
- Waste handling capacity: 200 kg/hr
- Land requirement: 2.5 sq. mt.
- Operating requirements: 5.25 kW and 7 HP motor

Successful installations:

- Mahindra Royale, Pune
- Imperial Heights, Mumbai
- Palm Beach Residency, Pune
- E-Square, Pune

Saveco

www.savecosystems.com

Phone: 080 6560 4319

Fax: 080 4246 4013



5-7 min for 30 kg to be processed; **10 days** curing time for first batch



Rs. 6.25 lakh



- 1-year warranty
- AMC

C-75 Automatic Compact Composter (Ecoman Enviro Solutions Pvt. Ltd.)



Description: The C-75 Automatic Compact Composter is noiseless, odourless composting machine that converts organic waste into 7.5 kg of compost everyday reducing the volume of waste added by 90%.

Suited for: Apartments, Complexes

Capacity:

- Product size: 75 cm (l) X 73 cm (w) X 117 cm (h)
- Waste handling capacity: 75 kg
- Land requirement: 76 sq. ft. of sheltered space
- Operating requirements: 3-phase electrical supply of 440V/50Hz and 3.1 kW, no water connection, vent to outdoors or storm water line required

Successful installations:

- Tyagi Properties
- DSK Developers

Ecoman Enviro Solutions Pvt. Ltd.

www.ecomanenviro.com

Phone: +91 20325 35122

Mobile: +91 99229 13777

Email: info@ecomanenviro.com



15-20 days for first batch



Rs. 4.59 Lakh



- Maintenance-free product
- Service on call

C-125 Automatic Compact Composter

(Ecoman Enviro Solutions Pvt. Ltd.)

Description: The C-125 Automatic Compact Composter is noiseless, odourless composting machine that converts organic waste into 12.5 kg of compost everyday reducing the volume of waste added by 90%.

Suited for: Cafeterias, Residential complexes

Capacity:

- Product size: 187 cm (l) X 90 cm (w) X 130 cm (h)
73.6 in (l) X 35.4 in (w) X 51.2 in (h)
- Waste handling capacity: 125 kg
- Land requirement: 80 sq. ft. of sheltered space to fit the equipment
- Operating requirements: 3-phase electrical supply of 440V/50Hz and 4.8 kW, no water connection, vent to outdoors or storm water line required

Successful installations:

- Pudumjee G-Corp

Ecoman Enviro Solutions Pvt. Ltd.

www.ecomanenviro.com

Phone: +91 20325 35122

Mobile: +91 99229 13777

Email: info@ecomanenviro.com



5-20 days for first batch



Rs.7.14 lakh
+ CST/VAT



- Maintenance-free product
- Service on call

BioOrja

(GPS Renewables Pvt. Ltd.)



Description: BioOrja uses a unique waterless system to produce biogas from organic waste.

Product output: 170-180 kg of LPG equiv. per month for a 100 kg plant

Suited for: Institutions with a central kitchen, such as Hotels, Restaurants, Hospitals, Corporate, Schools, Colleges, Temples

Capacity:

- Product size: 1 m X 1 m X 2 m for 100 kg capacity
- Waste handling capacity: 100 kg-1.5 ton
- Land space requirement: 10-20 sq. mt. for 2 ton/day system
- Operating requirements: No water required and no waste water produced either, unlike competing solutions which require as much water as the waste being handled

Successful installations:

- Oxford Engineering College, Bangalore

Green Power Systems (GPS) Renewables Pvt. Ltd.

www.greenpowersystems.co.in

Phone: +91 80 4244 6600, +91 97390 50797, +91 97312 72138

Fax: +91 80 4244 6606

Email: info@greenpowersystems.co.in



1-month incubation period, continuous production thereafter



Rs. 6-30 lakh



- AMC
- On-site training

100 kg Portable Biogas Unit

(Mailhem Engineering Pvt. Ltd.)

Description: The 100 kg Portable Biogas Unit from Mailhem accepts cow dung, fruit and vegetable waste, and poultry waste to produce Biogas.

Product output: 84 kg of LPG equiv. per month

Suited for: Institutions, Corporates, Restaurants

Capacity:

- Product size: 8 m X 5 m
- Waste handling capacity: 100 kg
- Land requirement: 40 sq. mt.
- Operational requirement: Water-same as the quantity of waste

Successful installations:

- UAS, Bangalore
- GVKK, Bangalore
- Arcot Municipality, Vellore, Tamil Nadu

Mailhem Engineering Pvt. Ltd.

www.mailhem.com

Phone: +91 20 2565 0057

Mobile: +91 93733 39159

Fax: +91 20 2565 0047

Email: info@mailhem.com/marketing@mailhem.com



21-30 days of incubation period, continuous production thereafter



Rs. 8-8.5 lakh



- AMC
- On-site training

200 kg Portable Biogas Unit (Mailhem Engineering Pvt. Ltd.)



Description: The 200 kg Portable Biogas Unit from Mailhem accepts cow dung, fruit and vegetable waste, and poultry waste to produce Biogas.

Product output: 168 kg of LPG equiv. per month

Suited for: Choultries, Restaurants

Capacity:

- Waste handling capacity: 200 kg
- Land requirement: 6 m X 4.5 m
- Operational requirement: Water-same as the quantity of waste

Successful installations:

KVV Samsthe Kalyana Mantap,
Kengeri

Mailhem Engineering Pvt. Ltd.

www.mailhem.com

Phone: +91 20 2565 0057

Mobile: +91 93733 39159

Fax: +91 20 2565 0047

Email: info@mailhem.com/marketing@mailhem.com



21-30 days of incubation period, continuous production thereafter



Rs. 11.5-12 lakh



- AMC
- On-site training

The TEAM Process

(Enhanced WAPP Systems Pvt. Ltd.)

Description: The TEAM Process biogas unit is especially suitable for Industries and factories and accepts wet garbage, food waste, kitchen trash, used oil, STP sludge, oil & grease sludge. The process generates compost as a by-product which is 10% of the plant capacity.

Product output: 216 kg of LPG equiv. per month

Suited for: Factories, Offices, Residential complexes, Hotels

Capacity:

- Waste handling capacity: 100-300 kg
- Land requirement: 50 sq. mt.
- Operating requirements: Water is initially required in the ratio 1:2 (weight:volume) and then the effluent is recycled. Electrical connected load will be within 4 kW

Successful installations:

- Gujarat State Fertilizers & Chemicals Ltd.
- CIDCO, Mumbai
- NTPC, Singrauli

Enhanced WAPP Systems Pvt. Ltd.

www.wappsys.com

Phone: +91 96760 16083

Email: wappsouth@wappsys.com



7 days for first batch



up to **Rs. 17.5 lakh**



- On-site training

Pragathi Crusher

(Pragathi Enterprises)

Description: The Pragathi Crusher shreds waste to produce a semi-liquid paste that can be fed into a biogas plant for faster processing.

Suited for: Campuses, Apartments, Restaurants

Capacity:

- Product size: 2 ft x 2 ft x 2.5 ft
- Waste handling capacity: 500-800 kg/hr
- Land requirement: 4 sq. ft.
- Operating requirements: 2 HP motor

Successful installations:

- Infosys Ltd., Mysore
- JCD Enpn Hotel
- IIM Hotel

Pragathi Enterprises

Contact person: Vasanth Kumar K

Mobile: +91 98459 98761



Processes **500-800 kg per hour; 40 days** for biogas production



Rs. 1.2 lakh



- On-site training
- AMC

TRF 90 – Foliage Shredder

(MK Associates)

Description: TRF 90 Foliage Shredder is a powerful machine that shreds garden waste reducing the waste volume by 20%.

Suited for: RWAs, Apartments, Campuses

Capacity:

- Product size: 1.25 ft (l) X 1.50 ft (b) X 4.25 in (h)
- Waste handling capacity: 500 kg/hr
- Land requirement: 2 sq. ft.
- Operating requirements: 1.5-2 HP electrical power or fuel engine 3.5 HP diesel/petrol required

Successful installations:

- Adarsh Residency Apartment, Bangalore
- Shoba Opel, Bangalore
- Rain Drop, Bangalore
- Bhramananda Reddy, Andhra Pradesh

MK Associates

www.mkassociates.net
Phone: +91 80 2358 3935
Mobile: +91 81230 11159



Processes **500 kg** of waste in **1 hour**, 10 days of curing time thereafter



Rs. 45,000



- Service on call

Choultry Waste Shredder

(ANS Consultants)



Description: The Choultry Waste Shredder is a one-of-a-kind shredder requiring minimum maintenance and helps achieve waste volume reduction by one-fourth.

Suited for: Choulttries, Restaurants, Parks, Apartments; especially suited for shredding plantain leaves, areca nut plates

Capacity:

- Product size: 4 ft X 3 ft X 4 ft
- Waste handling capacity: 300-400 kg/hr
- Land space requirement: 12-15 sq. ft.
- Operating requirements: 5 HP motor, 3-phase power supply

Successful installations:

- Bhavikatte Choultry, Tumkur
- Gangadhariah Memorial Hall, (Siddhartha Medical College), Tumkur
- Godrej Apartments
- Shobha Althea, Bangalore
- Koramangala RWA, Bangalore
- Hassan District Municipal Council

ANS Consultants

Contact person: HM Shivakumar

Phone: +91 81055 73163

Email: aganinandi20@hotmail.com



Processes **300-400 kg** per hour, **10-12 days** to compost thereafter



Rs. 1.5 lakh



● AMC

Swatch Self-Powered Garbage Disposal

(Innovative Environment Solutions)

Description: Swatch Self-Powered Garbage Disposal is a unique composting unit that uses Japanese technology to reduce waste to a phenomenal 2-3% of original volume.

Suited for: Municipal corporations, Small business, Public enterprises

Capacity:

- Product size: It is the size of a big refrigerator and uses a magnetized advanced burning mechanism
- Waste handling capacity: 250 kg/day
- Land requirement: 18 sq. mt.
- Operating requirements: No water or power required

Successful installations:

- Nandyal Municipality, Andhra Pradesh

Innovative Environmental Solutions

www.inenviro.com

Phone: 080 2272 0588



Every **8 hr, 75 kg** of waste is reduced to **1.5 kg** of ash



Rs. 11 lakh



- 1-year warranty
- AMC

GPS Biowaste Shredder

(GPS Renewables Pvt. Ltd.)

Description: The GPS Biowaste Shredder accepts all wet waste and garden waste and can offer shredded particles up to 10 mm size.

Suited for: Restaurants, Hotels, Complexes

Capacity:

- Product size: 1.2 m X 0.5 m X 1.2 m
- Waste handling capacity: 500 kg/hr
- Land requirement: 10-20 sq. mt. (for up to 2 ton/day systems)
- Operating requirements: 3-phase supply, motor size varies from 1 HP to 3 HP

Successful installations:

- Oxford Engineering College, Bangalore

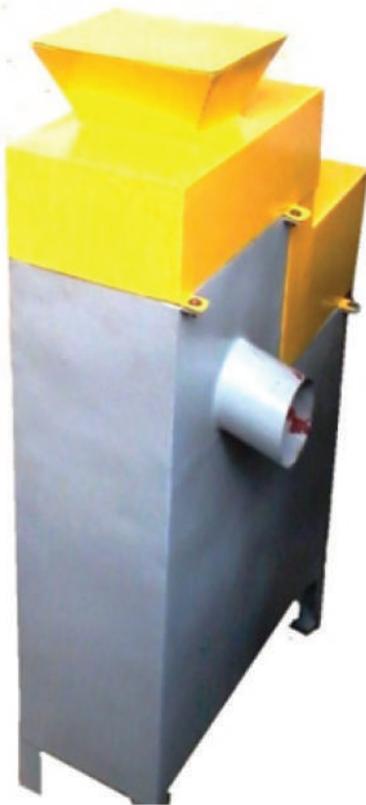
Green Power Systems (GPS) Renewables Pvt. Ltd.

www.greenpowersystems.co.in

Phone: +91 80 4244 6600, +91 97390 50797, +91 97312 72138

Fax: +91 80 4244 6606

Email: info@greenpowersystems.co.in



Processes **100-500 kg per hour, 10-12 days** curing time



Rs. 50,000 to 1 lakh



- Service on call

Saveco 400

(Saveco)

Description: Saveco 400 is a composting unit with an in-built shredder that reduces waste by 15-20% of original volume.

Suited for: Hotels, Corporate campuses, Large apartment complexes

Capacity:

- Product size: 1.5 m x 2.5 m x 1.5 m
- Waste handling capacity: 400 kg/hr
- Land requirement: 3 sq. mt.
- Operating requirements: 8.5 kW and 11.5 HP motor

Successful installation:

- HDIL, Mumbai
- The Capital, Mumbai

Saveco

www.savecosystems.com

Phone: 080 6560 4319

Fax: 080 4246 4013



Processes **400 kg per hour, 10 days** curing time thereafter



Rs.9.5 lakh



- On-site training
- 1-year warranty period
- AMC

Saveco +500

(Saveco)



Description: Saveco +500 is a composting unit with an in-built shredder, processing 500 kg per hour and reducing waste volume by 15-20%.

Suited for: Municipal corporations, Corporate campuses, Large apartment complexes

Capacity:

- Product size: 1.5 m x 3.2 m x 2.4 m
- Waste handling capacity: 500 kg/hr
- Land requirement: 4 sq. mt.
- Operating requirements: 9.5 kW and 12.5 HP motor

Successful installations:

- Panaji Municipal Corporation
- Pune Municipal Corporation

Saveco

www.savecosystems.com

Phone: 080 6560 4319

Fax: 080 4246 4013



Processes **500 kg per hour**, 10 days curing time thereafter



Rs. 12.5 lakh



- On-site training
- 1-year warranty period
- AMC

Organic Waste Converter

(Vennar Organic Fertilizer Pvt. Ltd.)

Description: The Organic Waste Converter is a popular waste handling equipment that can handle 500 kg to 5 ton of organic waste per day.

Suited for: Campuses, Apartments, Restaurants, Markets

Capacity:

- Product size: 5 ft (l) X 2 ft (b) X 4 ft (h)
- Waste handling capacity: 500 kg-5 ton
- Land requirement: 40-60 sq. ft.
- Operating requirements: 5 HP power supply, bio-culture, dry leaves

Successful installations:

- Sobha Developers Limited
- Brigade Enterprises Limited
- ITC Ltd. Bangalore

Vennar Organic Fertilizer Pvt. Ltd.

www.vennarorganic.com

Phone: +91 80 2245 351/+91 80 2244 9269



Processes **50 kg** in **15 minutes, 10-15 days** curing time thereafter



Rs. 5 lakh upwards



- On-site training
- AMC

C-250 Automatic Compact Composter

(Ecoman Enviro Solutions Pvt. Ltd.)



Description: The C-250 Automatic Compact Composter is noiseless, odourless composting machine that converts organic waste into 25 kg of compost everyday reducing the volume of waste added by 90%.

Suited for: Restaurants, Canteens, Complexes

Capacity:

- Product size: 232 cm (l) X 118 cm (w) X 155 cm (h)
- Waste handling capacity: 250 kg
- Land requirement: Sheltered space to fit the equipment of 103.5 sq. ft.
- Operating requirements:
3-phase electrical supply with 440V/ 50Hz and 10.4 kW of power, no water connection required, vent to outdoors or storm water line

Successful installations:

- Mont Vert Homes
- Amanora Park Town
- Clover Builders

Ecoman Enviro Solutions Pvt. Ltd.

www.ecomanenviro.com
 Phone: +91 20325 35122
 Mobile: +91 99229 13777
 Email: info@ecomanenviro.com



15-20 days



Rs. 9,69 lakh
 + CST/VAT



- Maintenance-free product
- Service on call

Kirloskar Biogas Plant

(Kirloskar Integrated Technologies Ltd.)

Description: The Kirloskar 500 kg Biogas Plant is suited for cooking and electricity purpose, producing 40 cubic metre of biogas per day.

Product output: 480 kg of LPG equiv. per month

Suited for: Hotels, Restaurants, Choultries, Hospitals, Municipals

Capacity:

- Product size: 20 sq. mt.
- Waste handling capacity: 500 kg
- Land requirement: 60 sq. mt.
- Operating requirements: Max. 500 litres water and auxiliary electricity 10 kW Per day

Successful installations:

- Shree Swami Samartha Annachattra Mandal Akkalkot, Maharashtra

Kirloskar Integrated Technologies Ltd.

www.kitlgreen.com

Phone: +91 20 2545 7940/+ 91 20 2545 7939 (225)

E-mail: GTC.KITL@kirloskar.com



20 days of
preparation, daily
production henceforth



Rs. 20 lakh



- On-site training

Large Biogas Plant (Mailhem Engineering Pvt. Ltd.)



Description: The Large Biogas Plant from Mailhem can handle upto 500 kg per day and has had several successful installations all over the city.

Product output: 420 kg of LPG equiv. per month

Suited for: Apartments, Corporates, Municipalities

Capacity:

- Waste handling capacity: 500 kg
- Land requirement: 48 sq. mt.
- Operating requirements: Water-twice the amount of waste. The water usually re-circulates to the input feed

Successful installations:

- KVV Samsthe Boys Hostel, Bangalore
- MTR Foods Pvt. Ltd., Bangalore
- MRPL, Mangalore

Mailhem Engineering Pvt. Ltd.

www.mailhem.com

Phone: +91 20 25650057

Mobile: +91 93733 39159

Fax No.: +91 20 2565 0047

Email: info@mailhem.com/marketing@mailhem.com



21-30 days of incubation period, continuous production thereafter



Rs. 18 lakh



- AMC
- On-site training

The TEAM Process

(Enhanced WAPP Systems Pvt. Ltd.)

Description: The TEAM Process biogas unit is especially suitable for industries and factories and accepts wet garbage, food waste, kitchen trash, used oil, STP sludge, oil & grease sludge.

Product output: 720 kg of LPG equiv. per month

Suited for: Large Apartments, Industries, Municipalities

Capacity:

- Waste handling capacity: 1,000 kg
- Land requirement: 80 sq. mt.
- Operating requirements: Water-is initially required in the ratio 1:2 (weight:volume) and subsequently the effluent is recycled. Electrical connected load will be within 5 kW

Successful installations:

- NTPC, Dadri
- NRL, Assam
- Jambopani Village, Khandwa

Enhanced WAPP Systems Pvt. Ltd.

www.wappsys.com

Phone: +91 96760 16083

Email: wappsouth@wappsys.com



7 days for first batch



up to
Rs. 25 lakh



- On-site training

City Compost Plant

(Karnataka Compost Development Corporation (KCDC))

Description: The KCDC operated City Compost Plant is set on 28 acres of land at Bommanahalli, Bangalore. The plant accepts both segregated and un-segregated waste. The segregated waste generates 30% of original quantity as compost and the un-segregated waste generates about 20% as compost.

Collection service exists (Yes/No): No

Suited for: Centralised municipal wet waste processing

Capacity:

- Waste handling capacity: 75-350 TPD (Ton Per Day)
- Land requirement: 28 acres for windrow composting
- Operating requirements: Water-approximately 2,000 litres per day

Successful installations:

Bommanahalli, Bangalore

KCDC

www.kcdc.in

Phone: 080 2573 0649/2573 2265

Email: mdkcdc@gmail.com



Rs. 1,200 per ton of waste

ES 400 – Animal Ration/ Foliage Shredder

(MK Associates)

Description: The ES 400 – Animal Ration/Foliage Shredder has a shredding capacity of 1.5 ton per hour and mainly accepts garden waste, achieving volume reduction by 20%.

Collection service exists (Yes/No): No

Suited for: Office campuses, Schools, Parks, Municipal, Street Litter Management

Capacity:

- Waste handling capacity: 1.5 ton/hr
- Land requirement: 1.5 ft (l) X 2 ft (b) X 3 ft (h)
- Operating requirements (water, electricity): 3-7.5 HP electrical power, 8-10 HP of fuel engine diesel/Petrol

Successful installations:

- Reva Institute of Engineering and Technology, Bangalore
- Glenmore, Bangalore
- RMRWA, Bangalore

MK Associates

www.mkassociates.net
Phone: +91 80 2358 3935
Mobile: +91 81230 11159



Rs. 2.5 lakh

Compost Conversion Plant (Terrafirma Biotechnologies Ltd.)



Description: The Compost Conversion Plant at Terrafirma Biotechnologies is set on 130 acres of land producing 15% of compost from total un-segregated TPD and 20% from segregated waste.

Collection service exists (Yes/No): Yes

Suited for: Centralised municipal wet waste processing

Capacity:

- Waste handling capacity: 1,000 TPD (Ton Per Day)
- Land requirement: 130 acres
- Operating requirements: Water-Leachete water treated and used for curing

Successful installations:

- Doddaballapur, Bangalore

Terrafirma Biotechnologies Ltd.

www.terrafirmabiotech.com

Phone: 080 2221 5412, 2224 8265, 2228530

Email: bioinfo@vsnl.net/terrabio@bgl.vsnl.net



Rs. 1,100 per ton of waste

Large Biogas Plant

(Mailhem Engineering Pvt. Ltd.)

Description: The Large Biogas Plant from Mailhem can handle up to 1 ton waste per day and has successfully installed plants in Nasik and Vijayawada.

Product output: 840 kg of LPG equiv. per month

By-product: Slurry, twice the amount of waste

Collection service exists (Yes/No): No

Suited for: Municipalities, Restaurants, Corporate campuses, Markets

Capacity:

- Waste handling capacity: 1 ton
- Land space requirement: 14 m X 6 m
- Operating requirements: Water-1:1 ratio of waste:water

Successful installations:

- Nasik Municipal Corporation
- Vijaywada Municipal Corporation

Mailhem Engineering Pvt. Ltd.

www.mailhem.com

Phone: +91 20 25650057

Mobile: +91 93733 39159

Fax No.: +91 20 2565 0047

Email: info@mailhem.com/marketing@mailhem.com



Rs. 27 lakh

Winnergy CleanBox Service

(Noble Exchange Environment Solutions Pvt. Ltd.)



Description: The Winnergy CleanBox Service is a revolutionary on-premise solution that produces eco-friendly biogas which can be used for cooking or to generate electricity.

Product output: 912 kg of LPG equiv. per month

By-product: 160-200 kg of slurry

Collection service exists (Yes/No): Yes

Suited for: Star hotels, Restaurants, Corporate parks, IT campuses, Residential societies

Capacity:

- Product size: 15 m (l) x 5 m (w) x 4 m (h)
- Waste handling capacity: 2 ton
- Land requirement: 75 sq. mt.
- Operating requirements: 3-phase 25 HP power supply for 6 hours/day. The electricity required is 25 Kwh/day. Initially water might be required, after which it is usually re-circulated to the input feed.

Successful installations:

- JSW Steel, Mumbai
- Volkswagen, Pune
- Tata Power, Mumbai



Rs.65 lakh + VAT+ Insurance + Transportation + AMC

The TEAM Process

(Enhanced WAPP Systems Pvt. Ltd.)

Description: The TEAM Process biogas unit is especially suitable for industries and factories. It accepts wet garbage, food waste, kitchen trash, used oil, STP sludge, and oil & grease sludge.

Product output: 3,000 kg of LPG equiv. per month

By-product: Compost, 10% of plant capacity

Collection service exists (Yes/No): No

Suited for: Educational Institutions, Industries, Municipal Corporations

Capacity:

- Waste handling capacity: 5 ton
- Land requirement: 150 sq. mt.
- Operating requirements: Water, initially required in the ration 1:2 (weight:volume) and then the effluent is recycled. Electrical connected load will be within 10 kW

Successful installations:

- Vedanta, Orissa

Enhanced WAPP Systems Pvt. Ltd.

www.wappsys.com

Phone: +91 96760 16083

Email: wappsouth@wappsys.com



Rs. 25 lakh

Kirloskar Biogas Plant (Kirloskar Integrated Technologies Ltd.)

Description: The Kirloskar Biogas Plant can handle 1.5 ton of waste per day and is most suitable for poultry and agro waste.

Product output: 1,080 kg of LPG equiv. per month

By-product: Maximum of 1,000 Litre of biomethanated slurry per day

Collection service exists (Yes/No): No

Suited for: Poultry Farms, Dairy Farms, Agro Industries

Capacity:

- Waste handling capacity: 1.5 ton
- Land requirement: 3,000 sq. mt.
- Operating requirements: Max. 1,000 litres of water and auxiliary electricity 10 kW per day

Successful installations:

- 1.2MW Biogas Power Plant along with fertilizer unit in Fazilka, Punjab.
- Biogas Power Plant of 400 m³ capacity in Kolwan, Distt. Pune

Kirloskar Integrated Technologies Ltd.

www.kitlgreen.com

Phone: +91 20 2545 7940/+ 91 20 2545 7939 (225)

Email: GTC.KITL@kirloskar.com



Rs. 25 lakh

M3RP Waste to Energy Plant

(Southern Cogen Systems Pvt. Ltd.)

Description: The M3RP Waste to Energy Plant is a waste to energy unit that produces energy from un-segregated waste, segregated waste, and all waste that cannot be recycled and is carbon based.

Product output:

Oil - 10% of input of un-segregated waste 33% in case of dry waste
Carbon - 7% of input of un-segregated waste 25% in case of dry waste

By-product: Gas - 13% of input of un-segregated waste
- 48% of the input of segregated dry waste

Collection service exists (Yes/No): No

Suited for: Municipal Corporations, Factories, Institutions

Capacity:

- Waste handling capacity: 6-500 ton per day
- Land requirement: 30 ft x 40 ft, up to 7 acres
- Operating requirements: 30 kW for small plant, up to 300 kW

Successful installations:

- 6 TPD plant in Mysore
- 33.3 TPD plant in Korea
- 6 TPD plant in Czech Republic

Southern Cogen Systems Pvt. Ltd.

www.scogen.in

Phone: +91 8221 228 614, 228 627

Fax: +91 8221 228 620.



Rs. 4-200 Cr

Dry waste – **Rs. 4-50 Cr**

Un-segregated – up to **Rs.250 Cr**

Landfill Waste Processing Plant

(Hanjer Biotech Energies Pvt. Ltd.)



Description: Hanjer Landfill processing plants produce RDF, ingots, and other energy material from landfill waste, and have been successful operating in 16 cities all over India.

Product output:

Bio-organic Fertilizer 14%; Green RDF & RDF in charcoal form 18.5%; Liquid RDF 1.2%; Plastic ingots 2%; Sand 5%

By-product: Remnant material to landfills - 20%

Collection service exists (Yes/No): No

Suited for: Municipal corporations, Existing landfills

Capacity:

- Waste handling capacity: 750 ton
- Land space requirement: 10 acres for project proposed at Subbarayanapalya, Bangalore

Successful installations:

- Pune, Salem, and 16 other operating plants in various cities

Hanjer Biotech Energies Pvt. Ltd.

www.hanjer.com

Phone: +91 22 2684 1425, 2684 1554

Fax: +91 22 2684 2617

Email: info@hanjer.com



Several crores

Waste to Electricity Plant

(Organic Recycling Systems Pvt. Ltd.)

Description: The Waste to Electricity Plant uses DRYAD Technology and operates on Build Own Operate & Transfer Basis (BOOT) to convert segregated waste as well as un-segregated waste into energy.

Product output: Installed capacity 10 MW for power generation

By-product: 150-200 ton of compost per day

Collection service exists (Yes/No): No

Suited for: Municipal Corporations, Existing Landfills

Capacity:

- Waste handling capacity: 1,000 ton
- Land requirement: Project proposed for Mandur

Successful installations:

- Solapur

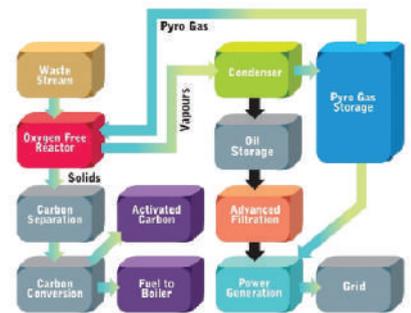
Organic Recycling Systems Pvt. Ltd.

www.organicrecycling.co.in

Phone: + 91 22 4170 2222

Fax: + 91 22 4170 2200

Email: mktg@organicrecycling.co.in/info@organicrecycling.co.in



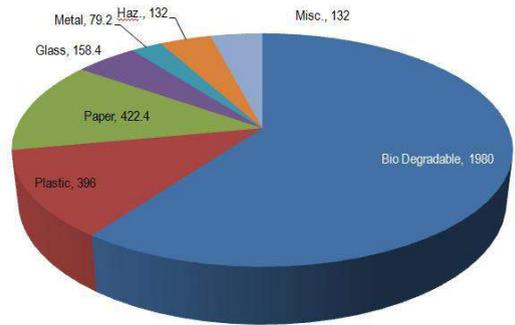
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**PROCESSING
&
MANAGING
OTHER WASTES**

Reducing Waste Going To Landfills

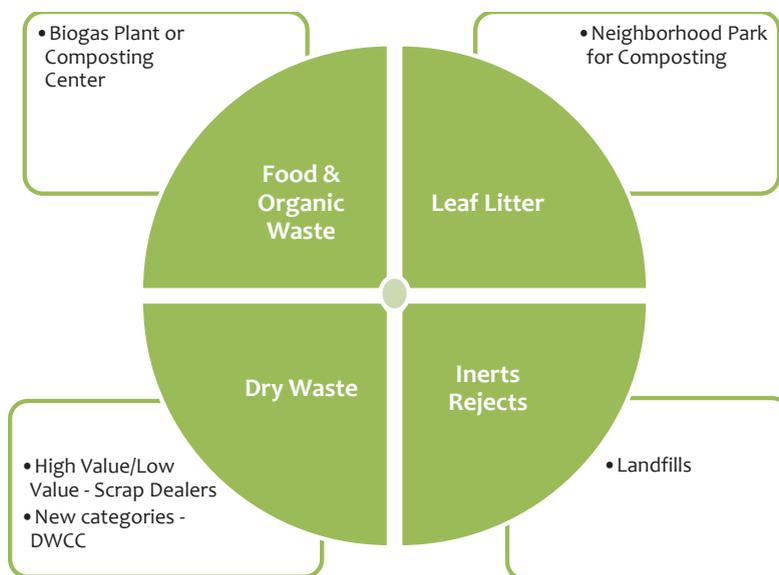
By deployment of appropriate technology, scaling the collection efforts and building method to mainstream that we want to ensure that we don't send any more than inerts/rejects to the landfills. The term landfill is for those waste streams that can no further be upcycled or recycled.

For example, we can reduce tons of waste going to the landfill daily in terms of volume by composting the leaves at BBMP Park or neighborhood levels. This also ensures some nutrients stay in the soil.



Volume of Waste by Category Going to Landfill

Waste Streams Currently Being Managed



Dry Waste Collection Centre (DWCC)



The idea behind establishing DWCCs was to facilitate the streamlining of the entire process of waste management in the city, by concentrating exclusively on dry waste. The DWCCs are equipped with appropriate infrastructure capable of purchasing, collecting, aggregating, and processing both high value and low value dry waste such as plastics, papers, glass, Tetra pak, etc.

remind the public of their duty towards recycling. The BBMP aims to build a brand around the DWCCs by incorporating uniformity in design such that over a period of time the Kartavya centres will become part of the local community fabric and will promote segregation as everyone's duty. They will also function as driving force that will encourage and initiate the process of segregation of waste and in turn result not only in effective waste management but also in income from waste.

The DWCC's are aptly named **Kartavya** - meaning duty that will



The idea behind establishing DWCCs was to facilitate the streamlining of the entire process of waste management in the city, by concentrating exclusively on dry waste. The DWCCs are equipped with appropriate infrastructure capable of purchasing, collecting, aggregating, and processing both high value and low value dry waste such as plastics, papers, glass, Tetra pak, etc.

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of waste and in turn result not only in effective waste management but also in income from waste.

DWCC as a Source of Income and Livelihood

The DWCCs will in future behave as source of livelihood for numerous scrap dealers and resource recovery agents. With the Hub and Spoke model as its foundation and the DWCC being the Hub, the BBMP plans to appoint NGOs, RWAs, SHGs, licensed recyclers or scrap dealers as the sole licensed agents of BBMP to maintain dry waste Collection Centres and / or operate such dry waste Sorting Centres (Spokes). Also, the dry waste collected shall pay the Pourakarmika /public/waste-picker or any individual who brings the waste to the centres.

Corporate institutions, trusts, universities, and companies will also be given an opportunity to showcase Extended Producer

Mural at a DWCC



Responsibility (EPR) through these DWCCs, where they will have the opportunity provide the gap funding.

Thus, through the establishment of DWCCs, the BBMP hopes to:

- Create a value chain for Low Value Waste
- Aggregate Low Value, Medium Value, and High Value Waste through mechanisation processes such as bailing and compacting to reduce mass. Reduced mass will subsequently result in transportation vehicles accommodating more volumes and this will eventually result in reduction of transport costs
- Create an inclusive programme that provides training for the informal sector (waste pickers, Pourakarmikas, contractors) and helps them earn their livelihood

The BBMP has plans to establish dry waste Collection Centres (DWCC) in all wards of the city in the next 8-10 months as a part of its Solid Waste Management Policy. At present, 60 of the 198 wards in the city have DWCCs.

Dry Waste Sorted, Collected & Stored at DWCC



Aggregation & Bailing of Dry Waste



A DWCC in Bangalore



Employees at DWCC



Extended Producer Responsibility (EPR)

EPR means the responsibility of producers for their products is extended to the post consumer stage. In other words, under EPR, a company must be concerned not only with making the product but also with what will become of the product at the end of its useful life. Under EPR programs, the costs of waste management are internalized into the product price and the consumer, when purchasing the products, pays for the waste management too. EPR programs are typically aimed at increasing recycling and often contain mandated recycling targets.

While EPR is intended to reduce the amount of materials going to landfills, it is also aimed “up-stream” - at product design and material selection. Its underlying theory is that if producers must pay for waste, they will have an incentive to make products that are less wasteful. EPR behaves as the missing link between product design and recycling, which will make recycling more sustainable and viable.

There is no “one size fits all” model for EPR programs. They vary by country and by products being targeted. In Germany the full

responsibility of EPR is shifted to the industry whereas in Japan and France the responsibility is shared by the government and private industry.

EPR in India

In 2009, the Ministry of Environment & Forests (MOEF) through the Central Pollution Control Board (CPCB) introduced EPR within the framework of new e-waste guidelines. These guideline have been since notified with the legislation being enforced w.e.f from May 2012.

The result of this is that companies, especially large brands like Nokia, HP, and Wipro etc. have introduced some form of take back of their products to fulfill their EPR.

Plastic Rules 2011

Under these rules, EPR has been described as the “responsibility of a producer or manufacturer of plastic carry bags and multilayered plastic for the environmentally sound management of the product until its end life. This also applies to all manufacturers using such packages.

For setting up collection center, the municipal authorities may ask the manufactures either individually or collectively in line with the

principle of Extended Producer Responsibility to provide the finance to establish the collection centers. This is a clear message to e-waste FMCG companies to participate in collection and recycling of their packaging waste.

Pilots in Progress for Other Waste Streams

Pilots are also being initiated in the following niche streams for collection, management, processing and/or disposal of different kinds of waste, on which adequate data is not available yet. These waste streams include:

- Construction materials/ debris - construction debris can also be recycled and the City plans to commence a pilot to recycle that stream as well.
- E-waste
- Street leaf litter
- Household biomedical waste
- Hazardous/toxic waste
- Street vendors, temples, places of worship, vegetable & fruit markets, slaughter houses, meat and fish market, goshala , piggeries
- Exhibitions, fairs, religious assemblies, conferences etc

**CASE STUDIES
ON IN-SITU WET
WASTE
MANAGEMENT**

Britannia

Britannia, a multi-national company is a renowned manufacturer of FMCG products. This Indian food corporation has several campuses across India and one of them is located at Old Airport Road, Bangalore. Spread over 7 acres, the campus with 300 employees primarily generates recyclable and bio-degradable waste.

Type of industry: Food industry

Campus size : 7 acres

No. of employees: 300

Scale of waste generation: Medium

Type of waste generated daily:

Waste type	Kg	% Weight
Wet Waste	21.0	27%
Dry Waste	27.9	36%
Rejects	28.5	37%
Total	77.4	100%

Pre-intervention waste management practise:

- Garden litter – though not audited, the quantity was suitable for composting. There was an existing attempt to compost some of the garden waste.
- Leaf litter, food waste, and mixed waste from workstations, cafeteria, and restrooms put out in an enclosed area for collection by the BBMP contractor. This included:
 - Recyclable and organic waste put out for garbage collection
 - Significant quantities of food waste due to lack of awareness amongst employees
 - 40% of 28 kg of rejects included food waste
 - Only high value waste (newspapers, carton boxes, etc.) being recycled
 - Dry waste also discarded as rejects as mixed with food waste

Approach & Implementations:

As part of implementation process, Britannia set up an 800 sq. ft. dry waste sorting and wet waste composting unit within the premises to manage the waste generated on-site. They also appointed 2-3 individuals from the rural area to manage the eco centres.



Before WMS initiative

22.53
mg/annum

After WMS initiative

5.65
mg/annum

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Main steps in the implementation of the programme involved:

- Placement of two separate bins in all common areas of the premises (dining area, kitchen, near vending machines & water coolers, guest house)
- Ensured correct labelling of the bins as wet and dry, for organic and recyclable waste respectively
- Set-up of sorting and collection unit for dry waste. Dry waste is collected and brought to the sorting unit, categorised as per type, and transported through a network of scrap dealers to the relevant recycler
- Collect and convert wet waste into valuable compost by using three composters installed on site. The compost is used as manure for the sprawling gardens on campus.
- Availability of capacity and manpower to manage around 200 kg of dry and wet waste generated on the campus every day
- Intensive waste handling training for Housekeeping and support staff. Training conducted every quarter
- Collection of food waste in black bags and brought to compost area
- Collection of recyclable waste in white bags and brought to sorting/unit
- Collection of e-waste in separate receptacles and sent for recycling
- Provision of water bottles and ceramic coffee mugs to employees to reduce use of paper mugs
- Conduct regular sensitisation and awareness programmes for Britannia employees across all levels
- Display information boards in canteen to show amount of food wasted every day
- Installation of leaf shredder for garden litter management
- Use of recycled products such as pens, paper, tissue rolls, etc.



Impact

- 75% reduction of Greenhouse Gases (GHG) emission
- Ripple effect: Launch of similar programmes in other units and change in waste management practises in employee homes

Waste type	Before (Cost per Month) INR	After (Cost per Month) INR
Initial Capital	21.0 (Lakh)	5,000 (Interest rate is taken for setting up initial infrastructure)
Operational Expenses	15,000 (Given to BBMP for lifting Waste)	20,000 (for running WMS)
Waste Generated	17,000 (Cost of paper cups and other waste in canteen etc.)	Waste reduced through this new initiative
Compost	1,500 (We used to buy this for garden fertilizers)	We started using compost from Organic Waste.
Recycled Products	8,000 (Amount spent on office stationary)	We started using recycled products from dry waste.
Total	41,500	25,000

With the successful implementation of the programme, at least 90% of the waste output from Britannia's Old Airport Road premises is either recycled or composted making it a near zero-waste facility

BOSCH Limited

Bosch Limited, Bangalore has several campuses, but the one being described here is located at Adugod. Apart from initiating several in-house initiatives to manage waste on campus, Bosch has also taken up the initiative of extending its corporate principles to the neighbourhood of Lakkasandra, in collaboration with an NGO - Saahas, whose solid waste management unit in Koramangala – Kasa Rasa Unit – has been partly funded by Bosch.

Type of industry: Automotive Technology, Industrial Technology, Consumer and Building Goods Technology

Campus size : Approx 75 acres

No. of employees: 5,703

Scale of waste generation: Large

Bosch's Aim – 'Zero Waste Discharge to BBMP Landfill'

It aims to achieve this through:

- 1) Campus engagement through in-house waste management principles (wet waste)
- 2) Citizen and trader engagement through ward adoption (Lakkasandra)
- 3) Pourakarmika and contractor capacity building in association with Saahas, funded by Bosch. (Training programmes and Kasa Rasa Unit)



Type of Waste Generated	Processing Method/Disposal Method		
	Before WM Initiatives	After WM Initiatives	Other In-house Initiatives
Leftover food	Avg. 208 Kg/day after water extraction given to piggeries	Avg. 152Kg (reduced through initiatives of the campaign).	Introduced campaign to reduce food waste
Vegetable cuttings	300 Kg/day given to BBMP	NIL, composted daily in-house	Introduced organic waste convertor unit, to convert wet waste into compost.
Dry leaves & garden litter	Was given to KCDC	To be brought in-house in phase 2	Set up additional shredder to handle dry leaves and garden waste. In discussions with ITC for Paper recycling tie up.

Lakkasandra Ward Adoption – Ward 146



Pilot Area

Interim Dry Waste Collection Centre

Lakkasandra Ward BBMP office (old) has been allocated as the potential dry waste Collection Centre. Civil work is yet to be initiated. Pourakarmikas have started collecting dry waste in sack bags and same is stored at Lakkasandra ward office before giving it to Kasa Rasa.

Waste management activities in the ward kicked off on 16 March, 2013

The programme was formally inaugurated with much fanfare. A group of enthusiastic volunteers from Bosch performed a street play in the presence of residents, senior staff of Bosch, ward councilor, and BBMP employees including Pourakarmikas. The volunteers were assigned specific areas in the ward and they conducted door-to-door campaigns to create awareness on waste segregation at source. Also, political and

Data	Nos.
Populations	5,800
Households	
Nanjappa Layout	1,000
Aiyappa Layout	250
Pukhraj Layout	200
Shops & commercial establishments	100

Demographics of pilot area

Waste to Landfill

Total weight of waste ending up at landfill - 3.6 ton per day

Parametre	Households
Segregated	5
Mixed	36
Compost	0
Sells Waste	15
Regular collection	22
Irregular collection	18

Household Waste Details

Waste type	Quantity (kg)		Total (kg)
	Household*	Bulk*	
Wet Waste	232	297	529
Dry Waste	261	108	369
Mixed Waste	2,407	319	2,726
Total	2,900	725	3,625

administrative involvement was present along with residents and volunteers.

A training programme was conducted at Kasa Rasa. About 60 Pourakarmikas including, contractors and supervisors attended the session. They were familiarised and given hands-on training on segregation, secondary sorting, and composting. Pourakarmikas were educated about types of household waste generated as well as on the scientific way of collection and transfer of the same. This session was also intended to help the Pourakarmikas understand

the current incorrect practices and its impacts on health and environment. Pourakarmikas and supervisors were explained about necessary preparedness, use of Personal Protective Equipment (PPE), planning, and monitoring of segregation as well as collection.

2 April, 2013 - Another street play was performed in the pilot area

8 April, 2013 - 14 large bins were donated by Bosch to the contractor.

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GLOSSARY
FAQ
DIRECTORY

a

Active Landfills: Those landfills still accepting MS waste.

Acute Toxicity: Toxic effects which can cause rapid (acute) deleterious effects on biological (human, animal, plant) systems.

Aeration: The process of exposing bulk material, like compost, to air. Forced aeration refers to the use of blowers in compost piles.

Aerobic: Living systems or processes that require, or are not destroyed by, the presence of oxygen. (See: anaerobic).

Aerobic Decomposition: The first of the typical decomposition phases that occur in landfilled wastes. Refers to decomposition that takes place in the presence of oxygen. Carbon dioxide (CO₂) is generated and oxygen is consumed.

Aerobic Treatment: The process by which microbes decompose complex organic compounds in the presence of oxygen and use the liberated energy for reproduction and growth (such processes include composting, secondary wastewater treatment, extended aeration, trickling filtration, and rotating biological contractors).

Anaerobic: A living system or process that occurs in or is not destroyed by the absence of oxygen.

Anaerobic Decomposition: The second phase of decomposition that typically occurs in landfilled wastes. Refers to decomposition in the absence of oxygen with (when complete) results in the formation of mainly methane (CH₄) and carbon dioxide (CO₂) gases.

b

Baling: Compacting municipal solid waste or plastic and metal recyclables into blocks (called bales) to reduce volume and facilitate handling.

Best Practice: The planning and/or operational practice that is the most technically and politically feasible, cost-effective, sustainable, environmentally beneficial and socially sensitive, to a particular locality.

Bio-accumulation: The retaining and accumulation over time of certain chemical compounds in organic matter such as the tissues of plants and animals used as food sources.

Bio-degradable: Capable of decomposing rapidly by microorganisms under natural conditions (aerobic and/or anaerobic). Most organic materials, such as food scraps and paper are bio-degradable.

Biogas: Gas formed by digestion of organic materials. Typically dominated by CH₄ and CO₂ in a landfill.

C

Centralised Composting: System utilising a central facility within a defined area with purpose of composting the putrescible fraction of MSW.

Collection: The process of picking up wastes from residences, businesses, or a collection point, loading them into a vehicle, and transporting them to a processing site, transfer station or landfill.

Collection Timing: The pre-determined time period when MSW is collected from a location or pick-up point.

Collection Vehicle: Vehicle used to transport MSW collected from premises and streets to transfer stations and waste disposal site.

Compost: The relatively stable humus material that is produced from a composting process of putrescible fraction of MSW in which bacteria in soil mixed with it break down the mixture into organic fertiliser

Composting: 1. The controlled biological decomposition of putrescible fraction of MSW in the presence of air to form a humus-like material. Controlled methods of composting include mechanical mixing and aerating, ventilating the materials by dropping them through a vertical series of aerated chambers, or placing the compost in piles out in the open air and mixing it or turning it periodically (windrow

composting). 2.The controlled degradation of putrescible fraction of MSW following some form of pre-processing to remove non-compostible MSW.

d

Decomposition: The breakdown of matter by bacteria and fungi changing the chemical makeup and physical appearance of MSW in landfills, composting and/or fermentation processes.

Disposal: 1. The final placement of MSW that is not salvaged or recycled. 2. The process of finally disposing MSW in a landfill. 3 MSW disposal is an ultimate action by which MSW is disposed on land in acceptable engineering manner with and/or without previous treatment/processing and/or recycling.

Drop-off Centre: A method of collecting recyclables or compost in which the materials are taken by individuals to collection sites and disposed into designated containers.

f

Fermentation: Chemical reactions carried out by living microbes that are supplied with nutrients in the presence of heat, pressure, and light. The result of these reaction is usually methane, carbon dioxide and water.

g

Garbage: An American term for municipal solid waste arisings which include the putrescible fraction of MSW such as animal and vegetable waste resulting from the handling, storage, sale, preparation, cooking, and serving of foods.

Generation: 1. MSW generation is a process of creating heterogeneous mixture of materials which are considered to be of no further use to the MSW generator. MSW is usually discarded from households, residential areas, commercial activities, educational establishments, hospital and clinics, business, shops, industries, etc. 2. Non-hazardous industrial waste, acceptable quantities of non-hazardous agricultural wastes, municipal wastewater (sewage) sludge and acceptable quantities of non-hazardous industrial sludges are also included in municipal solid waste generation

Generator: Any person or organisation whose actions or process generate MSW

h

Hazardous Waste: Waste generated during production or other activities by society that

can pose a substantial or potential hazard to human health or the environment when improperly managed. Possesses at least one of four characteristics (ignitability, corrosivity, reactivity, or toxicity).

i

Incineration: 1. A treatment technology involving destruction of MSW by controlled burning at high temperatures, eg, burning sludge to reduce the remaining residues to a safe, non-combustible ash which can be disposed of safely on land. 2.The thermal process aimed in MSW destruction. It is applied in countries where high content of combustible fraction (paper and plastics/synthetics) is present in the MSW and where land for disposal is very limited and scarce. The main objective of this process is in reducing volume of MSW so that landfill life span could be extended. It requires high technological level in the country which is supported by adequate equipment, infrastructure facility and trained personnel.

In Situ: Processing at source

l

Landfills: Designed, controlled and managed disposal sites for

MSW spread in layers, compacted to the smallest practical volume, and covered by material applied at the end of each operating day (see also sanitary landfill).

Leachate: Waste water that collects contaminants as it trickles through MSW disposed in a landfill. Leaching may result in hazardous substances entering surface water, ground water, or soil.

m

Mandatory Recycling: Programs which by law require consumers to separate waste so that some or all recyclable materials are recovered for recycling rather than going to landfills for disposal.

Municipal Solid Waste (MSW): Includes non-hazardous waste generated in households, commercial and business establishments, institutions, and non-hazardous industrial process wastes, agricultural wastes and sewage sludge. In practice, specific definitions vary across jurisdictions.

p

Producer Responsibility: In order to reduce generation of packaging and other commercial waste, many governments have introduced the legislation requiring certain type of

'producers' to minimise their packaging and/or accept back their own products which have no more value for consumers. In effect, the responsibility e.g., for packaging waste is transferred for the municipality to the 'producer'.

r

Recyclables: MSW fractions that still have useful physical and/or chemical properties after serving their original purpose and that can therefore, be reused or re-manufactured into additional products.

Recycling: Separation physical/mechanical process by which secondary raw materials (paper, metals, glass, plastics/synthetics) are obtained from MSW. The process could be accomplished manually, by simple and/or sophisticated mechanical equipment.

s

Source Reduction: Reducing the amount of waste entering the MSW stream by redesigning products or patterns of production or consumption (eg using returnable beverage containers). Synonymous with waste reduction.



Source Separation: Segregating various wastes at the point of generation (eg separation of paper, metal and glass from other wastes to make recycling simpler and more efficient).

w

Waste Management Hierarchy: The waste management hierarchy is a symbol for the strategic options available for dealing with MSW and their desirability. An adapted version of the hierarchy presents the more 'desirable' waste management practices at the top of the hierarchy (avoid, minimise and/or recover material) and the least 'desirable' practices at the bottom (treatment and/or disposal in landfill), with dumping "floating" around the bottom, not even recognised by the MSWM concepts as an option in industrialised countries of the West.

Waste Stream: The total flow of MSW from homes, businesses, institutions, and manufacturing plants that are recycled, burned, or disposed of in landfills, or segments thereof such as the "residential waste stream" or the "recyclable waste stream".

FAQs for Individual Generators such as Households



1 What do you mean by waste segregation/separation?

Waste segregation means keeping wet and dry waste separately so that dry waste can be recycled and wet waste can be composted.

2 Why should I do it?

- 1 To reduce waste that enter landfills which will in turn reduce air and water pollution.
- 2 To allow use of various waste management processes - composting, recycling, and incineration - on different types of waste

3 How do I practice waste management at home?

- 1 Use separate containers for dry and wet waste in the kitchen
- 2 Take two bags for dry waste collection – one bag for paper and plastic and one for the rest of the household waste
- 3 Clean and dry the plastic from the kitchen before throwing it into the dry waste bin. Wash glass/plastic containers for re-use
- 4 Throw wet waste from the house daily. Store and throw dry waste from house, once a week.
- 5 Keep a paper bag to throw sanitary waste and store separately

4 What are the first few steps to initiate waste management in apartment complexes?

- 1 Form a group of people with same interest
- 2 Explain separation of waste to your family/neighbours in your apartment building
- 3 Get the staff in the apartment building to also understand waste management
- 4 Use separate storage drums to store dry waste and wet waste
- 5 Have the dry waste picked up by the Dry Waste Collection Centre (DWCC) or your local scrap dealer

5 What is dry waste?

Paper, plastic, metal, glass, rubber, thermocol, styrofoam, fabric, leather, rexine, wood – anything that can be kept for a long period without decomposing is dry waste.

6 Will dry waste smell if I store it for a week?

If it is clean and dry, then it will not smell. Make sure that plastic bags/covers of milk, curd, oil, idli batter, any food item, are washed and dried before putting them in the dry waste bag. Then they will not stink.



7 Will I have cockroach, rat, and/or fly problem?

Only if any leftover food or organic matter is present in the dry waste. Clean, dry waste will not attract any pests.

8 How do I store pizza and cake boxes?

Clean the remaining food from the pizza or cake boxes with a wet kitchen cloth or wash them quickly in water and let them dry before putting them in the dry waste container.

9 How do I store pickle and sauce bottles?

Sauce bottles should be rinsed/washed very well with water. Pickle bottles should be cleaned/washed with soap and water, as they contain oil. Basically, no food should remain in the bottles. Clean them to use again.

10 What do I do with milk packets, dosa packets, and yoghurt boxes?

Wash them very well. Completely cut the milk, yoghurt, and dosa batter packets from on one side, and wash the remaining food particles. They can be put for wash with the dishes in the sink, then dried, and thrown into the dry waste bag.

11 If I order food from a local darshini - do I have to rinse the plastic bags/containers?

Oh yes. Any plastic containing any food has to be rinsed or washed with soap and water, if required, before throwing them in the dry waste bag.

12 Should I rinse my juice containers/tetra packs?

Yes, otherwise ants will be attracted to the sugar in the juice.

13 Will my biscuit/bread packets attract ants? How do I store them?

Make sure all the bread/biscuit crumbs are removed from the packet so that they do not attract ants. If the biscuits are too oily, the packet may need to be washed with soap and water.

14 What do I do with old clothes/shoes/handbags/belts/toys?

If they are still in usable condition, they should be given to some organisation that collects them. If they cannot be used again or are quite damaged, they are still categorised as dry waste.

If, clothes are dirty with body fluids such as blood, they come under the sanitary waste category.

If, clothes are dirty with paint or any chemicals, they are come under Household Hazardous Waste (HHW).

15 What do I do with old bed sheets/mattress/pillows, etc.?

Same as above

16 What do I do with my old furniture/broken glass table?

Old furniture can be recycled, if not, along with broken glass it can be thrown away as debris or rubbish (inerts).

17 What do I do with old vessels/non-stick pans, etc.?

If they are not broken, they are recyclable dry waste. If broken, they are debris or rubbish (inerts).

18 What do I do with my old taps/broken sanitary ware?

Old taps – recyclable dry waste. Broken sanitary ware – debris or rubbish (inerts).

19 What do I do with my old brooms/floor cleaning clothes/dry mops bathroom cleaning brush?

Bathroom cleaning brush is sanitary waste.

20 What is the best method to store dry waste?

Store it in a bag in the utility area/ store room after cleaning and drying till it is picked up by the BBMP or the waste management organisation

21 What is e-waste?

E-waste or electronic waste consists of batteries, computer parts, wires, electrical equipment of any kind, electrical and electronic toys, remotes, watches, cellphones, as well as bulbs, tubelights, and CFLs.

22 How do I store e-waste?

Store them in separate closed boxes/containers; keep them away from moisture; and make sure you do not to put anything else in it.

23 What is wet waste?

Wet waste consists of kitchen waste - including vegetable and fruit pieces and peels, tea leaves, used coffee powder, eggshells, leftover meat, fish scales, as well as cooked food (both veg and non-veg).

24 Can I compost at home?

Yes, you can compost at home. Home composting can be easily done in Daily Dump's pot system, or in any aerated container.



25 I don't have the time to compost at home do I have any other option?

If you live in a large apartment building, a community composting system such as tank composting or an Organic Waste Converter (OWC) could be set up for all the wet waste from all the houses residents. If not, the wet waste can be given every day to the BBMP.

26 If I don't use a plastic bag inside the dustbin, can I directly throw my food waste in the bin?

Before we started using bin liners, we all used to put our garbage directly in the bin, and wash it every day. That is what we will have to do now. The bin can have a newspaper or a layer of sawdust in it if you don't want to put the wet waste directly into it.

27 What is biomedical waste?

This includes used menstrual clothes, sanitary napkins, disposable diapers, bandages, and any material that is dirty with blood or other body fluids.

28 How do I dispose sanitary pads and diapers?

They should be put/covered in a newspaper, marked with a red cross, and given to the BBMP every day.

29 How do I throw expired medicines/injections/condoms/dirty cotton?

Expired medicines and injections along with used syringes come under HHW or Household Hazardous Wastes. They should be kept separate from other categories of waste and given to the BBMP once every quarter.

Condoms, dirty cottons, etc. are sanitary waste – they should be wrapped/covered in a newspaper, marked with a red cross, and given to the BBMP every day.

30 Is my shaving blade a biomedical waste?

It is HHW or Household Hazardous Waste just like used syringes, etc. It should be kept separate from other categories of waste and given to the BBMP.

31 What do I do with waxing strips?

Used waxing strips are sanitary waste - they should be wrapped covered in a newspaper, marked with a red cross, and given to the BBMP every day.

32 What are hazardous wastes?

HHW or Household Hazardous Wastes includes three sub-divisions: e-waste; toxic substances such as paints, cleaning agents, solvents, insecticides and their containers, and other chemicals; and biomedical wastes such as used syringes, expired medicines, thermometres, used cosmetics, and many more.

33 I have just painted my room. How do I throw half-used paint cans?

They come under HHW or Household Hazardous Wastes. They should be kept separate from other categories of waste and given to the BBMP once every three months.

34 Under what category do I keep cosmetics?

They come under HHW or Household Hazardous Wastes. They should be kept separate from other categories of waste and given to the BBMP once every three months.

35 What about pesticides, cleaning solutions, mosquito repellents?

Same as above.

36 What do I do with my tube lights and other bulbs?

Same as above

37 How do I throw dog shit? In case of loose motions, what is the best way to dispose it?

It is a sanitary waste. Wrap it in a newspaper, mark with a red cross, and hand it over to the BBMP every day. In case the dog or cat has loose motions, do the same with the cloth used to clean the liquid shit/motion.

38 How do I throw human hair/nails?

Human hair and nails are sanitary waste. Cover it in a newspaper, mark it with a red cross, and give it to the BBMP every day .

40 What do I do with garden waste?

Garden waste is collected by the BBMP on particular days or it can be given to the nearest park for composting.

FAQs for Bulk Generators such as Apartments/ Gated Communities



- 1 Who are called large generators of waste?**
The large generators of waste include hotels, shopping complexes, malls, wedding halls, convention halls, temples, and residential apartments (with 10 houses and more), institutions, public offices, railway stations, and bus stands which generate 100kg or more of wet waste per day.
- 2 Why are apartments with over 10 houses called large generators?**
A typical ward has, at the very minimum, over a 100 apartments with more than 10 houses . An apartment complex can also very easily combine its resources to manage its waste. The combination of these two reasons leads to a reduction of waste at source, which is very important for an efficient solid waste management system
- 3 I pay property tax and SWM cess/tax - why should I manage my waste?**
Only a part of the SWM cess/tax we pay is used for door-to-door collection of waste and its management. There is the other component of services that comes out of the SWM cess that is sweeping of streets, footpaths, cleaning of roadside drains, cleaning of general areas such as playgrounds, graveyards, flyovers, and subways.
- 4 I believe that this is an attempt by the BBMP to wash-off its hands from providing service to apartment complexes?**
As a large generator of waste, it is our responsibility to manage our waste. It becomes the BBMP's responsibility to deal with waste that cannot be recycled and composted at the point of generation. And this is a service that is available. Rejects will be picked up by the BBMP.
- 5 What is the KMC Act?**
KMC Act is the Karnataka Municipalities Act, 1964
<http://dpal.kar.nic.in/.%5C22%20of%201964%20%28E%29.pdf>
- 6 What does the Act have to say about management of garbage?**
Under sections 256, 257, and 260 of the Karnataka Municipal Corporations Act, 1976, apartment complexes are supposed to take care of their water, electric, and garbage expenses. The KMC Act also specifies that every apartment complex should have a space for composting garbage, in this way they will not have to depend on the government for waste management.

7 After the notice has been issued to me, do I need to be concerned as my apartment association has not made any provisions? OR I don't have an association in my apartment complex. What do I do?

The BBMP Commissioner has extended the deadline for apartment complexes by 2 months, so there is time to start a system. Please speak to your neighbours, especially your association/committee members about taking this issue seriously. If there is no association committee in your building, please form one by bringing all interested persons together.

8 What is the first step to set-up/start waste management in my apartment complex?

Ask your association/committee members to organise a meeting of all residents. Conduct an awareness programme about this issue, followed by a discussion of what needs to be done. Ask for volunteers from among the residents to keep the programme running.

9 Where can I find awareness material for my apartment complex?

On Facebook you will find awareness material. Also, there are several sources of awareness material specific to BBMP's requirements.

- 1 The group Waste Segregation and Recycling - several resources for awareness have been uploaded in the Files section of the group.
- 2 The page BBMP Speak on Solid Waste Management
- 3 The community Solid Waste Management Round Table

10 Are there any resource persons available to conduct workshops?

Same as above

11 How do we teach domestic help and the housekeeping staff?

Using the awareness material as above, someone who knows how to speak in Kannada (or the language spoken by the housekeeping staff) should explain what needs to be done by them. It is important to teach them the need for waste separation so that they take it seriously, and take the necessary steps.

You could also show them movies - refer to question 9 for more information.

12 What are the different arrangements required?

- 1 Different bins to: (1) store dry waste till it is picked up, (2) collect wet waste every day, and (3) collect sanitary waste every day – this should be dry or the mess created will be unbearable.
- 2 A dedicated/specific area to keep the dry waste bins which is clean and dry and protected from sun and rain.



If the apartment building is big, a composting system for the wet waste – this could be a tank composting system, an Organic Waste Converter (OWC), a Bokashi composting system, or the building could choose a biogas plant – could also be big

13 From individual houses - should the housekeeping/domestic servant/help collect dry waste only once a week?

It is usually collected once a week, as the pick-up happens once a week. This usually works well as it keeps the common storage areas clean for the entire week. However, it can be collected as often as needed, based on the association's decision. Individual residents can also choose to throw the dry waste themselves in the bins .

14 Where do we keep the dry waste?

Keep the dry waste in a dedicated area, protected from the sun and rain. The area should be clean and dry, away from areas that require plumbing and electricity repair work. The bins should have lids which should always be kept closed. Precaution should also be taken to not keep it open in the basement area and/or near the car park, as it could be a potential fire hazard.

15 Who will pick-up the dry waste? Can I give it to my contractor to pick-up my dry waste?

You can sign an arrangement with any organisation/NGO that operate the Dry Waste Collection Centre (DWCC). You can also sign an arrangement with specific scrap dealers that the BBMP authorises. These scrap dealers will collect all dry waste.

The regular garbage contractor is not required to collect dry waste from the bulk generators, however if you want, you could choose a separate scheduled pick-up. Other scrap dealers may also be considered, but you need to ask them how they plan to handle it.

16 I don't have the time to give it to the nearest Dry Waste Collection Centre - can they pick it up? Do I have to pay them?

The DWCC will pick-up the waste. Check the terms of service of the DWCC near you and work out the details. If there are more apartments in your neighbourhood, it might be easy to have a common timing for pick-up by the DWCC.

17 What is the ideal quantity that my apartment complex should store before calling for a pick-up?

There is no ideal quantity – the volume and weight should be such that pick-up and transport is easy and at the same time of sufficient quantity for financial feasibility. Check the terms of service of the DWCC near to you.

18 Can I sell my dry waste to the nearest scrap shop or Dry Waste Collection Centre?

The nearest scrap shop will only take certain items that they can be sold for a profit. They might not accept the rest of the dry waste if you give it to them. You can call the scrap dealer to your building after collecting all the dry waste, ask them to pick out the items that they want, and they will pay you for it. Give the remaining dry waste to the DWCC.

Check the terms of service of the dry waste collection centre closest to you. BBMP's DWCC will not pay for really low value dry waste – it is a service they are providing to us. However, if you are sending all the dry waste to the centre they will pay you a nominal minimum amount.

19 My area does not have a Dry Waste Collection Centre. What are my options?

You can tie up with variety of organisations that pick-up dry waste for recycling or enter into an arrangement with your nearest DWCC. Also, you could speak to your local scrap shop dealer and work out an arrangement. There are many organisations that collect waste for recycling.

20 What system will have to be started for collection of wet waste from individual houses - earlier it was easy as people would hand over waste in plastic bags so it would not leak?

Before the use of bin liners, we would put all our mixed waste directly into the bin. We have to do the same thing now with wet waste – put it directly into the dustbin, which will then be emptied directly into the wet waste collection bin by the domestic help servant. If you want, you can put a newspaper or sawdust in your wet waste bin, both are compostable.

21 What are the different composting options available for apartments ?

Tank composting with blowers, OWC (Organic Waste Converters), Open Pile Composting (only for garden waste, not kitchen for wet



waste), Bokashi composting system, Manthan from Daily Dump, Roli Poli, Morph TM Composter, and many more.

22 I don't have place for apartment composting. What do I do?

Give your wet waste to the BBMP for a fee, or tie up with neighbouring large apartments that have a composting system who will take your wet waste (they may charge too).

23 The BBMP states that if the apartments cannot make provisions for composting, they can pay the BBMP a fee of Re 1 per kg of waste. Who will weigh it? To whom should the cheque be in favour of? This is still being planned by the BBMP and will be notified shortly.

24 If my area has a community composting facility – can I give my waste to them? Who will pick-up the waste?

Tell the operator of the community composting facility that your apartment is ready to supply wet waste. The operator will plan the pick-up with the contractor.

25 Will the community composting operator collect the wet waste daily? Do I have to pay them?

BBMP operates the community composting programme, and may operate a pick-up system for apartments too. If they do, you may have to pay them.

26 My apartment has only 10 houses and we do not generate 100kgs of waste. Do we still have to compost?

Yes, you still have to compost. The reason is as explained in point question 2.

27 How do we collect sanitary waste? Should individual houses give sanitary waste in newspapers marked with a red cross?

Yes, it should be covered in newspaper bags marked with a red cross. The apartment complex can have a separate container/box to collect the sanitary waste, which should always be kept in a dry open place.

28 What do we do about houses that do not separate their waste? Will the entire apartment complex be fined even if one house does not manage its waste?

Yes, the entire apartment complex will have to pay a fine. More than that, the trouble to manage the large amount of mixed waste, arguing at every stage with the contractor to pick-up the mixed waste, and the unpleasantness created by those who do not separate should be avoided.

29 What is the amount of fine we have to pay?

As per the Schedule of Fines, the fine for non-processing of wet waste on the premises is Rs. 500 per day.

30 How will it be imposed? Who will collect it? Where should we pay the fine?

This is still being planned by the BBMP and will be notified shortly.

31 What happens to people who continue to not follow regulations?

It is up to the association/committee to decide what action they would like to take, as the apartment complex is considered as a whole as far as the BBMP is concerned.

32 I am confused, we have a private contractor who comes in a lorry to collect the daily garbage - he does not have enough space for a compartment in the truck. Will the apartment complex be penalised for handing over the waste to the contractor?

All this will change when the new contract for door-to-door collection comes into effect. Under the new system, the lorry that comes to collect the daily garbage does not need a compartment as it is only allowed to pick up wet waste and sanitary waste on a daily basis. For dry waste collection, which is done once a week, there will be a separate vehicle and pick-up.

33 Can I keep track of the destination of the wet waste collected by the private contractor?

Yes, once the back-end infrastructure comes up, it should be possible for you to know where your wet waste is going.

34 My neighbour throws garbage into the vacant plot besides our apartment complex? How does the penalty/fine work? Do we need proof?

Yes, he should pay fine for dirtying the empty plot; as per the Schedules of Fines, the fine is presently fixed at Rs. 200. Your local health Inspector or environment engineer is authorised to levy the fine. Yes, some proof would be required!

35 What should the apartment complex do with garden waste?

Garden waste can also be composted by open pile composting. All it needs is a space of 5 ft x 5 ft for one pile. If not, garden waste can be given to the BBMP – drop it off at the nearest park which has composting facilities, or call them to pick it up, which they will do for a fee.



36 How does the apartment complex manage Household Hazardous Waste?

The apartment complex should collect Household Hazardous Waste (HHW) from each individual unit just before the collection by the contractor is scheduled. It therefore becomes the responsibility of the household to store the waste till such time.

Keep a common drum away from rain/sun and get individual houses to throw the HHW in the drum.

Plan the pick-up details with your contractor based on the pick-up schedule for individual houses.



Directory

List of solution providers- Small, Medium & Bulk

Technology and Solutions Providers - Small, Medium & Bulk

Sl. No.	Name	Contact Person/Details	E-mail ID & Website	Solutions Category
1	ANS Consultants	HM Shivakumar 8105573163	aganinandizo@hotmail.com	S/M
2	Arjun Energy Corporation	(0427)2417121 9442212345 Fax: +(91)(427)4030183	info.arjungroups@gmail.com www.arjunbiogas.com	S/M
3	ChemPure Technologies (Chennai)	(044) 2382 1882, 83 Fax: 44-2382 1884	chempure@vsnl.net nfo@chempuretech.com www.chempuretech.com	S/M
4	Daily Dump	(080) 41152288 99164 26661	dailydumpcompost@gmail.com www.dailydump.org	S/M
6	Eco man Enviro Solutions Pvt Ltd	(020) 325 351 22 229 137 77	99 info@ecomanenviro.com www.ecomanenviro.com	S/M
7	Enhanced WAPP Systems	9676016083	wappsouth@wappsys.com www.wappsys.com	S/M
8	EROEI Power Solutions	(080) 23281931/32	www.eroeipower.com www.eps3e.com	S/M
9	Girem	Shyam Sundar 9845008865	shyam@girem.com www.girem.com	S/M
10	Green Farm Innovators Pvt. Ltd.	Mr. Akhil Dutt Bharti +917676412359		S/M
11	Green Power Systems (GPS)	(080) 42446600 Fax: +9180 42446606	info@greenpowersystems.co.in www.greenpowersystems.co.in	S/M
12	Green Tech Life	(080) 2854 1266 01361	94835 info@greentechlife.in www.greentechlife.in	S/M
13	Green Technologies	(080) 2669 6905 94485 71861	greentech@gmail.com response@greentechindia.in	S/M
14	Green-Nerds Solutions	Abhiman Shetty 9880457499 9686100788	contact@green-nerds.com www.green-nerds.com	S/M
15	Hanjer Biotech Energies Pvt. Ltd.	(022)26841425 9730009404 Fax: 91-22-26842617	info@hanjer.com www.hanjer.com	S/M/B
16	Hi-tech BioFertilizers (Kochi)	(0484) 2331991 9447033360	www.cleancity.in	S/M
17	Innovative Environmental	(080) 2272 0588	www.inenviro.com	S/M
18	Karnataka State Biofuel Development	Y.B Ramakrishna 9448053914	ybramakrishna@gmail.com www.biofuelkarnataka.com	B
19	Karnataka State Pollution Control	Dr. Vaman Acharya (080)25588151 / 9731963456	chairman@kspcb.gov.in www.kspcb.gov.in	B
20	KCDC	L.N Belavanki (080)25730649 /948276726	mdkcdc@gmail.com www.kcdc.in	B

21	Kirloskar Integrated Technologies	Alpesh Chavan (020) 25457939	alpesh.chavan@kirloskar.com www.kitlgreen.com	S/M
23	Mailhem Engineering	Col. (Retd.) KC Achappa (020)25650057 9373339159 Fax: +91 20 25650047	info@mailhem.com marketing@mailhem.com www.mailhem.com	S/M
24	Mandar Enterprises	Chandrashekhar 9448049749		S/M
25	Maridi Eco Industries Pvt. Ltd.	Srinath - 9845162041	maridibmw@gmail.com www.maridibmw.co.in	B
26	MK Aromatics Ltd.	Mahesh Merchant 9243104936	mahesh@mkaromatics.com, info@mkaromatics.com www.mkaromatics.com	B

Recycling Solutions Providers

Sl. No.	Name	Focus Area	Contact Person/Number	E-mail ID & Website
1	ITC	Paper & Plastics Recycling	Jogarao Bhamidipati (040) 27815962	jogarao.b@itc.in / www.itcpspd.com
2	Adamya Chetana	Stove	Tejaswini Ananthkumar (080)23340084 / 9449867979	tejaswiniacf@gmail.com www.adamyachetana.org
3	ASA E-waste	E-waste collection	Naveed Shariff 9886475786	www.asaewasterecycle.com
4	Eco-Birdd		Rizwan Khan (080)2274822 / 9945008827	ecobirdd@gmail.com
5	Eco-E-Waste Recyclers	E-waste recycling	Sharif - 9845778036	
6	E-Cure	E-Waste Collection	David SR - 9986452888	info@e-cure.org www.e-cure.org
7	EEFWA Infra and Research	CFL Bins	Ramesh Pethkar 7276419959	www.effwa.co.in
8	E-Parisara Pvt. Ltd.	E-waste recycling	Parthasarthy 9845104573	recycle@ewasteindia.com www.ewasteindia.com
9	E-Warrrd	E-waste recycling	Asif Pasha (080)414944826 / 9880884166	info@ewardd.com pasha@ewardd.com www.ewardd.com
10	K.K Plastics Waste	Plastics Recycling	K Rasool Khan (080)4057555 9886505811	kkpwm@hotmail.com www.kkplasticroads.com
11	Karnataka State Plastic	Plastic Crusher	Suresh Sagar 9880298510	
12	Khadi Gram Udyog	Paper Collection Handmade Paper Products	G Nagaraju - 9448558592	
13	Power Waste		Nupur Tandon - 9686274681	nupurtandon11@gmail.com
14	Recycle Trade India		Amit Khandelwal - 9972097097	info@recycletradeindia.com www.recycletradeindia.com
15	Sunrays		Manjunath. M - 9242225309	manjunath.moli@gmail.com sunrays14@gmail.com
16	Tetra Pak	Tetra Pak Collection		www.tetrapak.com
17	Trackon e-waste		Imtiyaz Pasha - (080) 28437943	trackonewaste2011@gmail.com

Service Providers & Sustainable Products

Sl. No.	Name	Focus Area	Contact Person/Number	E-mail ID & Website
1	Apna Complex	Apartment Management	Raja Shekhar - 9845057189	www.apnacomplex.com
2	Bhageerath	Training on SWM	PM Kulkarni - 9845902370	prakash_kug@yahoo.co.in
3	CHF International		Ranjiy Ambastha - 9975603023	rambastha@india.chfinternational.org / www.chfinternational.org
4	EDGE Networks	Training Modules	9741495300	info@edgenetworks.in www.edgenetworks.in
5	Full Circle	Promoting Sustainable Living	Anjana Iyer (080)23336030 / 9449220484	mail.fullcircle@gmail.com www.fullcircle.org
6	Goonj			mail@goonj.org www.goonj.org
7	Hasirudala	Dry waste collection, processing audits, training and dr	Nalini Shekhar 782977737	www.hasirudala.in
8	Helen Govindraj	WMS	8867764936	
9	Kenterra	Waste Management	Raghavendra Krishna 9994501257	krishna@kenterra.com www.kenterra.com
10	LabourNet	Enabling Livelihoods	Gayathri V (080)44504450 / 9448395256	gayathri@labournet.in www.labournet.in
11	Parivarthana		Jayakrishna R - 9740803112	jaikrishna@gmail.com www.parivarthana.co.in
12	Pelican Eco Stores	Planters/Seedling Fertilizers/Repellents Agents	8861637745	contact@pelicanbiotech.com www.pelicanbiotech.com
13	Radio Active	Awareness and training through	Basant Achar - (080) 43430201	www.jgi.ac.in/radioactive
14	Reap Benefit	Low Cost Eco Solutions	Kuldeep Dantwadia 9886361805	info@reapbenefit.org www.reapbenefit.org
15	Saahas	Waste Awareness & Sensitizing	Wilma Rodrigues (080)41689889 / 9880124921	response@saahas.org www.saahas.org

Aids

Sl. No.	Aids	Function	Contact Person / Number
1	Biocompostable Bags	For Bin Liners	Earthsoul India Pvt. Ltd. - 9821050328 info@earthsoulindia.com / www.earthsoulindia.com
2	Bioculture Microbes	Aid Composting Process	Reap Benefit - Kuldeep Dantewadia - 9886361805 Prithivi Eco Science: Kris Madhusudhan 9845201959 info@green.in / www.green.in GreenTech Life - (080) 2854 1266 / 94835 01361 info@greentechlife.in / www.greentechlife.in
3	Compost Curing System	Cure semi-compost in racks	EROI Power Solutions - (080) 23281931/32 www.eroeipower.com / www.eps3e.com SaveCo - (080) 65604319 / www.savecosystems.com
4	Raking Tools	For turning compost	Mandar Enterprises: Chandrashekhar: 9448049749 Daily Dump - (080) 41152288/99164 26661 dailydumpcompost@gmail.com / www.dailydump.org Hi-Tec Fertilizers India Pvt. Ltd. (0484) 2331001 / 0447033360 / www.cleancity.in
5	Cloth and Jute bags		Scord Trust: Venaktesh Murthy (080)41280105/9035882263

ANNEXURES

Solid Waste Management - Assessment Form

Name:		House No./Building No.			
Sl. No.	Type of Waste	Disposal/Management			Interval
1					
2					
3					
4					
5					
6					
7					
Is your waste segregated?	Yes		If yes, describe how it is done		
	No				
Monthly waste management expenses	Collection	Collection Bags	Bins	Disposal	Others
Details					

BRUHAT BANGALORE MAHANAGARA PALIKE

Ward Wise Details of Dry Waste Collection Centre BOMMANAHALLI ZONE

SL NO	Ward No./Name of the Ward	Location
1	174/HSR Layout	24th Main 15th A Cross 1st Sector
2	175/Bommanahalli	Devarachikkanahalli Road, Near Royal Shelters
3	184/Uttarahalli	Adj to Uttarahalli Circle Burial Ground
4	185/Yelachenahalli	Near BWSSB Pipeline road chandra Nagara
5	186/Jaraganahalli	Astalaxmi layout 3rd Cross
6	187/Puttenahalli	Adj to Puttenahalli Lake
7	188/Bilekhahalli	Near BBMP Helpline Point, Kodichikkanahalli
8	189/Hongasandra	Nyanappanahalli Bande
9	190/Mangammanapalya	Near Hosapalya Nursery
10	191/Singasandra	Opp to Dakshina Honda, Hosur Road
11	192/Begur	Gunduthopu, Begur
12	193/Arekere	Nyanappanahalli Bande
13	194/Gottigere	Jambu Savari Dinne, Near church
14	194/Gottigere	Near Nandi park apartment
15	195/Konanakunte	Near Southcity Apartment
16	196/Anjanapura	Royal Park Residency (Avalahalli)
17	197/Vasanthapura	Yadalam, Nagara Burial Ground

Dasarahalli Zone

Sl.No.	Ward No.	Location
1	12	Lakshmipura Main road Abbigere
2	39	Near Nagasandra Tank
3	70	Pillappanakatte, Annapoorneshwari nagara
SHANTHINAGARA DIVISION		
1	111	Langford Road, Victoria Layout
2	116	80ft Road, Koramangala
3	117	Hindu Burial Ground, Shanthinagara
4	89	Below Stadium, Jogupalya G Street Main Road
5	112	Below Domlur Flyover
6	114	Austin Town, 4th Square
SHIVAJINAGARA DIVISION		
7	90	Gangadhar Chetty Road
8	92	Neharupuram
9	63	Miller Road
10	110	Tasker Town Play Ground
11	91	Russel Market
C.V. RAMAN NAGARA DIVISION		
12	50	Kasturinagara 2nd Main Road Near BDA Fly Ov
13	57	5th Cross near Kaggadasapura Lake
14	58	4th Main Road, 8th Cross Road near KHB Lane
15	79	KHB Colony, PSK naidu Road
16	80	Anantha Nair Road
17	88	BBMP Park PWS Quarters Near Jeevan Bhima Na
18	113	Back Side Ward Office Ward No. 113
PULIKESHINAGARA DIVISION		
19	31	P & T Colony
20	32	Near Ward Office at L.R. bande BDA Park
21	48	Near N.P Factory
22	60	Charles Ground
23	47	# 7, Bangaragiri Layout
24	61	Madiana Mohala
25	78	Nathaji Road Ground Near BWSSB

SARVAGNA NAGARA DIVISION

26	23	Gandhinagara Near Railway T
27	24	Hennur village near SWD
26	30	Gandhinagara Near Railway T
27	27	By the side of Bhunanagiri Association C
28	29	HBR 1st Block near Storm Water
29	59	Sathya Nagara Slum
30	49 & 28	Lingarajapuram

HEBBALA DIVISION

30	18	Radhakrishna Temple
31	19	Sanjayanagara
32	20	Ganganagara
33	21	Hebbala
34	22	V.N. Nagenahally
35	33	Manorayanapalya
36	34	Gangenahalli
37	46	J.C. Nagara

Mahadevapura Zone

Sl.No.	Ward No.	Location
1	52,53&55	K.R Pura Market
2	25,26&51	Horamavu Panchayt office & Commercial Complex Kalkere Park
3	56,81 &87	Commercial Complex Udaya Nagar of A Narayanapur Ward
4	54,82&85	1. Hooday ward office & 2. Behind Zonal office
5	83,84 & 149	Sorehunse Village opp. To Milk dairy
6	86 & 150	Daddakanhalli ward office
7	52, 53 & 55	K.R pura santhe maidan, K.R puram, Chikka Basavanagara K.P pura santhe Santhe maidan , K.R puram
8	25, 26 & 51	1. Hormavu Agraha Railway gate near 2.Munneswara Ground, Shanthi Layout Main Raod, BDA Layout Godawan,
9	56, 81 & 87	A Naranpura Bande, Andra Colony Main Road Basavanagara Bus Stand, Basavanagara Main Road Narayanapura Service road of ORR Near B. Narayanapur Lake,1 1st A main Road, Ramesh Nagar of HAL ward
10	54,82,85	1. Near Sadarmangal Lake 2. Hoody Circle Near School, 1. Kaveri Nagar Bande 2. Behind Mahadeva Zonal office ,AECS Layout Near ward Taluk
11	83, 84, &149	1 Kadugodi santhe maidan , 1. Inner circle of Hagaduru 2. Near Hagaduru Corp office, 1.Varthur Santhe 2.Near Munnekollala ward office
12	86 & 150	Near Bellandur Lake, Fire Station Near Kaikodanur Sarjapura Lake

ರಾಜರಾಜೇಶ್ವರಿನಗರ ವಲಯ

ಕ್ರಮ. ಸಂಖ್ಯೆ	ವಾರ್ಡ್ ಹೆಸರು ಮತ್ತು ಸಂಖ್ಯೆ	ಗುರುತಿಸಲಾಗಿರುವ ಸ್ಥಳ
1.	16- ಜಾಲಹಳ್ಳಿ	4ನೇ ಅಡ್ಡ ರಸ್ತೆ, ಜಾಲಹಳ್ಳಿ ವಾರ್ಡ್ ಕಛೇರಿ ಪಕ್ಕದಲ್ಲಿ
2.	17- ಜಿ.ಪಿ.ಪಾರ್ಕ್	ಜಿ.ಪಿ.ಪಾರ್ಕ್ ಪಕ್ಕದಲ್ಲಿರುವ ಘನತ್ಯಾಜ್ಯ ವಸ್ತು ವಿಂಗಡಣಾ ಕೇಂದ್ರದ ಕಟ್ಟಡ
3.	37- ಯಶವಂತಪುರ	ಪಶು ವೈದ್ಯ ಆಸ್ಪತ್ರೆ ಹತ್ತಿರ, ಎನ್.ಆರ್.ಕಾರೋನಿ ಯಶವಂತಪುರ
4.	38- ಹೆಚ್.ಎಂ.ಟಿ	ಬಿ.ಡಿ.ಎ ಸ್ವತ್ತು, 6ನೇ ಮುಖ್ಯ ರಸ್ತೆ, ಇಂಡಸ್ಟ್ರಿಯಲ್ ಸಬುರ್ಬ್, 2ನೇ ಹಂತ
5.	40- ದೊಡ್ಡಬಿದರಕಲು	ಸರ್ವೆ ನಂ.75, ತಿಪ್ಪೇನಹಳ್ಳಿ ಗ್ರಾಮ, ದೊಡ್ಡಬಿದರಕಲು

lex opp. To
yanapura
office
avanapura, am
hwar Nagar t Near Gas
, 1. Near oad, 2. B. rayanapura L Airport
ar Urdhu devapura ank
aduru ward e maindan
rahalli lake

6.	42- ಲಕ್ಷ್ಮಿದೇವಿನಗರ	1. ಜಾರಕ್ ಬಂಡೆ ಕಾವಲ್, ದಿ ದೇವರಾಜ್ ಅರಸ್ 2. ಜೈ ಭುವನೇಶ್ವರಿನಗರ ಕರ್ನಾಟಕ ಕೊಳಚೆ ನಿಷ್ಕರಣ
7.	69-ಲಗ್ಗೆರೆ	1. ಸರ್ವೆ ನಂ. 2,3,4,5,6, 91 ಮತ್ತು 92 ರ 2. ವರ್ತುಲ ರಸ್ತೆಯ ಸೇತುವೆ ಕೆಳಗಡೆ ಹರಿದು ಹೋಗಿರುವ ನಂ.9
8.	72 - ಹೇರೋಹಳ್ಳಿ	ಮಾಗಡಿ ಮೈನ್ ರೋಡ್, ಬಿಇ
9.	73-ಕೊಟ್ಟಿಗೆಪಾಳ್ಯ	1. ಸರ್ವೆ ನಂ.55, 9ನೇ ಬ್ಲಾಕ್ ಜನತಾ ಕಾಲೋನಿ 2. ಸರ್ವೆ ನಂ.3 ಸುಮ್ಮನಹಳ್ಳಿ ಕಡೆ ಹೊಸ ರಿಂಗ್ ರಸ್ತೆಯ ವ್ಯವಸ್ಥಾವತಿ ಕರೆವೆಯ
10.	129- ಜ್ಞಾನಭಾರತಿ	ಬಾಲಾಜಿ ಬಡಾವಣೆ, ಎನ್.ಜಿ.ಇ
11.	130- ಉಲ್ಲಾಳು	ಶಿವನಪಾಳ್ಯ ವಲಗೇರೆ ಹಳ್ಳಿ ಇಂಡಸ್ಟ್ರಿ
12.	159- ಕೆಂಗೇರಿ	ಕೆಂಗೇರಿ ಉಪನಗರದ ಘನತ್ಯಾಜ್ಯ
13.	160- ರಾಜರಾಜೇಶ್ವರಿ ನಗರ	ಐಡಿಯಲ್ ಹೋಮ್ಸ್ ಲೆ
14.	198- ಹೆಮ್ಮಿಗೆಪುರ	ಹೆಮ್ಮಿಗೆಪುರದ ಘನತ್ಯಾಜ್ಯ ವಸ

ಪಶ್ಚಿಮ ವಲಯದ ಒಣ ತ್ಯಾಜ್ಯ ಸಂಗ್ರಹಣಕ್ಕೆ ಗುರುತಿಸಿರುವ ಸ್ಥಳಗಳ ವಿವರ

ಕ್ರಮ ಸಂಖ್ಯೆ	ವಾರ್ಡ್ ಸಂಖ್ಯೆ ಮತ್ತು ಹೆಸರು	ಗುರುತಿಸಿರುವ ಸ್ಥಳದ ವಿಳಾಸ
1	35 ಅರಮನೆನಗರ	ಹಳೇವಾರ್ಡ್ ಕಛೇರಿ ಕಟ್ಟಡ
2	36 ಮತ್ತಿಕರೆ	ಎ.ಕೆ. ಕಾಲೋನಿ ಹಳೇ ಕಟ್ಟಡ
3	45 ಸುಬೇದಾರ್ ಪಾಳ್ಯ	ಹೆಚ್.ಎಂ.ಟಿ ರಸ್ತೆ, ಅಯ್ಯಪ್ಪ ಸ್ವಾಮಿ ದೇವಸ್ಥಾನದ ಎದುರಿನ ಖಾಲಿ ಜಾಗ
4	64 ರಾಜ್‌ಮಹಲ್‌ಗುಟ್ಟಹಳ್ಳಿ	ತೆಂಗಿನ ಮರದ ರಸ್ತೆ ಶೌಚಾಲಯದ ಪಕ್ಕ
5	65 ಕಾಡುಮಲ್ಲೇಶ್ವರಂ	ಚೌಡಯ್ಯ ಮೆಮೋರಿಯಲ್ ಹಾಲ್ ಹಿಂಭಾಗ
6	66 ಸುಬ್ರಮಣ್ಯನಗರ	ಮಿಲ್ಕಿ ಕಾಲೋನಿ ಆಟದ ಮೈದಾನ
7	76 ಗಾಯತ್ರಿನಗರ	ಹರಿಶ್ಚಂದ್ರ ಫಾಟ್, ರುದ್ರಭೂಮಿ ಜಾಗ
8	99 ರಾಜಾಜಿನಗರ	ಸಿದ್ದಪ್ಪಾಜಿ ಪಾರ್ಕ್ ಪಕ್ಕದ ಜಾಗ
9	100 ಬಸವೇಶ್ವರನಗರ	ನೌತಾಜಿ ಸುಭಾಷ್‌ಚಂದ್ರ ಬೋರ್ಡ್ ಮೈದಾನದ ಪಕ್ಕದ ಜಾಗ, ತಿಮ್ಮಯ್ಯ ರಸ್ತೆ
10	101 ಕಾಮಾಕ್ಷಿಪಾಳ್ಯ	ಕೆರೆ ಅಂಗಳ, ಮಾಗಡಿ ರಸ್ತೆ
11	107 ಶಿವನಗರ	ಶಿವನಗರ ಶಾಲೆ ಪಕ್ಕದ ಮೈದಾನ
12	97 ದಯಾನಂದನಗರ	ಅಂಬೇಡ್ಕರ್ ಸ್ಟೇಡಿಯಂನಲ್ಲಿರುವ ಜಾಗ
13	98 ಪ್ರಕಾಶ್‌ನಗರ	ಗಾಯತ್ರಿ ದೇವಿ ಪಾರ್ಕ್ ಜಾಗ
14	108 ಶ್ರೀರಾಮಮಂದಿರ	ಎಸ್.ಜೆ.ಆರ್. ಮಹಿಳಾ ಕಾಲೇಜ್ ಪಕ್ಕ
15	77 ದತ್ತಾತ್ರೇಯ	ದತ್ತಾತ್ರೇಯ ದೇವಸ್ಥಾನ, ನಾಗಪ್ಪ ಸ್ಟ್ರೀಟ್
16	94 ಗಾಂಧಿನಗರ	ಸ್ವಾತಂತ್ರ್ಯ ಉಧ್ಯಾನವನ
17	95 ಸುಭಾಷ್‌ನಗರ	ಓಕಳೀಪುರ ರುದ್ರಭೂಮಿಯ ಖಾಲಿ ಪ್ರದೇಶ
18	96 ಓಕಳೀಪುರ	ಓಕಳೀಪುರ ರುದ್ರಭೂಮಿಯ ಖಾಲಿ ಪ್ರದೇಶ
19	109 ಚಿಕ್ಕವೇಟೆ	ಸ್ವಾತಂತ್ರ್ಯ ಉಧ್ಯಾನವನ
20	120 ಕಾಟನ್‌ವೇಟೆ	ಬಿನ್ನಿಮಿಲ್ ಹತ್ತಿರವಿರುವ ಕಟ್ಟಡ
21	121 ಬಿನ್ನಿವೇಟೆ	ಬಾಳೆಕಾಯಿ ಮಂಡಿ ಪಕ್ಕ
22	139 ಕೆ.ಆರ್. ಮಾರುಕಟ್ಟೆ	ಹಳೇ ವಾರ್ಡ್ ಕಛೇರಿ ಹತ್ತಿರ, ಬಿ.ಜಿ.ಎಸ್. ಹಾಸ್ಟೆಲ್ ಎದುರು, ಡಾ. ಟಿ.ಸಿ.ಎ
23		ಕೆ.ಆರ್. ಮಾರುಕಟ್ಟೆ, ಕೊತ್ತಮಿರಿ ಮಂಡಿ
24	140 ಚಾಮರಾಜವೇಟೆ	ನಂಜಾಂಬ ಅಗ್ರಹಾರ, ಟಿ.ಆರ್. ಮಿಲ್ ರಸ್ತೆ ಹಿಂಭೂ ರುದ್ರಭೂಮಿ ಹತ್ತಿರ
25	141 ಆಜಾದ್ ನಗರ	ಪೈಪ್‌ಲೈನ್ ಮುಖ್ಯರಸ್ತೆ, ಕಸೂರಿ ಬಾ ನಗರ, ಕನಕ ಭವನದ ಹಿಂಭಾಗ
26	135 ಪಾದರಾಯನಪುರ	ರೈಲ್ವೆ ಅಡ್ಡರಸ್ತೆ ಪಕ್ಕ, ವೆಸ್ಟ್ ಆಫ್ ಪಾದರಾಯನಪುರ
27	136 ಜಗಜೀವನರಾಮನಗರ	
28	137 ರಾಯಪುರ	
29	138 ಚಲುವಾದಿಪಾಳ್ಯ	ನೀರಿನ ಟ್ಯಾಂಕ್ ಹತ್ತಿರ ರಾಯಪುರಂ
30	43 ನಂದಿನಿ ಲೇಔಟ್	ವೆಟರ್‌ನರಿ ಆಸ್ಪತ್ರೆ ಪಕ್ಕದ ಮೂಲೆ ನಿವೇಶನ
31	44 ಮಾರವ್ವನ ಪಾಳ್ಯ	ಸೋಪ್ ಪ್ಯಾಕ್ಟರಿ ಹಿಂಭಾಗ
32	68 ಮಹಾಲಕ್ಷ್ಮೀಪುರಂ	ಎಸ್.ಜಿ. ಇಂಟರ್ ನ್ಯಾಷನಲ್ ಶಾಲೆ ಹತ್ತಿರ, ಗಣೇಶ ಬ್ಲಾಕ್
33	74 ಶಕ್ತಿಗೋಪತಿನಗರ	ಮಾರುಕಟ್ಟೆ ಹತ್ತಿರವಿರುವ ಮೂಲೆ ನಿವೇಶನ
34	67 ನಾಗಪುರ	ನಂದಿನಿ ಟ್ಯಾಂಕಿಸ್ ಪಕ್ಕ
35	75 ಶಂಕರಪುರ	ಬಿ.ಡಬ್ಲ್ಯೂ.ಎಸ್.ಎಸ್.ಬಿ. ಜಾಗ
36	102 ವೃಷಭಾವತಿನಗರ	ಬಿ.ಬಿ.ಎಂ.ಪಿ. ಉಪ-ವಿಭಾಗದ ಕಛೇರಿಯ ಪಕ್ಕವಿರುವ ಹೆಲ್ಪ್ ಸೆಂಟರ್
37	103 ಕಾವೇರಿಪುರ	4ನೇ ಮುಖ್ಯರಸ್ತೆ, ಕಾವೇರಿಪುರ, ಕೆನರ ಬ್ಯಾಂಕ್ ಕಾಲೋನಿ ರಸ್ತೆ
38	104 ಗೋವಿಂದರಾಜನಗರ	ವಾರ್ಡ್ ಕಛೇರಿ
39	105 ಅಗ್ರಹಾರ ದಾಸರಹಳ್ಳಿ	17ನೇ ಅಡ್ಡರಸ್ತೆ,
40	106 ಡಾ.ರಾಜಕುಮಾರ್	2ನೇ ಮುಖ್ಯರಸ್ತೆ ಮತ್ತು 1ನೇ ಮುಖ್ಯರಸ್ತೆ ಮಧ್ಯಭಾಗ
41	125 ಮಾರೇನ ಹಳ್ಳಿ	ನಚಿಕೇತ ಪಾರ್ಕ್ ರಸ್ತೆ

43	127 ಮೂಡಲ ಪಾಳ್ಯ	ತಿಮ್ಮಕ್ಕ ಪಾರ್ಕ್ ಹತ್ತಿರ, ಅದರ್ಶನಗರ
44	131 ನಾಯಂಡ ಹಳ್ಳಿ	ನಾಯಂಡಹಳ್ಳಿ ಕೆರೆ

Proposed Dry waste collection centers in Yel

Sl. No.	Ward No.	Location
1	1	Maruti
2	2	Puttenahalli/ Ke
3	3	M.S Palya Main Ro
4	4	Allalasa
5	5	Palana
6	6	Hegden
7	6	Bhuvanewary Nagar (Dasarahalli Sub
8	7	Kodegihalli near
9	8	Balaji L
10	9	Near Canara Bank (Next D
11	10	(Near) Doddabom
12	11	Varadaraj

BRUHAT BANGALORE MAHANAGARA PALIKE

PUBLIC NOTICE

In exercise of powers conferred by Section 256,257 and 260 of the Karnataka Municipal Corporations Act, 1976 (Karnataka Act 14 of 1977) and in Continuation of the Public Notice dated: 15-09-2012, the following Public Notice is hereby issued regarding delivery and disposal of Municipal Solid Waste form Bulk generators within the BBMP area, with effect from October 1st 2012.

- (1) Unless the context otherwise requires, the following shall be understood as definitions under this Notice.

Definitions:

- a) **Bulk generators** means any hotel/restaurant, choultry, mail, shopping complex, marriage hall, convention hall, temple, residential apartments (10 units and above), institutions, public offices, railway stations, bus stands or any other residential, commercial or a public entity which generates 100 kg and more wet waste per day and any other such entity that is specifically identified and notified by the Commissioner as bulk generator;
- b) **Shopkeeper** is broadly defined as a person who offers goods or services for sale to the public having a permanent/ semi- permanent built up structure;
- c) **Street vendor/ hawker** is broadly defined as a person who offers goods or services for sale to the public without having a permanent built up structure but without a temporary static structure or mobile stall or headload;
- d) **Composting** means a controlled process involving microbial decomposition of organic matter ; for conversion of bio –degradable waste into compost.

- (2) Bulk Generation shall not mix wet waste with any other types of waste. Wet Waste and garden waste generated shall be composted at source or processed using bio methanisation technique. Where it is not possible to compost wet waste as site, due to space constraint alternate arrangements shall be made by the generator to hand over wet waste to private composters or BBMP wet waste collectors, on payment, as specified by concerned Zonal Commissioner.

- (3) Bulk Generators shall retain Dry Waste within their premises to be handed directly to the nearest authorized Dry Waste Collection Centers.
- (4) Bulk Generators Shall cause the sanitary Wastes to be separately collected by in house staff and deposited at the nearest Bio-medical Waste Collection Centers to be specified by the BBMP or arranged by mutual consent.
- (5) BBMP will collect rejects/ inerts from the bulk generator once a week on a payment basis,
- (6) All shopkeepers /vendors/ hawkers shall keep their wet and other wastes unmixed in containers/bins at the site of vending for the collection of wastes generated by that vending activity It will be their responsibility to deliver to waste collectors of BBMP. Failure to do so will attract fines.
- (7) No wastes of any kind shall be deposited at any time by Bulk generators, street shopkeepers/vendors/hawkers on the streets, public spaces or other sites and violations will attract fines.

Date: 20-09-2012

Sd/-
(Rajneesh Goel)
Commissioner
Bruhat Bangalore Mahanagara Palika

BRUHAT BANGALORE MAHANAGARA PALIKE

PUBLIC NOTICE

In exercise of powers conferred by Section 256, 260 of the Karnataka Municipal Corporations Act, 1976 (Karnataka Act 14 of 1977), the following Public Notice is hereby issued regarding Delivery and collection of Municipal Solid Waste within the BBMP area, with effect from October 1st, 2012.

(1) Unless the context otherwise requires, the following shall be understood as definitions under this Notice.

- (a) **Wet Waste** Includes cooked and uncooked food (Vegetarian and Non Vegetarian), fruit and flower waste and small quantities of fallen leaves and similar compostable material;
- (b) **Dry Waste** includes all types of recyclable waste like paper, plastic, wood, rubber, metals, fabrics, glass, metal objects, wire, cloth, Rag, Leather, Rexine, Rubber, furniture, thermocole (expanded polystyrene),
- (c) **Garden Waste** includes fallen leaf sweepings, large trimmings of branches, lawn trimmings and weeds in quantity;
- (d) **Debris and Rubbish (also called Inerts)** includes dust, road sweepings, drain silt, ashes, broken bricks, mortar, broken glass, construction and demolition waste (C & D Waste) and similar non-compostable and non-recyclable wastes;
- (e) **Sanitary wastes** include used menstrual cloths, sanitary napkins, disposable diapers, bandages and any material that is contaminated with blood and the like;
- (f) **Household Hazardous Wastes (HHW)** do not include industrial or trade wastes but refer to toxic wastes like tube lights, CFL bulbs and fluorescents, batteries and button cells, cleaning agents, paints, oils, solvents, chemical cosmetics, insecticides and their containers,

discarded medicines/syringes/needles/thermometers, e-waste, computer parts and mobile parts.

(g) **Occupier** includes any person for the time being paying or liable to pay to the owner the rent or any portion of the rent of the (vacant land or building) or part of the same.

- (2) All occupiers shall keep all types of waste and discards within their premises until collected by authorized persons as described below.
- (3) They shall not mix Wet Waste with any other types of waste. This Wet Waste shall be handed over daily to specified Wet Waste Collectors on specified times. The BBMP undertakes to provide for daily collection of such Wet Waste at the gate or doorstep of such premises or, in the case of narrow unapproachable premises, at the nearest designated access point.
- (4) All Wet Waste shall be unloaded directly into the bins or vehicles brought to the occupier's doorstep or nearest access point. No Wet Waste shall be handed over inside plastic bags or non-biodegradable bags. If Wet Waste is offered in plastic bags the Wet Waste Collectors are hereby authorized and instructed by the BBMP to refuse to accept it or to insist that the occupier hand over the Wet Waste after removing the plastic bag.
- (5) Occupiers shall retain unwanted Dry Wastes within their premises and hand over to specified Dry Waste Collectors on specified days of the week or month to be intimated Ward-wise to all occupiers.
- (6) Occupiers may also personally deliver their Dry Wastes to any of the Waste Collection Centres (DWCCs) set up or authorized by or with the permission from the BBMP.
- (7) Garden Waste will be collected from residential premises on specified days of the week or month by authorized persons. It may also be delivered by residents to the nearest specified park for decentralized composting.

- (8) Debris, Rubbish and Inerts will be collected on request against charges to be specified. Inerts (especially C & D waste) lying uncollected for over a month will be removed by the BBMP during monthly Ward-wise Cleaning Drives and the cost of such removal will be collected along with property tax from the occupier of the site.
- (9) Sanitary Wastes from individual family occupiers may be handed over daily along with the wet waste suitably wrapped in newspaper and marked with a red cross.
- (10) Household Hazardous Wastes shall be retained within the premises until collected quarterly or earlier on specified dates. They may also be deposited at designated HHW collection points which will be intimated to the public from time to time.
- (11) No wastes of any kind shall be deposited at any time by occupiers on the streets, public spaces or vacant sites, and violations will attract fines.

DATE: 15-9-2012.

(Rajneesh Goel)
Commissioner
Bruhat Bangalore Mahanagara Palike.



“You may never know what results
come of your action, but if you do
nothing there will be no result.”

— Mahatma Gandhi



Responsible
Collection

Informed
Segregation

Proactive
Regeneration

Waste
Revolution



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