



"Decentralized
Waste Management
&
Effect of
Waste Bulk Generator Rule
from the Government

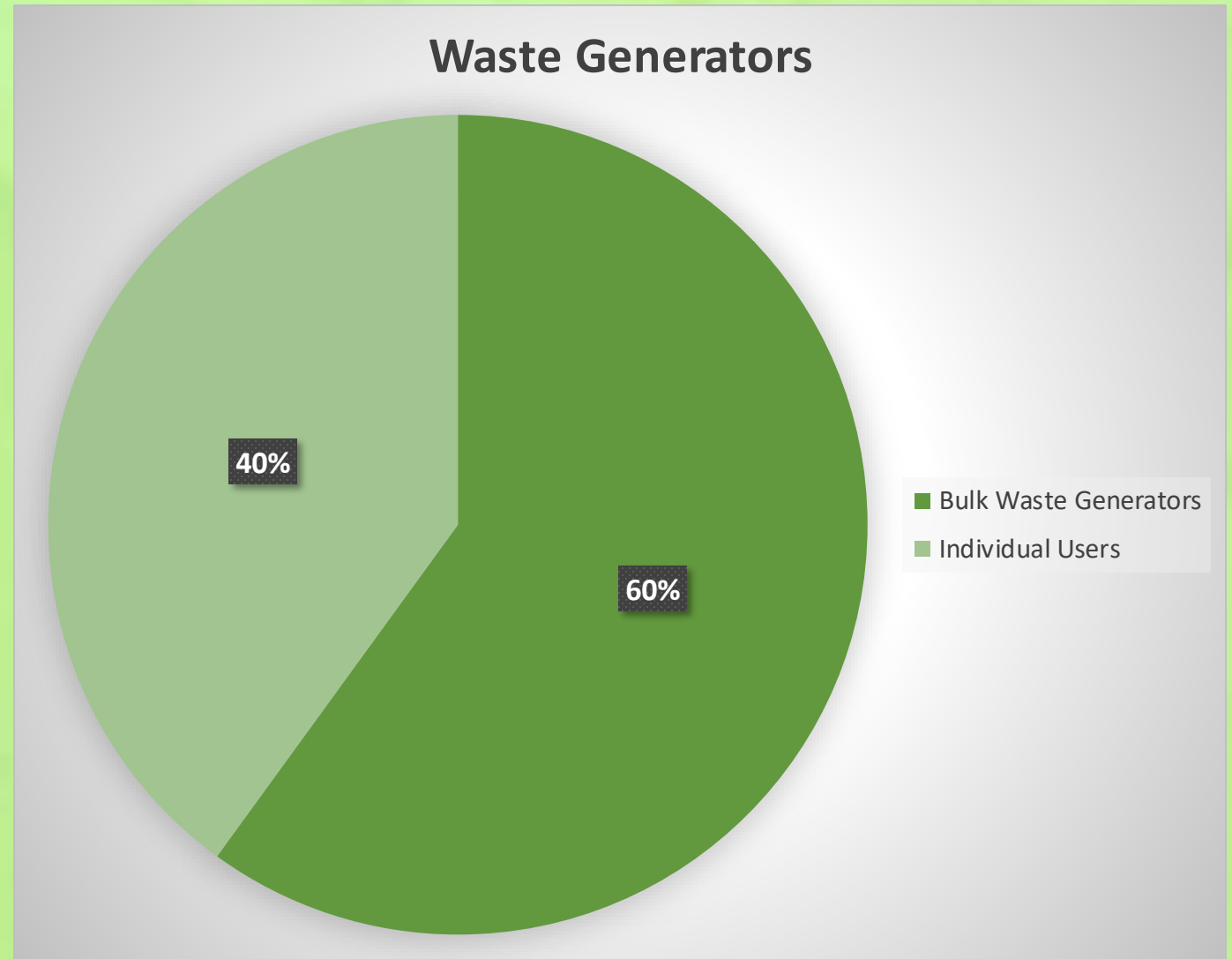
Solid Waste Management

Solid waste management is one of the critical elements of any city and it affects the day-to-day living conditions as well as maintenance of the city. Solid waste management if carried out in a planned fashion can also provide valuable addition to the resources of the city.

Therefore, the intent of solid waste management is two-fold:-

- 1, Smooth and reliable processes
2. Planned usage of the waste

**Who are
culprits?
Bulk waste
generators.**



Who are Bulk Waste Generators?

1. Agri Produce Markets
2. Hotels and Restaurants
3. Shopping Malls
4. Large Govt. and private Buildings
5. Software Tech-parks
6. Residential

Existing Scenario

- **Only transported to landfills and dumped.**
- **Very few places waste is composted.**

Landfills

- A landfill, also known as a dump, is a site for the disposal of waste materials by burial and is the oldest form of waste treatment. Historically, landfills have been the most common methods of organized waste disposal and remain so in many places around the world.



LANDFILL LEACHATE



- During landfill site operation, a liquid known as leachate is produced.
- It is a mixture of organic degradation products, liquid waste and rain water.
- It has high organic carbon content, high concentrations of nitrogen and is usually slightly acidic.

Gasses found in landfills:

The typical constituents of gases produced by a municipal solid waste landfill:

- | <u>Component</u> | <u>Percent (dry volume basis)</u> |
|------------------|-----------------------------------|
| Methane | 40-60% |
| Carbon Dioxide | 40-60% |
| Nitrogen | 2-5% |
| Ammonia | 0.1-1.0% |
- Methane : It is often flammable and sometimes even explosive.
 - Carbon Dioxide: Non harmful to the environment
 - Nitrogen: Non harmful to the environment
 - Ammonia: Ammonia in air is an irritant and causes burning of the eyes, nose, throat and lungs.

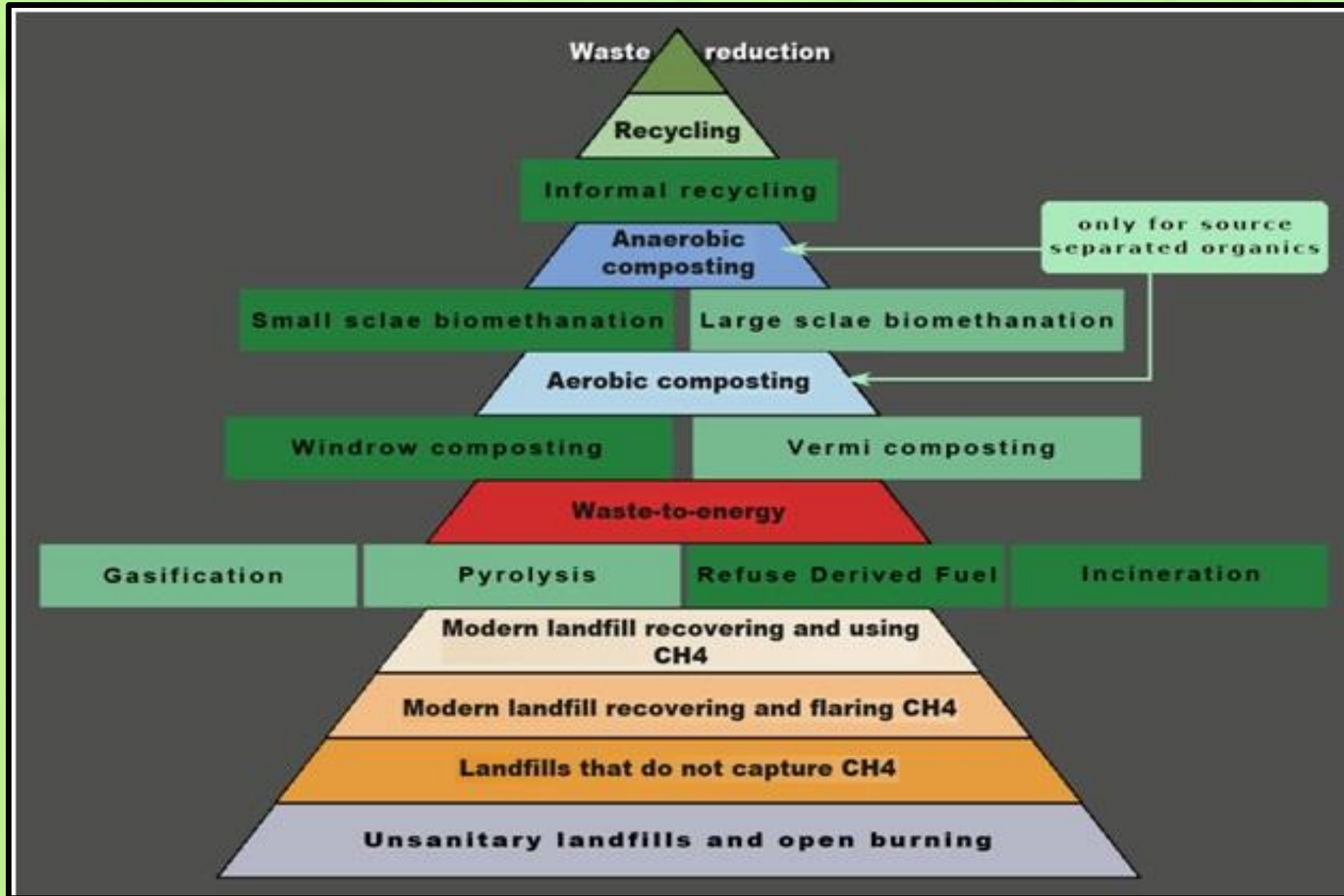




DEONAR

India's Largest Dumping Ground

Hierarchy of Sustainable Waste Management



The background is a vibrant green, featuring a close-up of a leaf with water droplets on its surface in the upper right corner, and concentric ripples from a water drop in the lower left corner. The overall aesthetic is clean and natural, suggesting environmental or health-related themes.

Government Regulations



Bruhat Bengaluru Mahanagara Palike

Office of the Chief Commissioner, N. R Circle – 560002.

No.: JC(SWM)/PRF/e-17410/2021-22

Date: 30.03.2022

::CIRCULAR::

Sub: Bulk Waste Generators shall ensure segregation of Municipal Solid Waste at source within their Premises and facilitate collection, processing and disposal of segregated Solid Waste in the manner specified in the SWM Rules 2016 and SWM Bye-laws.

Ref: 1. Solid Waste Management Rule -2016.
2. Solid Waste Management Bye-law(March 2020) No:A.C/SWM/ PR/9266 /2019-20, dated: 20.04.2020.

Bruhat Bengaluru Mahanagara Palike has estimated that around 1500 tonnes per day of bulk waste is generated through bulk waste generators. The bulk waste generated by bulk waste generators is collected through the service providers identified by BBMP.

In the Solid Waste Management Bye-laws, BBMP reserves the right to modify the threshold of waste generation for being declared as bulk waste generator and also include other types of waste generators as bulk waste generators at a later point of time and also the manner of collection / processing of bulk waste, as notified through an official order.

In Solid Waste Management Bye-Law(March 2020) No:A.C/SWM/PR/9266/2019-20.Dated:20.04.2020, "BULK WASTE GENERATOR" Means

- (1) **Residential Bulk Waste Generators** and this includes Apartments, Multi dwelling units, gated communities housing greater than 100 Units
- (2) **Institutional Bulk Waste Generators**-Includes any Government Institution, religious Institution, Campus(Corporate, Industrial, Academic, Research institution with or without residential campus attached, Conclaves, Tech Parks),buildings occupied by the Central government departments or undertakings, State government departments or undertakings, local bodies, public sector undertakings or private companies, hospitals, nursing homes, schools, colleges, universities, other educational institutions, hostels, hotels, commercial establishments, markets, places of worship, stadia, sports and complexes, Natural markets selling agricultural produce, APMC yards, HOPCOMS, and milk sales,

Outlets dealing with timber and horticulture like yards, Nursery, Gardens, which generates on an average more than 100 kgs of waste per day and/or located in an area above 5000 sq mts; and/or any entity which carries out Public Outdoor Events (Trade Fairs, Public Events, Entertainment events- shows, rallies, sporting events), irrespective of any quantity of waste generated and area occupied.

- (3) **Commercial Bulk Waste Generators**- All Commercial entities which generates on an average more than 100 kgs of waste per day and/or located in and area above 5000 sq mts. This includes:
 - A. Any Commercial Entity to which a Trade Licence is applicable like Company or office establishment, Hotel, Restaurant, Factory, Choultry, Mall, Shopping Complex, Super Market, Marriage Hall, Convention Hall, Place of worship, Institution, Paying Guest dwelling, Club, Caterers, Auditorium, Petrol Bunks, Service Garage, Fireworks Sales, Sale of Construction materials, Barber shops or Salons, or any other Commercial or Public entity, who is required to be compliant with the Trade Licence requirements or are under any other regulatory authority.
 - B. Any Petty Food Business operator which includes Bakeries- Confectioners, Juice and Lassi shops, Ice cream parlours, Fast food- chaats, Tea and coffee, Meals and snacks, Poultry and Tender coconut and other entities like Temples, Itinerant vendors, Petty retailers, street vendors, Hawkers or temporary stall holders, Flower Bouquet stalls & small scale cottage industry;

Duties of Bulk Waste Generators:

1. All Bulk Waste Generators shall ensure segregation of Solid Waste at source within their Premises in the manner specified below and facilitate collection, processing and disposal of segregated Solid Waste in the manner specified in these Bye-laws. **The biodegradable waste shall be processed, treated and disposed off through composting or bio-methanation within the premises itself, to the extent of space available.** If there is absolute space within premises, the waste generator shall identify the space for waste processing in BBMP limits on their own cost.
2. Bulk waste Generators must ensure segregation and processing of solid waste at source. If failure to segregate and process as per the SWM bye-law will be penalized.
3. As mentioned above, in the exceptional event that the Bulk Waste Generator is unable to process their Bio-degradable Waste on-site due to space constraints, they may obtain the services of an Authorised Waste Processor for collection, processing and disposal of segregated Solid Waste on mutually agreed terms including fees for such services. BBMP shall call upon the authorised waste processors to submit the fees charged by them and establish that the fees are fair and reasonable.
4. Hence all **Bulk Waste Generators** (except markets and bazaars as identified under Bye-laws 14(3) shall,-
 - I. **process their Bio-degradable Waste through composting, bio-methanation or any other methods approved by KSPCB/CPCB within their respective premises (in-situ);** or
 - II. have their Bio-degradable Waste processed by the Authorised Waste Processor engaged by them

2. All Bulk Waste Generators shall, either-
 - I. by their own arrangement, process the Non-biodegradable Waste in accordance with these Bye-laws and SWM Rules 2016; or
 - II. Engage authorized Waste Processors for collection, transportation and processing of their Non-Biodegradable Waste on mutually agreed terms;
6. All Bulk Waste Generators shall, engage Authorised Waste Processor for collection, transportation and processing of their Domestic Hazardous Waste and Sanitary Waste on mutually agreed terms;
7. As detailed at Byelaws 14(8), the Authorized Waste Processors will be required to register themselves with BBMP along with proof of grant of authorization by KSPCB before they undertake services of Collection, Transportation and Processing for Bulk Waste Generators, on payment of registration fee as prescribed by BBMP. They shall also be required to file periodic returns to BBMP with respect to their operations i.e. areas of operation, waste generators serviced, waste collected and processed, charges levied etc. They shall maintain all records for traceability of waste from collection point upto processing and disposal point for audit purposes. They also have to comply with the directions issued by BBMP from time to time. BBMP would prescribe registration / annual renewal fee payable for such Authorized Waste Processors operating within limits of BBMP.
8. Bulk Waste generator shall give their wet waste/food waste to BBMP authorized piggery farmers as these wet/food waste shall be used as a good source to feed pigs.
9. If the waste generators are processing their waste within their own premises, the officials of the BBMP department will have inspection in the premises. If waste is being processed in accordance with the Solid Waste Management Rules and Guidelines issued by the KSPCB / CPCB, such waste generators will be given some rebate/exemption from the SWM user fee payable. If the waste generator submits false information or false records that the waste is being processed by insitu composting or Bio-methanisation, the waste generator will be charged with a penalty and also legal action will be taken.
10. It shall be the duty of Bulk Waste Generators that where they are permitted to avail services of Authorised Waste Processor to ensure that such processors have authorization from KSPCB and have registered themselves with BBMP for providing such services and if not, the same should be reported to BBMP, failing which both the waste generator and unauthorised vendor shall be liable for levy of penalty.
11. The compost generated by insitu composting to be given to the place given by BBMP or to other registered institutions or Government horticulture department.
12. In future or coming days, the buildings with a maximum area of more than 5 sq.km or the estimated waste generated above 100 kgs, the builders must reserve space exclusively for solid waste management in their own building premises.

Therefore, All Bulk Waste Generators like apartments with more than 100 units and/or located in an area above 5000 sq mts, malls, 3 star hotels, IT tech parks, MNCs, gated communities, Kalyan Mantapas, Government offices which generates more than 100kgs of waste shall ensure segregation of Solid Waste at source and facilitate collection,

processing and disposal of segregated Solid Waste within their Premises in the manner specified below as per SWM Bye-laws.

1. All Bulk waste generators shall ensure that the waste generated is segregated as wet, dry and sanitary waste and collected separately at the source.
2. The Bio-degradable Waste shall be processed through composting method or bio-methanation or any other methods approved by Ministry of New and renewable Energy(MNRE) or KSPCB/CPCB within their respective premises (in-situ).
3. Sanitary waste to be handed over to the respective Biomedical Waste management services authorised by central/state pollution control board at the rates prescribed by them.
4. The segregated Dry waste to be sent to nearby BBMP's Dry Waste Collection Centres or to the Authorised bulk waste service provider near the zone at their own expense.

In view of this, all Bulk Waste Generators shall segregate, collect and process the waste generated within their premises as above and follow the As per Solid Waste Management Bye-Law (March 2020) No: A.C/SWM/PR/9266/2019-20, dated: 20.04.2020. Anticipating the Gazette Notification in this regard from Government, all officers of BBMP are hereby directed implement the provisions of this circular.


Chief Commissioner

Bruhat Bangalore Mahanagara palike

To,

1. Zonal Commissioners, all zones of BBMP, Bengaluru for necessary action.
2. Spl. Commissioner (SWM), BBMP, Bengaluru for necessary action.
3. Joint Commissioner(SWM), BBMP, Bengaluru for necessary action.
4. Joint Commissioners, all zones of BBMP, Bengaluru for necessary action.
5. Superintendent Engineers/AEEs(SWM), all zones/divisions of BBMP, Bengaluru for necessary action.
6. Office Copy.

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महाराष्ट्र शासन

अतितात्काळ

क्रमांक:- वीमएसी २५१६/प्र.क्र.२१८/नवि-२१

नगर विकास विभाग,

४ था मजला, मुख्य इमारत,

मंत्रालय, मुंबई ४०००३२

ई-मेल : udd.ud21@gmail.com

दिनांक २५ फेब्रुवारी, २०१६.

प्रति,
आयुक्त,

वृहन्मुंबई महानगरपालिका,
मुंबई.

(MUNICIPAL REGULATION)
FOR DECENTRALISATION

MGC/6/208
16/2/16

अ. नं. २१५२

अ. नं. २१५२

अ. नं. २१५२

अ. नं. २१५२

विषय:- वृहन्मुंबई महानगरपालिका हद्दीतील कचऱ्याच्या समस्या सोडविण्याकरिता उपाययोजना करण्याबाबत.

मुंबईतील डम्पिंग ग्राऊंडसाठी धोरण ठरविण्याबाबत मा. मुख्य सचिव महोदयांच्या अध्यक्षतेखाली दिनांक ०८ फेब्रुवारी, २०१६ रोजी बैठक झाली. सदर बैठकीमध्ये, मनुष्य आयुक्ताने स्वयं विद्युत् पयविरणाच्या दृष्टीकोनातून २०,००० चौ. मी. क्षेत्रफळाच्या वरील इमारतीसाठी प्रदुषण नियंत्रण मंडळाकडून ओल्या कचऱ्यावर तेथेच प्रक्रिया करण्याच्या अटी घालण्यात येत असल्याची माहिती संचालक, पयाविरण यानी दिली. त्यानुषंगाने आपणांस कळविण्यात येते की, २०,००० चौ. मी. क्षेत्रफळाच्या वरील इमारतीसाठी पयाविरणाच्या दृष्टीकोनातून प्रदुषण नियंत्रण मंडळाकडून ओल्या कचऱ्यावर तेथेच प्रक्रिया करण्याच्या ज्या अटी घालण्यात येतात त्या अटीची ततोतंत अंमलबजावणी करण्यात यावी.

Off of the AMC (City)
No. 7417
Date 16.2.16

D.M.C. (S.W.M.)

A.M. 16/2

K. K. K. K.
(स.दि. खराल)
अवर सचिव

Y to (S.W.M.)

16.2.16
D.M.C. (S.W.M.)

CR 218_2636_BMC_SDR_C_04

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PUNE MUNICIPAL CORPORATION
PUBLIC NOTICE

Consequent to the directives of Supreme Court and Govt. India Gazette Extra ordinary dated 3.10.2000 and Ministry of Environment and forests notification dated 25.9.2000 and provisions of Environment (Protection) Act 1986 and Municipal Solid Waste (M & H) Rules 2000, all the residents of houses, societies, bungalows and row houses are hereby directed that the garbage generated by them has to be segregated at source in DRY and WET in green and white buckets / containers within their premises. This has been made MANDATORY in accordance with the above rules. The details are as follows.

1. **WET WASTE** :- Kitchen waste such as vegetable, leftover and spoiled food, mutton, fish, chicken waste, egg shells, fruit peels, etc. are to be kept in a separate bucket.
2. **DRY WASTE** :- Such waste as paper, plastic, glass, rubber, metal scrap, nails, wires, medicine bottles, broken crockery, packaging materials etc. are to be kept in a separate bucket.

Consequent to MSW (Management & Handling) rules 2000 it has been made compulsory for hotels, commercial establishments, row houses, bungalow apartment & other establishments to segregate waste at source in dry & wet. PMC has made it compulsory to make arrangements for scientific disposal of wet waste for all types of establishments constructed after year 2000. Building permission department, PMC also does not issue completion certificate unless waste disposal facility is made in their own premises. 5% concession from municipal property tax is offered as incentive to the establishments practicing methods for scientific disposal of wet waste generated by them.

The dry and wet waste will be collected from door to door / society to society and from bungalows by PMC employees and members of organizations like SWaCH through ghanta trucks / wheel barrows, tricycles.

No dumping of any mixed waste in PMC containers and no open littering of waste on roads will be allowed henceforth. Those who do not abide by the above rules will be liable for levy of **HEAVY ADMINISTRATIVE CHARGES** as well as legal action which may please be noted.

As per the directives of Maharashtra biodegradable and nonbiodegradable garbage control Act 2006, manufacture, stocking sale as well as distribution of all plastic below 50 micron thickness is strictly prohibited. Defaulters will be punished by fine & further legal action.

All citizens of pune are requested to cooperate with PMC to manage our waste efficiently and keep our environment clean.

Mahesh Pathak
Municipal Commissioner



Regional Office
U.P. Pollution Control Board

E-12/1, Sector-1, Noida, Gautambudh Nagar
E-Mail : ronoida@uppcb.com, Phone : 0120-4974552

Ref. No. :

Date :

To,

Subject: Regarding compliance of Solid Waste Management Rules, 2016 notified under Environment Protection Act, 1986.

Dear Sir,

Whereas Ministry of Environment, Forests & Climate Change, Government of India has notified E Solid Waste Management Rules, 2016 dated 8th April, 2016 in the Gazette of India under the powers conferred by sections 6, 8 and 25 of Environment (Protection) act, 1986. Detail of same is available on website of ministry ie. www.moef.nic.in. The rules have come into force w.e.f. 8th April, 2016

Whereas this rule applies to every urban local body, outgrowths in urban agglomerations, notified industrial townships, areas under the control of Indian Railways, airports, airbases, Ports and harbours, defence establishments, special economic zones, State and Central government organisations, places of pilgrims, religious and historical importance as may be notified by respective State government from time to time and to every domestic, institutional, commercial and any other non residential solid waste generator.

Whereas under the context of aforesaid Rules, your organization is a 'Waste Generator'.

Whereas under sections 4.1(a), (b),(c),(d), 4.2,4.3,4.4,4.6,4.7 and 4.8 it is defined that-

- 4 (1) (1) Every waste generator shall-
- (a) segregate and store the waste generated by them in three separate streams namely bio-degradable, non biodegradable and domestic hazardous wastes in suitable bins and handover segregated wastes to authorised waste pickers or waste collectors as per the direction or notification by the local authorities from time to time;
 - (b) wrap securely the used sanitary waste like diapers, sanitary pads etc., in the pouches provided by the manufacturers or brand owners of these products or in a suitable wrapping material as instructed by the local authorities and shall place the same in the bin meant for dry waste or non- bio-degradable waste;
 - (c) store separately construction and demolition waste, as and when generated, in his own premises and shall dispose off as per the Construction and Demolition Waste Management Rules, 2016; and
 - (d) store horticulture waste and garden waste generated from his premises separately in his own premises and dispose of as per the directions of the local body from time to time.
- (2) No waste generator shall throw, burn or bury the solid waste generated by him, on streets, open public spaces outside his premises or in the drain or water bodies.
 - (3) All waste generators shall pay such user fee for solid waste management, as specified in the bye-laws of the local bodies.
 - (4) No person shall organise an event or gathering of more than one hundred persons at any unlicensed place without intimating the local body, at least three working days in advance and such person or the organiser of such event shall ensure segregation of

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waste at source and handing over of segregated waste to waste collector or agency as specified by the local body.

- (5) Every street vendor shall keep suitable containers for storage of waste generated during the course of his activity such as food waste, disposable plates, cups, cans, wrappers, coconut shells, leftover food, vegetables, fruits, etc., and shall deposit such waste at waste storage depot or container or vehicle as notified by the local body.
- (6) All resident welfare and market associations shall, within one year from the date of notification of these rules and in partnership with the local body ensure segregation of waste at source by the generators as prescribed in these rules, facilitate collection of segregated waste in separate streams, handover recyclable material to either the authorised waste pickers or the authorised recyclers. The bio-degradable waste shall be processed, treated and disposed off through composting or bio-methanation within the premises as far as possible. The residual waste shall be given to the waste collectors or agency as directed by the local body.
- (7) All gated communities and institutions with more than 5,000 sqm area shall, within one year from the date of notification of these rules and in partnership with the local body, ensure segregation of waste at source by the generators as prescribed in these rules, facilitate collection of segregated waste in separate streams, handover recyclable material to either the authorised waste pickers or the authorized recyclers. The bio-degradable waste shall be processed, treated and disposed off through composting or bio-methanation within the premises as far as possible. The residual waste shall be given to the waste collectors or agency as directed by the local body.
- (8) All hotels and restaurants shall, within one year from the date of notification of these rules and in partnership with the local body ensure segregation of waste at source as prescribed in these rules, facilitate collection of segregated waste in separate streams, handover recyclable material to either the authorised waste pickers or the authorised recyclers. The bio-degradable waste shall be processed, treated and disposed off through composting or bio-methanation within the premises as far as possible. The residual waste shall be given to the waste collectors or agency as directed by the local body.

Whereas under rule 15 of Environment (Protection) Act, 1986, it is stipulated that :-

15(1) Whoever fails to comply with or contravenes any of the provisions of this Act, or the rules made or orders or directions issued thereunder, shall, in respect of each such failure or contravention, be punishable with imprisonment for a term which may extend to five years with fine which may extend to one lakh rupees, or with both, and in case the failure or contravention continues, with additional fine which may extend to five thousand rupees for every day during which such failure or contravention continues after the conviction for the first such failure or contravention.

15(2) If the failure or contravention referred to in sub-section (1) continues beyond a period of one year after the date of conviction, the offender shall be punishable with imprisonment for a term which may extend to seven years.

Therefore, in view of the above, you are directed to comply with all the conditions of Solid Waste Management Rules, 2016 and submit the compliance status accordingly within 15 days from receipt of this letter. Failure to comply with rules will attract actions as stipulated in Environment (Protection) act, 1986.

Yours Sincerely,

(Dr. B.B. Awasthi)
Regional Officer

Copy to : Chief Environmental Officer (C-1), UPPCB, Lucknow for information and necessary action please.

Regional Officer

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(To be published in Part II, Section 3, Sub-section (ii) of the Extra Ordinary Gazette of the Daman & Diu Union Territory Administration, dated the.....March, 2018)

Administration of Daman & Diu , Union Territory.
Urban Development Department

Notification

No.DMN/DMC/BYE LAWS/18/2017

The following draft Bye-Laws which are primarily based on model draft bye laws published by Ministry of Urban Development Union of India are proposed to be made by the council in exercise of the powers conferred by sub-sections (1) & (2) of Section 307 read with sections 223 and 225 of The Daman & Diu Municipalities (Amended) Regulation, 1994. They are hereby published, as required by clause (b) of Sub-Section (3) of Section 307 of the said Regulation. These have been published for suggestions and suggestions and objections received have been duly incorporated.

Draft Bye-Laws

In exercise of the powers conferred by sub-sections (1) & (2) of Section 307 read with Sections 223 and 225 of the Daman & Diu Municipalities (Amended) Regulation, 1994 the Daman Municipal Council hereby makes the following Bye-Laws. By powers vested in me as Collector cum Director (Municipal Administration), Daman & Diu under Sub-Section (1) of Section 307 of the said Regulation, I hereby sanction the draft Bye-Laws namely;

1. **Short title and Commencement.** 1.1 These **Bye-Laws** may be called the Daman & Diu Daman Municipal Council **Solid Waste (Handling and Management) Bye-Laws, 2018.**
1.2 They shall come in to force from the date of their publication in the Official Gazette.
1.3 They shall remain in force unless amended in accordance with The Daman & Diu Municipalities (Amended) Regulation, 1994

2.Applicability.

It extends to the whole of the Municipal areas including public places, private places, dwellings, trade and commercial centers. This Bye-Law shall apply to every generator of Municipal Solid Waste and to every premise under the ownership or occupation of any person within the limits of Daman Municipal Council. It will be applicable to any government or non-government premises or organization operating within the premises of Daman Municipal Council.

3.Definitions

In this Bye-Law, unless the context otherwise requires the following words shall have meaning herein defined:-

- 3.1 **"Angan"/premises/place** means the public place in front of, or adjacent on any side of any premises, extending to the road, kerb side including the footpath kerb, drain,nala, plot or premises.
- 3.2 **"aerobic composting"** means a controlled process involving microbial decomposition/breaking down of organic matter in the presence of oxygen;
- 3.3 **"Agency/Agent"** means any entity/person appointed or authorized by Municipal Corporation/Council/Municipality/Daman Municipal Council to act on its behalf, for discharge of duties or functions i.e. sweeping of streets, collection of waste, collection of charges / fines, and other such delegated responsibilities etc.;
- 3.4 **"anaerobic digestion"** means a controlled process involving microbial decomposition/ breaking down of organic matter in absence of oxygen;
- 3.5 **"authorisation"** means the permission given by the State Pollution Control Board or Pollution Control Committee, as the case may be, to the operator of a facility or urban local authority, or any other agency responsible for processing and disposal of solid waste;
- 3.6 **"Bio-degradable waste"** means any organic material that can be degraded by microorganisms into simpler stable compounds; for example the waste of plant and animal origin e.g. kitchen waste, food & flower waste, leaf litter, garden waste, animal dung, fish/meat waste and any other material that gets degraded/decomposed by the action of microorganisms;
- 3.7 **"Bio-medical waste"** means any waste, which is generated during the diagnosis, treatment or immunization of human beings or animals or in research activities pertaining thereto or in the production or testing of biological, and including categories mentioned in **Schedule IV** of the Bye-laws ;
- 3.8 **"bio-methanation"** means a process which entails enzymatic decomposition/ breaking down of the organic matter by microbial action to produce methane-rich biogas;
- 3.9 **"brand owner"** means a person or company who sells any commodity under a registered brand label.

Daman-&-Diu

- specified commercial generators of bulk bio-degradable waste at such times as may be notified from time to time.
- 5.6 Composting by all generators: Local composting or processing of waste shall be promoted to minimize transportation of waste. **It shall be mandatory for the bulk generators to do in house processing of waste.**
 - 5.7 Specified household hazardous waste: (as listed in Schedule III) shall be stored and delivered by every generator of waste to the collection vehicle, which shall be provided weekly by Daman Municipal Council or any other Agency authorized by the Daman & Diu Pollution Control Committee (PCC), for collection of such waste, or to a center designed for collection of such waste for disposal in a manner that is mandated by the Government of Union Territory of Daman & Diu or Daman & Diu Pollution Control Committee (PCC).
 - 5.8 Untreated bio-medical waste (as listed in Schedule IV) shall be collected & stored in specified type of covered receptacles and delivered by every generator of such waste to the collection vehicle which shall be provided weekly by Daman Municipal Council or any other Agency authorized by the Daman & Diu Pollution Control Committee (PCC) for collection of such waste, or to a centre designed for collection of such waste for disposal in a manner that is mandated by the Government of Union Territory of Daman & Diu or Daman & Diu Pollution Control Committee (PCC) in accordance with the Bio-Medical Waste (Management & Handling) Rules, 2016.
 - 5.9 Construction and Demolition waste shall be stored and delivered separately at such spot and at such time as notified by Daman Municipal Council or its agent from time to time for collection of such waste. Small generators (household level) shall be responsible to segregate the Construction & Demolition waste at source by contacting a local help-line of Daman Municipal Council or the Agent who shall then send a vehicle to pick up such segregated construction & demolition waste on payment of necessary charges by the said generator and transport this waste to a processing centre. The details of local Help line of Daman Municipal Council shall be available in the Office of Daman Municipal Council and on their website.
 - 5.10 All other Non-biodegradable ("Dry") waste – both recyclable and non-recyclable – shall be stored and delivered by every generator of waste to the dry waste collection vehicle, which shall be provided Daman Municipal Council its Agents at such spots and at such times as may be notified by them from time-to-time for collection of such waste.
 - 5.11 Bulk garden and horticultural waste shall be kept un-mixed and composted at source. Daman Municipal Council shall also notify Instructions/ guidelines with regard to pruning of trees and storage and delivery of tree trimmings including segregated garden and horticultural waste by charging suitable fees as notified by it from time to time, for collection and transport to its facility.
 - 5.12 Burning of waste: Disposal by burning of domestic, hazardous and commercial solid waste at roadsides, or at any private or public property is prohibited.
 - 5.13 If such owner or occupier fails to comply with any direction contemplated by this Bye law, he / she shall be guilty of an offence punishable under section 223, 224 and 225 of regulations and the Daman Municipal Council may remove, or cause to be removed dispose of or treat such hazardous waste in any suitable manners and recover the expenses incurred in doing so from such owner or occupier.

6) Obligatory duties of Daman Municipal Council

- 6.1 **Action against Transport Contractors, agents or Employees of Municipal Council:** Daman Municipal Council shall take action against the Transport Contractor and/or Agents/employees of Daman Municipal Council, if any worker of the contractor or any employee of Daman Municipal Council mixes segregated waste at any point of collection, or fails to pick up waste as per the specified time schedule.
- 6.2 **Infrastructure facilities:** Daman Municipal Council shall provide adequate infrastructure facilities to assist citizens' compliance with these Rules/Bye-laws. In addition to waste collection services, litter bins, dry waste sorting centers, and composting centers shall be set up, wherever possible and essential, in consultation with local citizens. Adequate community toilets shall be provided in slum localities with the participation of Community Based Organizations to prevent nuisance such as defecating/urinating, washing and bathing in public places.
- 6.3 **Citizen Resource Base:** The Daman Municipal Council shall facilitate information about composting as well as recycling of dry waste through composting centres and dry waste sorting centers listing them on its website.
- 6.4 **Bio-degradable puja articles:** **The Daman Municipal Council shall authorise interested organizations to collect bio-degradable 'puja' articles (flowers, leaves, fruits etc.) at certain designated sites near water-bodies such as beaches, lakes, ponds, etc. in notified receptacles. The collection from such receptacles shall preferably be composted at a suitable location.**
- 6.5 **Point-to-Point waste collection services:** The Daman Municipal Council shall provide for the collection of the municipal solid waste from specific pick-up points on a public or private road up to which the generator must bring the collected, segregated and stored waste for delivery to municipal

- majority. Any such resolution shall come in to effect as soon as the same is approved by Director Municipal Administration. Any such resolution shall be published in three local newspaper.
- 8.2 The owner/ occupier shall be deemed to be guilty of the offence and shall pay the fine, if the responsible person for dumping waste in a private place is unidentified.
 - 8.3 If it becomes necessary on the part of the Daman Municipal Council to remove or process the waste, which was the responsibility of any other agency to remove or process then the responsible person or entity shall be liable to pay the expenses to the Daman Municipal Council at the rate of 5 times the charges prescribed or Rs. 5000/- per incidence whichever is higher.
 - 8.4 (Nothing in these bye-laws prevents Daman Municipal Council to recover—in addition to the fine prescribed under Dadra and Nagar Municipal Council regulation or under any rules or bye-laws made there under— administrative charges for any extra expense incurred on removal or disposal of waste because of non-cooperation of any person.
 - 8.5 The dues under these bye-laws shall be recovered in the same manner and to the same extent as property tax. Provided that no such recovery Proceedings shall be initiated unless the defaulter has been given one month's time to pay the dues.
- 9) Miscellaneous provisions:**
- 9.1 Bio medical waste and industrial waste shall not be mixed with urban solid waste and the collection of such waste shall be made as per the rules/byelaws specified separately for the purpose. Common Bio Medical Waste Treatment Facility (CBWTF) services shall be availed for disposal of bio medical waste as per rules/byelaws. Disposal of such hazardous waste will have to be ensured at the Common Bio Medical Waste Treatment Facility (CBWTF) plant at the prescribed charges.
 - 9.2 Stray animals shall not be allowed to roam freely around waste dumps or at other places in the city and arrangement will have to be made for restraining them at authorized area/place only.
 - 9.3 No one will collect or throw waste water, muddy water, night soil, dung, excreta etc. from his/her building, institution or commercial establishment to pollute the atmosphere and ground with its stench and harm public health or obstruct traffic, failing which, administrative charges or fine shall be levied on the spot for spreading such waste, and case can be brought against them in court.
 - 9.4 If a person is found spreading pollution or filth in public parks etc. by throwing dead animal/cattle or its parts, it will be a punishable offense and administrative charges shall also be levied.
 - 9.5 It shall be the duty of Daman Municipal Council to protect all waste handlers from the ill-effects of their occupation and should be given annual medical examination and monitoring, given appropriate health education and free medical treatment if it is felt that the illness is occupation – related. Daman Municipal Council shall provide person protection equipment's and monitor that the same is used by the workers.
 - 9.6 The Daman Municipal Council shall develop a management information system for effectively taking corrective measures as well as proper planning for future. Geographic Information System (GIS) shall be introduced and MIS may be integrated in this system. There should be route maps and duty charts with each of the supervisory staff, who should check whether work on site is going as per schedule and whether vehicles and manpower are giving their optimum output.

10) Responsibility of Urban local bodies –

- 10.1 Transport of the municipal solid waste: - The vehicles used for the transport of solid waste are to be duly closed so that the waste should not be visible to the public and the waste is not scattered elsewhere on the road during transportation, the following standards should be maintained during the transportation of the solid waste.
 - 10.2 The solid waste would be collected and cleaned as per schedule from the established waste collectors. Along with the waste, the surrounding area of the disposal site should also be kept clean.
 - 10.3 The design of the transport vehicles will be such that the waste will not be allowed to touch ground until it reaches its final processing/disposal site, and thus the recurring handling of the waste will not be allowed
- 11) **Recycling of the municipal solid waste** - To process the solid waste collected in the Local Body of Municipal Corporation/ council as useful materials, various solid waste disposal units approved by the pollution control board/PCC and different techniques of such solid waste should be applied so that the dependency of waste disposal on the landfills can be minimized. Following standards should be applied for the expected results:-
- 11.1 **For the processing of the bio-degradable waste, various techniques can be used such as vermicomposting, composting, mechanized composting, bio-methanation etc. Also the waste can be degraded using the other natural methods/resources by obtaining the required authorisations.**

8.	No. 5.3	For not delivering bio-degradable waste in a segregated manner as specified	Rs. 50/-	Rs. 500/-
9.	No. 5.8	For not storing & delivering Construction and Demolition waste in segregated manner.	Rs. 500/-	Rs. 5000/-
10.	No. 5.9	All other Non-biodegradable Waste	Rs. 50/-	Rs. 500/-
11.	No. 5.10	For not delivering garden waste and tree trimmings as specified	Rs. 50/-	Rs. 500/-
12.	No. 5.11	For Burning waste	Rs. 500/-	Rs. 5000/-
13.	No. 6.1	Mixing Segregated Waste	Rs. 500/-	Rs. 5000/-
14.		Putting waste at not specified places	Rs. 200/-	Rs. 2000/-
15.	No. 7.2	For not delivering (non household) fish, poultry and meat waste in a segregated manner, as specified	Rs. 150/-	Rs. 1500/-
16.	No. 7.3	For a vendor / hawker without a container / waste basket	Rs. 150/-	Rs. 1500/-
17.		For a vendor / hawker who does not deliver waste in a segregated manner as specified	Rs. 150/-	Rs. 1500/-
18.	No. 7.4	For not keeping a house/ gully/ Service lanes clean	Rs. 100/-	Rs. 1000/-
19.	No. 7.5	For littering/defecation by pet / owned animals	Rs. 300/-	Rs. 3000/-
20.	No. 7.6	For not cleaning-up after public gathering / event within 4 hours	Forfeiture of the Cleanliness Deposit. Rs. 100/-	
21.	No. 9	Violation of provisions regarding hazardous waste and bio-medical waste.	Rs. 50/-	Rs. 500/-
22.	No. 13.7	Use, Sale, Storage or distribution of plastic bags is banned in DMC area	Rs. 200/-	Rs. 2000/-

SCHEDULE – II –

Illustrative list of biodegradable and recyclable waste

<p>Biodegradable Waste "Biodegradable waste" means "wet" waste of plant and animal origin.</p>	<p>Recyclable waste "Recyclable waste" means "dry" waste that can be transformed through a process into raw materials for producing new products, which may or may not be similar to the original products.</p>
<ul style="list-style-type: none"> •Kitchen Waste including: tea leaves, egg shells, fruit and vegetable peels •Meat and bones •Garden and leaf litter, including flowers •Soiled paper •House dust after cleaning •Coconut shells •Ashes 	<ul style="list-style-type: none"> •Newspapers •Paper, books and magazines •Glass •Metal objects and wire •Plastic •Cloth Rags •Leather •Rexene •Rubber •Wood / furniture •Packaging

Schedule III:

Specified hazardous waste:

Specified Household Hazardous Waste:

- Aerosol cans
- Batteries and button cells
- Bleaches and household kitchen and drain cleaning Agents & Containers.
- Car batteries, oil filters and car care products and consumables
- Chemicals and solvents and their containers
- Cosmetic items, chemical-based Insecticides and their containers
- Light bulbs, tube-lights and compact fluorescent lamps (CFL)
- Discarded Medicines and its containers,
- Paints, oils, lubricants, glues, thinners, and their containers
- Pesticides and herbicides and their containers
- Photographic audio/video tapes and their containers, chemicals
- Styrofoam and soft foam packaging of furniture, packaging and equipment
- Thermometers and mercury-containing products

Schedule IV:

List of Bio-medical waste: (Extract from the Bio-Medical Waste Rules)

<p>Bio-medical waste</p> <p>"Bio-medical waste" means any waste, which is generated during the diagnosis, treatment or immunization of human beings or animals or in research activities pertaining thereto or in the production or testing of biological.</p> <p>Category No 4 Waste sharps (Needles, syringes, scalpels, blades, glass, etc. that may cause puncture and cuts. This includes both used and unused sharps)</p> <p>Category No 5 Discarded Medicines and Cytotoxic drugs (waste comprising of outdated, contaminated and discarded medicines)</p> <p>Category No 6 Solid Waste (Items contaminated with blood, and body fluids including cotton, dressings, soiled plaster casts, lines, beddings, other material contaminated with blood)</p> <p>Category No. 7 Solid Waste (waste generated from disposable items other than the waste sharps such as tubing's, catheters, intravenous Sets etc)</p>
--

Collector / Director (MA)
Daman & Diu ,
Daman

Daman
Dated / /2018

Anaerobic or Composting?

Anaerobic Wins

Composting needs energy input to turn large compost piles in cities or apartments.

Anaerobic digestion:

produces biogas (a renewable energy)

biogas plants make more energy than they consume



Greeneria **Bio-Gas**

For Renewable and Sustainable Energy Production

Three Problems = One Solution

Bio Gas Plant

- Biogas is a different gases produced by the breakdown of organic matter in the absence of oxygen. Biogas can be produced from raw materials such as:

Agricultural waste

Manure

Municipal waste

Plant material

Sewage

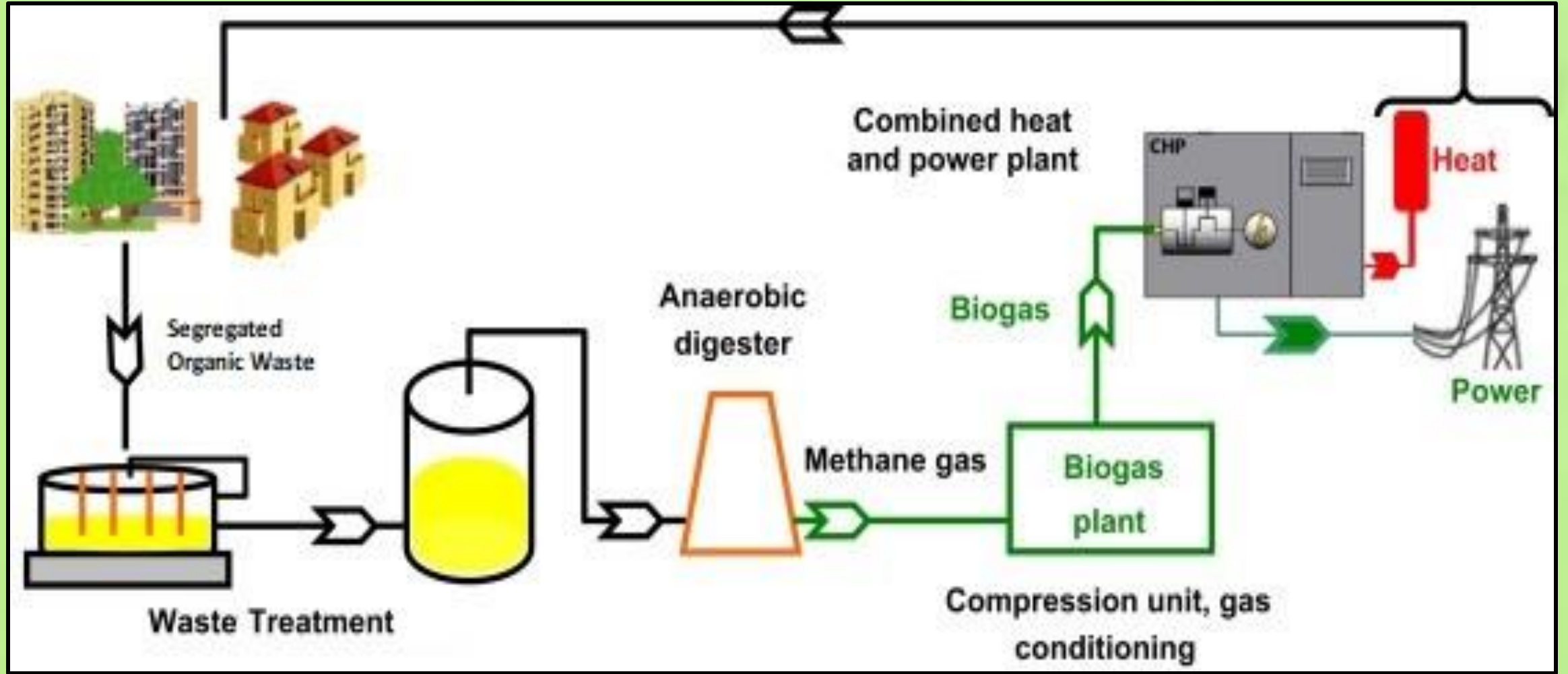
Green waste

Food waste

Cow dung

- Biogas is a renewable energy sources produced by anaerobic digestion with anaerobic organisms, which digest material inside a closed system, or fermentation of biodegradable materials.
- Biogas is primarily methane (CH_4), it has carbon dioxide (CO_2) as the second major constituent.

Biogas Plant Overview



Greeneria Renewable Technologies Proposes

1. Creating a community kitchen for poor and downtrodden people by building a kitchen with 30+ gas stoves.
2. Lighting up street lights through Biogas generator to nearby areas of biogas systems.
3. Creating a charging station for Electric Vehicles.

Community Kitchen



Out of the organic waste we can put gas stoves and given opportunity for utilization 2-3 hours in the morning and 2-3 hours in the evening for cooking purpose.

This can be a very popular and effective process.

Lighting up Street Lights

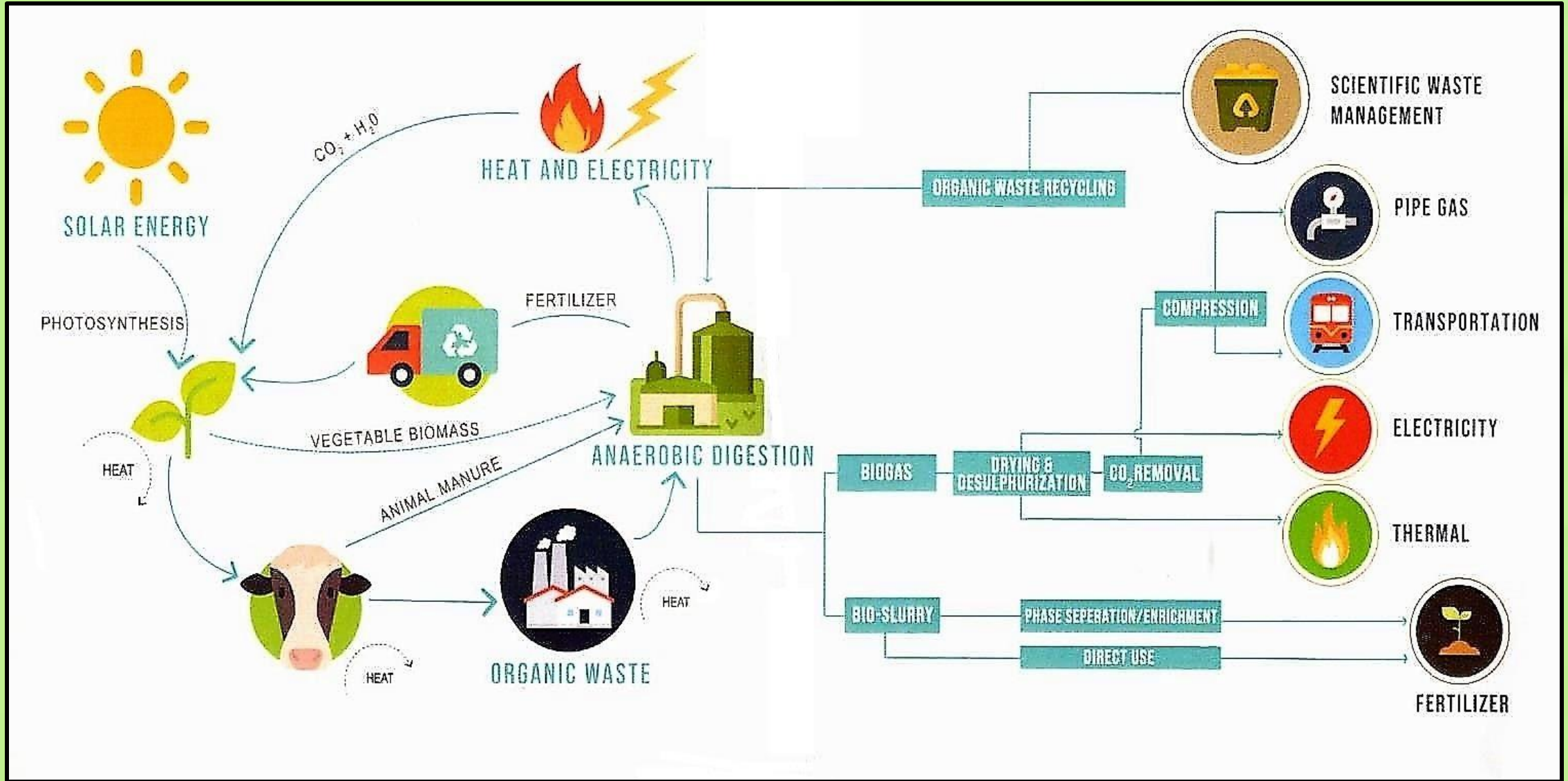


Out of the organic waste we can put gas stoves and given opportunity for utilization 2-3 hours in the morning and 2-3 hours in the evening for cooking purpose.

Charging Station



Why Biogas?



Why Biogas?

On demand energy

Organic Fertilizer

Closed nutrient cycle

Waste reduction

Renewable energy source

Reduced
green house gases

Reduced
odours & files

Uses of Bio-Gas

Bio-Gas is utilized for various purposes such as :

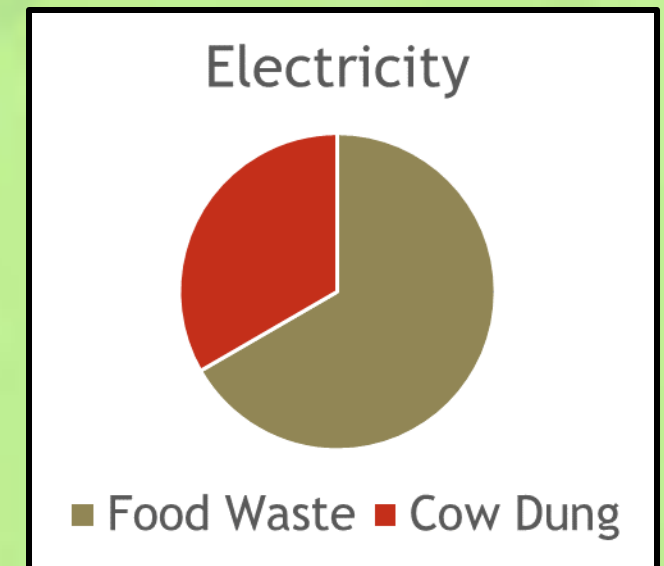
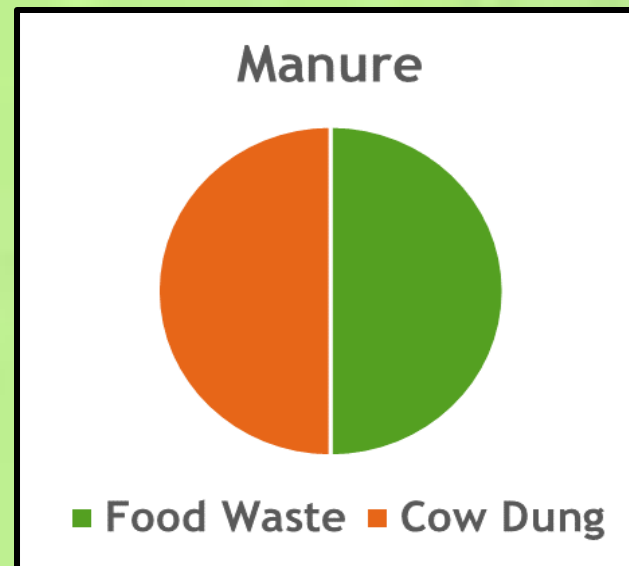
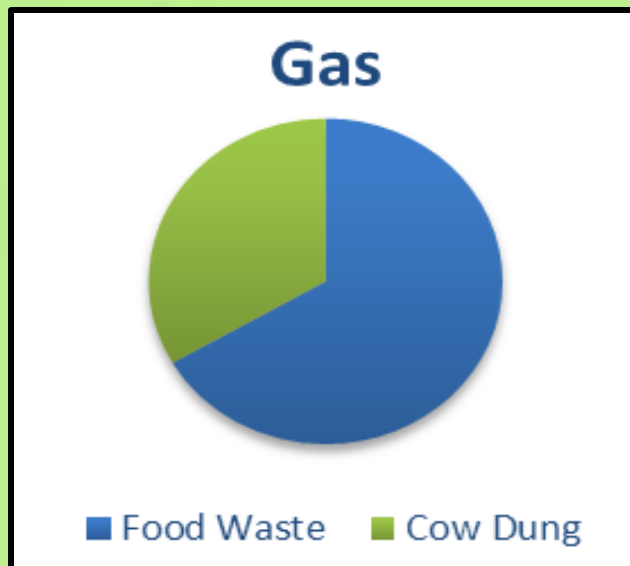
1. LPG equivalent Cooking gas
2. Electricity production
(Waste to energy)
 1. Water heating for steam boilers
 2. High quality fertilizers

Greeneria **Biogas**

- ✓ Greeneria offers a 'Zero garbage, Zero effluent' method for waste disposal.
- ✓ Greeneria is an above the ground State of the art Biogas plant made of steel with epoxy coating.
- ✓ The "Greeneria" technology offers a comprehensive solution for handling the bio-degradable waste material. It is based on the concept of maintaining elemental balance in the Nature.
- ✓ There is a good potential for energy generation and Methane-rich gas.

Output

Material	Gas	Manure	Electricity
Food Waste	4%	20%	100 Units per Ton
Cow Dung	2%	20%	50 Units per Ton



Types of Biogas Plants

1. Civil constructed Plant

– from 10 Cum to 1000+ Tons

(1 Ton to 1000+ Ton we can give Bio-CNG Cylinders, Electricity, Carbon Dioxide Cylinders)

2. Prefabricated Containerised GreeERIA Nest

– from 10 Cum to 160 Cum

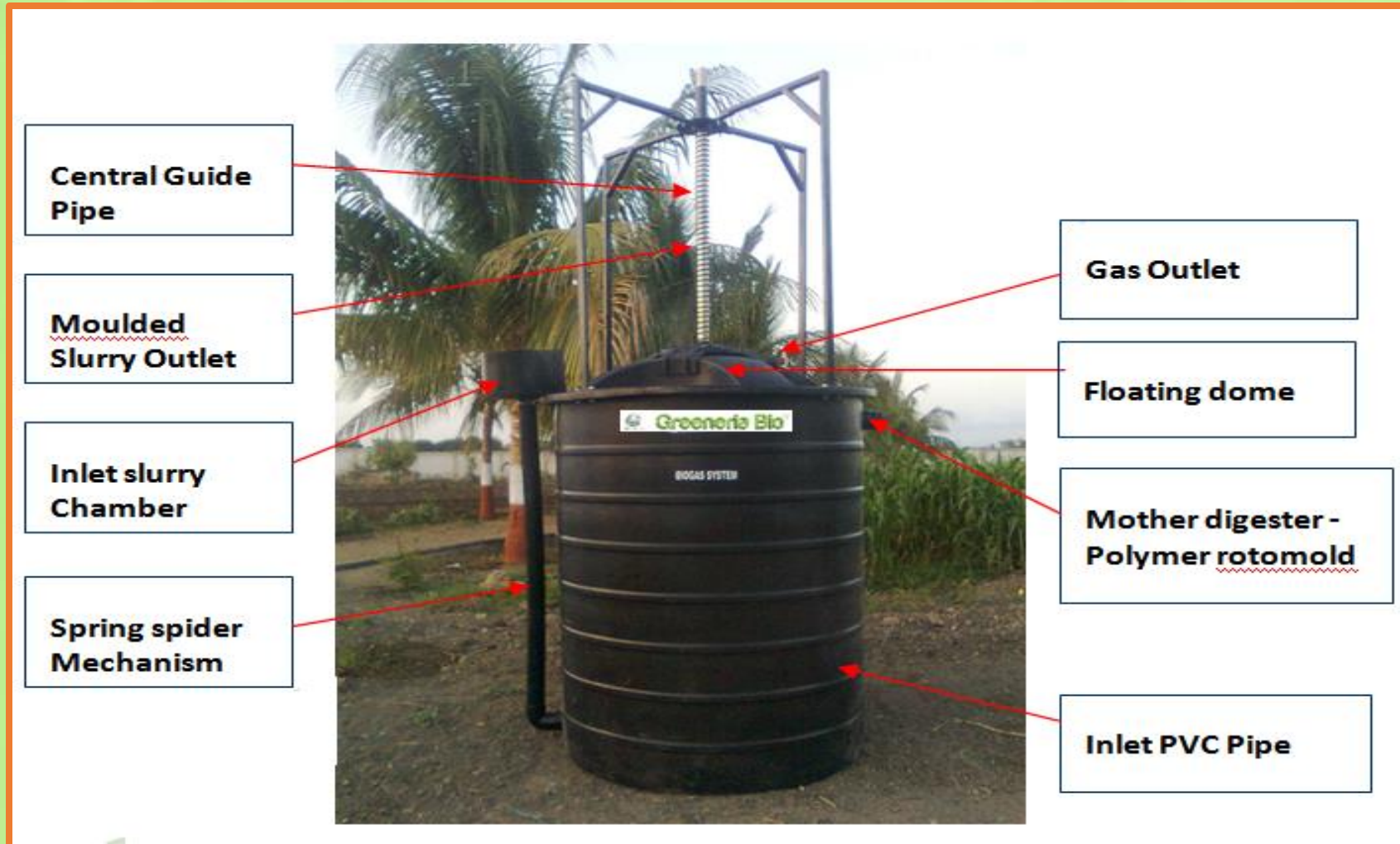
3. Polymer Rotomold Plants

– from 0.2 Cum to 4.0 Cum

4. Containerised Plant (Used Shipping Container)

– Optional

Greeneria Biogas Plant

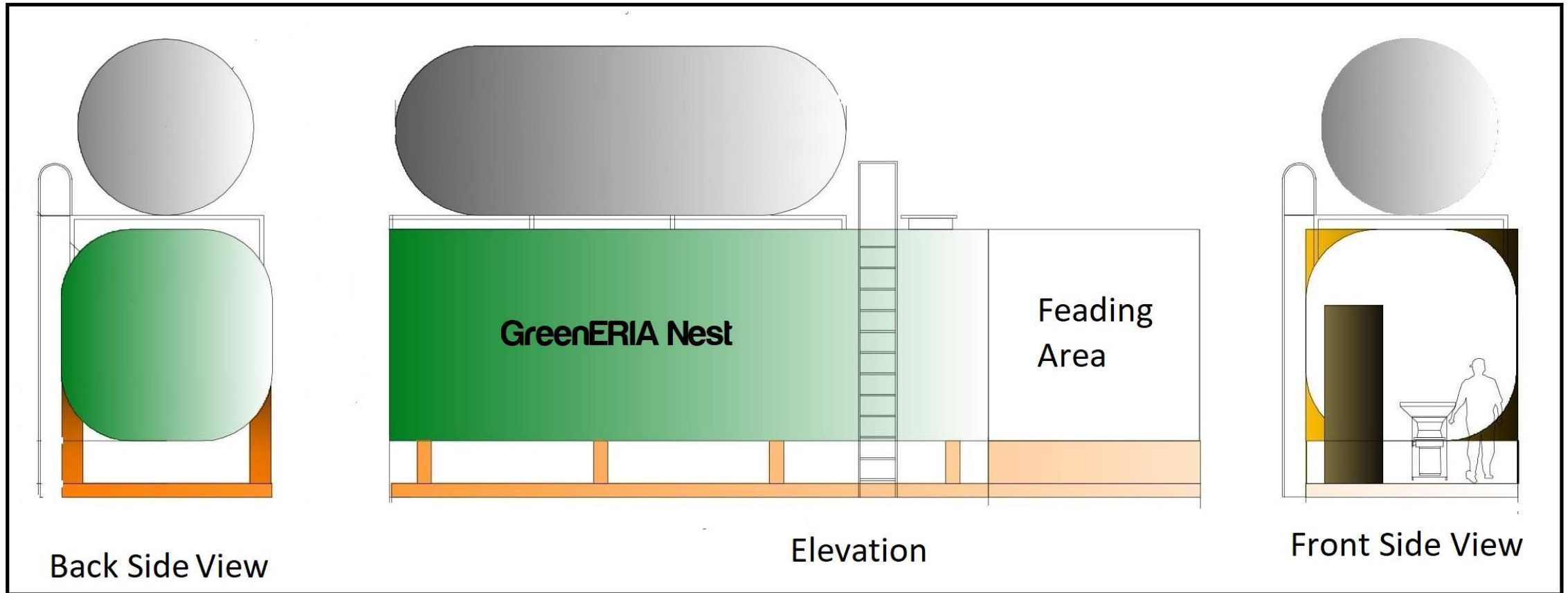


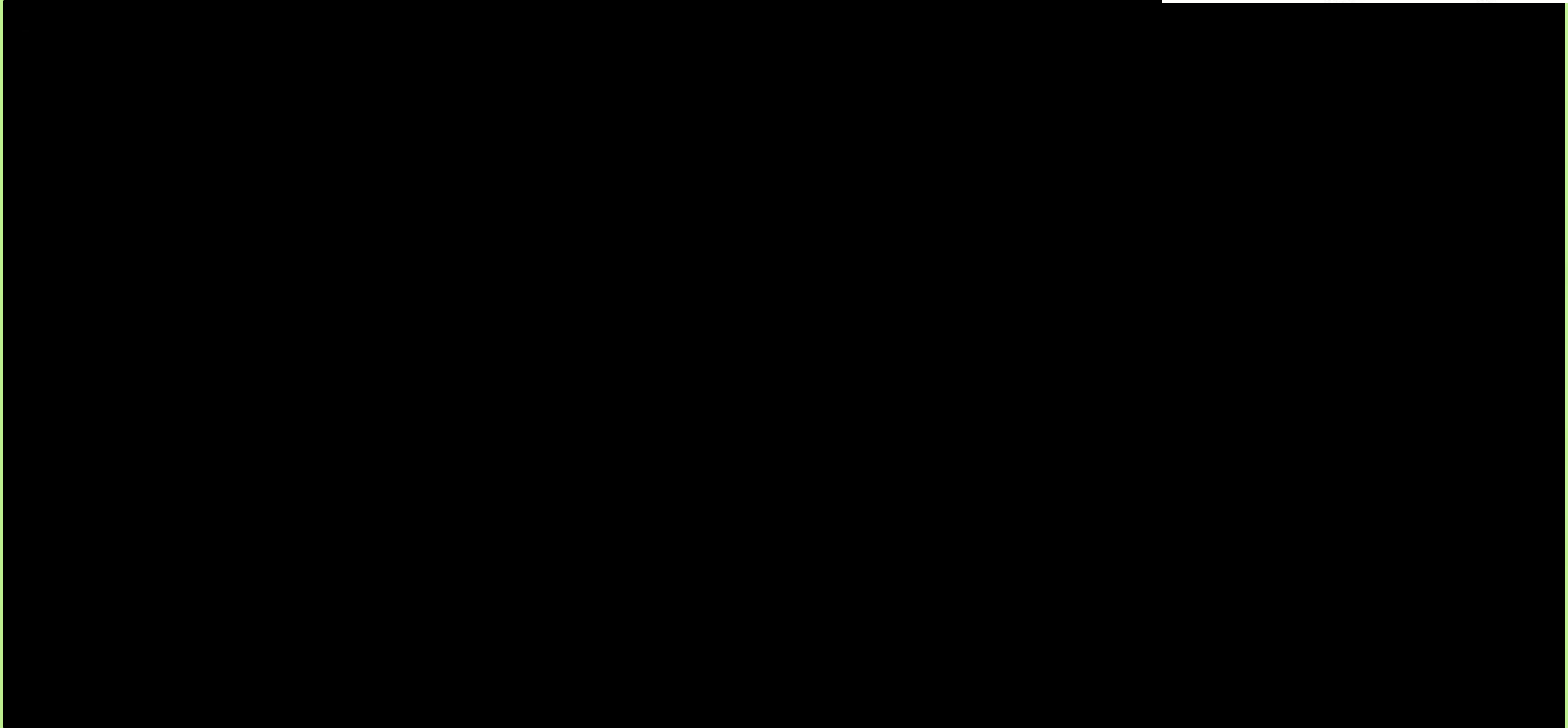
CUTTING EDGE TECHNOLOGIES IN BIOGAS

Aruna Green Ventures have developed “PSTR” patent pending technology which is highly compact (Only 320 Sq. ft) for processing 1 TON organic waste.



Technology: State of the Art Technology transfer from Germany





GreenERIA Nest

An Innovation from **Aruna Green Ventures Pvt Ltd**

The background is a vibrant green with a soft, out-of-focus texture. In the upper right corner, a single green leaf is visible, showing two small water droplets on its surface. In the lower left corner, there are concentric ripples on a body of water, suggesting a recent splash. The overall aesthetic is clean, fresh, and natural.

Remote Monitoring

MECHANICAL SHREDDER



CRUSHER ON

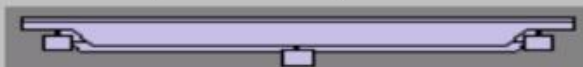


MIXER ON

SUB PUMP-1

SUB PUMP-2

-0.0 kg.



WEIGHTING SCALE

ACTUAL FLOW KG/HR

-12.5

TEMP. 19.63 °C

pH -520.0

HOT WATER SYSTEM ON

DEWATERING SYSTEM

ADD kg.

ALARM RESET

FLARING SYSTEM

FLARING UNIT ON

TEMP. -75.02 °C

SOV-2

SOV-1

PT-1

346.66 mmWC

PT-2

0.67 Bar

kg. 13.3

GAS STORAGE VESSEL

SCRUBBER

COMPRESSOR-1 ON
COMPRESSOR-2 ON



OR MESH

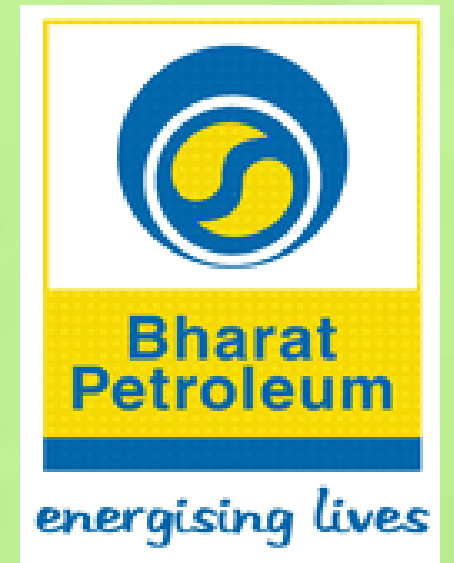
HOME

Managing Centralized Waste

- 1. Waste thru Bio-Methanation.**
- 2. SATAT Program.**

SATAT Program

Sustainable Alternative Towards Affordable Transportation (SATAT) aims at setting up Compressed Bio-Gas production plants for fuels for cars.



“If SATAT Program is Implemented”

- Cuts carbon emissions
- Additional revenue for farmers
- Climate change goals
- Reduction in import of natural gas and crude oil

Implementation of SATAT Program

- **Compressed Bio-Gas (CBG) plants are entrepreneur-driven.**
- **CBG transported by cylinders to CNG stations.**
- **CNG stations serve 32 lakh gas-based vehicles.**
- **Entrepreneurs market other by-products -- bio-manure, CO₂, etc.**

The background is a vibrant green with a soft, out-of-focus texture. In the upper right corner, a single green leaf is visible, with two small water droplets resting on its surface. In the lower left corner, there are concentric ripples on a body of water, suggesting a recent splash. The overall aesthetic is clean, fresh, and natural.

Success Stories

Rashtrapathi Bhavan, New Delhi – 2 TPD



Source of waste from Landscape, Food waste from support staff, Horse dung from cavalry, Cow dung from cattle is being processed into useful biogas for 3 different canteens at Rashtrapathi Bhavan, New Delhi

Prestige Jindal City, Bangalore – 5.5TPD



India's largest residential biogas system processing about 5 Tons of waste into about 300 common area street lights.

Prestige Falcon City, Bangalore – 3.5 TPD



- 2525 Apartments
- 10 KVA Generator
- 1300 Kgs on an average waste is generated, producing about 56 units of power per day.
- Captive Power consumption will be handled by generator.
- Excess power will run common are lighting

TMC, Anekal,_Bangalore – 2 TPD



Anekal Municipality in the suburbs of Bangalore is using the generated electricity for their office lighting and AC purposes.

Shivamoga Corporation, Shivamoga – 2 TPD



1500 Kgs of waste is processed and generated LPG equivalent gas is being given to Indira Canteen

Uzhavar Sandhai (Farmer's Market)

Coimbatore City Municipal Corporation (CCMC) – 1.5 TPD



40 Kgs of output gas is obtained and is utilized for generating power of 140 units -- which are used to power 350 streetlights of 20-60 watts LEDs.

Shriram Summit, Bangalore – 1 TPD



Prestige Shanthiniketan Forum Mall, Bangalore – 1.5 TPD



Capgemini Technology Services India Limited, Hinjewadi, Pune – 1 TPD



Waste from about 2000 people eating. 40 kg of energy used for kitchen or 2 commercial cylinders a day.

NTPC Limited, Kudgi – 0.5 TPD



BEML, Bangalore - 500 Kgs



Rail Wheel Factory, Bangalore - 500 Kgs



East Central Railway, Sonpur - 500 Kgs



Noida Sector 30 - 500 Kgs



Noida Sector 71 - 500 Kgs



RNS Shanthi Nivas Apartments, Bangalore - 300 Kgs



Mahaveer Marvel Apartments, Bangalore - 250 Kgs



Air Force Station Suryalanka, - 150 Kgs



IOCL, Haldia - 100 Kgs



CSR from IOCL, Haldia - 100 Kgs per day plant installed at a school in Nandigram



South Asian Forum for Environment (SAFE), Kolkata - 100 Kgs



NTPC_Kahalgaon_100 Kgs



Parasmani Regency Apartments, Bangalore - 100 Kgs



Hotel Balaji Sarovar, Solapur_100 Kgs



TMC, Magadi- 1 Ton



Naval Dockyard, Vishakhapatnam - 2x250 Kgs



Harihara Town Municipal Council - 500 Kgs



Boys Hostel & Girls Hostel, Madhugiri – 1x125 Kgs & 1x250 Kgs



Army Campus, Bangalore – 250 Kgs



Town Municipal Council, Kottur - 100 Kgs



Town Municipal Council, Hanagal – 2x100 Kgs



Town Municipal Council, Mundgod - 100 Kgs



Town Municipal Council, Huvinahadagali - 100 Kgs



Town Municipal Council, Rabakavi Banahatti - 3 Nos of 50kg



Eshwari OAK Dale, Bangalore - 50 Kgs



KRK Urban Ville, Gunjur, Bangalore - 50 Kgs



Clientele



Central Public Works
Department



प्रयागराज
स्मार्ट सिटी



ಕರ್ನಾಟಕ ರಾಜ್ಯ ಪೊಲೀಸ್



सादर सेवा
Konkan Railway



beml
NEW FRONTIERS. NEW DREAMS



IndianOil



NTPC-SAIL Power Company Limited
(A Joint Venture of NTPC & SAIL)



Indian Railways
Life Line To The Nation



एनपीसीआईएल
NPCIL

Clientele



Reliance Industries Limited



L&T Construction



FUTURE OF SPACE



REMEMBER TO LIVE™
ozonegroup®
THE ONES THAT COUNT





Thank You!

For further details contact:

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formerly

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Jayanagar East End, Bangalore South, Bangalore – 560069

Ph: 8861075555, 8861921167

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Web: www.arunagreen.com