



Ahmedabad Municipal Corporation

Solid Waste Management Practices & Initiatives of Ahmedabad Municipal Corporation

SOLID WASTE MANAGEMENT

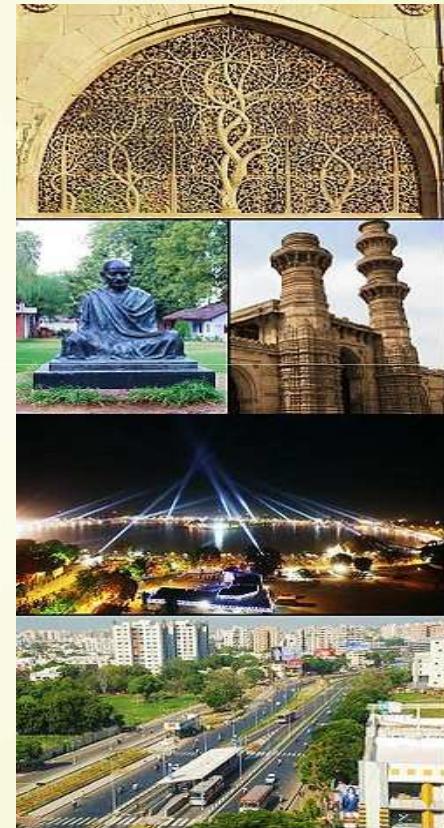


AHMEDABAD – an overview

- Ahmedabad is the 7th Largest Metropolis in India, having a population of almost 6 million and spread over an area of 466 Sq Km.
- For effective service provision and smooth administration to all citizens, AMC has divided its activities in 6 Zones and 64 wards.
- AMC has undertaken the mission towards achieving A Clean and Green Ahmedabad through the Solid Waste Management (SWM) Department which is in charge of all functions concerned with municipal waste collection, transportation, treatment and disposal of waste. AMC has allocated a funding of Rs. 2130 million in its annual budget 2012-13 towards the development of SWM.



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AHMEDABAD – Yearly growth statistics



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	1981	2001	2007	2010
AREA (sq km)	98.15	190.84	466	466
NUMBER OF WARDS	36	43	43	64
POPULATION (in million)	2.01	3.52	5.50	6.00
SOLID WASTE COLLECTION (TONE)	316483	394650	809856	948390
SOLID WASTE GENERATION PER HEAD PER DAY IN KGS	0.330	0.370	0.403	0.433
EMPLOYEES OF SWM DEPT.	3876	7554	8000	11000

TOTAL HOUSEHOLD UNITS = 1.3 Million

TOTAL COMMERCIAL UNITS = 0.4 Million



AHMEDABAD -Waste management scenario



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- Six municipal zones - 64 municipal wards.
- More than 1200 vehicles for collection & Transportation.
- Almost, **3600 Metric Tons of solid waste is generated** from the city on a daily basis including 300 MT of construction and demolition debris.
- 1100 Secondary Storage Sites
- More than 12,500 Employees Involved..



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AHMEDABAD -Waste management scenario



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Nearly 61 percent of total Municipal Solid Waste is collected through municipal bins and street sweeping.

STREET SWEEPING

- 365 Working Days
- Total 1,484 km roads area is swept on a daily.
- Strength of more than 12,000 Workers

Timing:

- 06.30 am to 11.30 am
- 03.00 pm to 06.00 pm



AHMEDABAD -Waste management scenario



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DOOR / GATE TO DUMP SYSTEM

- **365 Working day**
- More than **700 Vehicles** deployed
- Timing: 7 am Onwards
- Introduced in July 2009
- Closed body **Hydraulic Euro III vehicles** used for lifting solid waste.
- SW collected in morning from residential units and in evening from Commercial units.
- Refuse Compactors take waste from these vehicles to the treatment plants.
- The **Project covers entire city.**



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AHMEDABAD -Waste management scenario



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SECONDARY COLLECTION AND TRANSPORTATION

- 365 Days Working
- More than 100 Vehicles Used
- More than 1050 Sites
- Working: Round The Clock

WEIGH BRIDGE

- 365 Days Working
- Daily 3600 MT Waste Weighed
- More Than 1000 Trips
- Working: Round The Clock



AHMEDABAD -Waste management scenario



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JCB Type Front End Loader Machine



Truck Mounted Road Vacuum Sweeping Machine

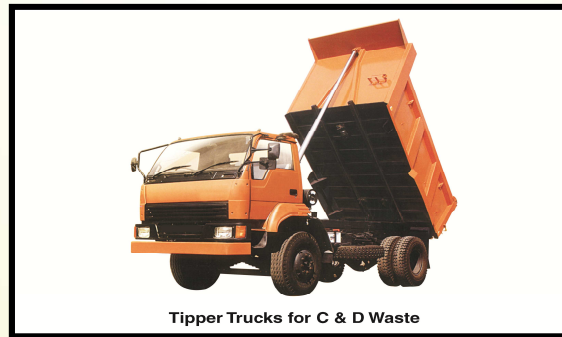


5 CMT skip containers for C & D removal on chargeable basis

Skip Lifter Unit



Dumper Placer Unit



Tipper Trucks for C & D Waste

Tipper Truck



Refuse Compactor



TREATMENT OF MSW



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AVERAGE DAILY COLLECTION OF MSW = 3600 MT/DAY
Contract Assigned For 2300 Tons

500 MT / DAY

EXCEL IND.

(For Compost, Since Year 2000)

250 MT / DAY

UPL DJAI POWER LTD.

(For Fuel Pellets {Eco Fuel}, Since July, 2009)

850 MT / DAY

Creative Eco-Recycle Port Pvt. Ltd.,

(Fuel Pellets / RPPWF {Eco Fuel}, will start in 2012)

500 MT / DAY

HANJER BIOTECH ENERGIES PVT. LTD.

(Using Integrated SWM Technology. The company will make Compost, Fuel Pellets {Eco Fuel}, it is expected to be functional in 2012)



Disposal of Solid Waste- Secured Engineered Landfill Site (Operational Since 14.10.2009)



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Capacity: 11.50 Lacs Metric Tones
(i.e. 1.15 million tons)

Daily off load: 500 metric tons of
inert waste from waste processing
plants for next 6 years

Total construction cost the site: Rs.
13 Crore

Area: 12.88 Hectares
(32.8271 acres)



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Overall Waste Characteristics

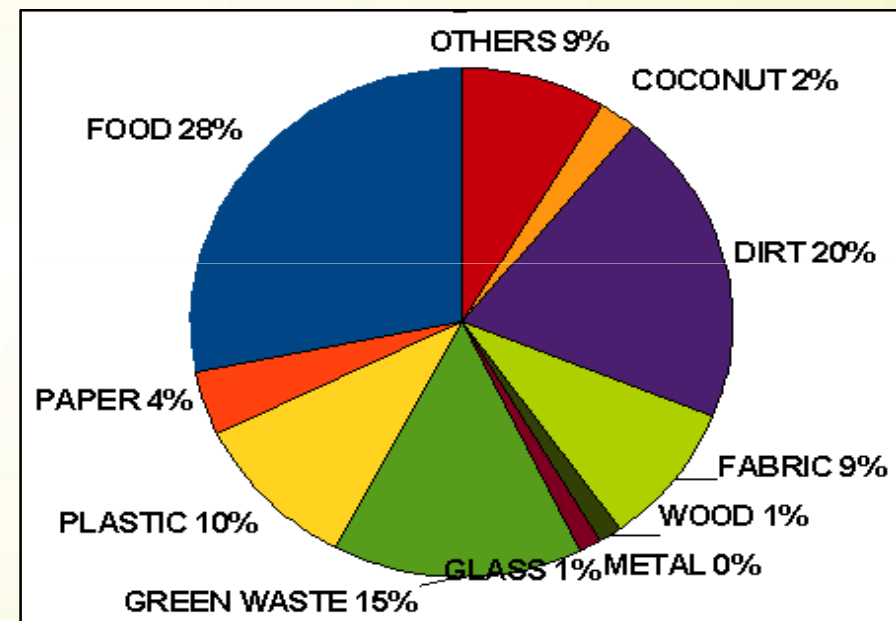


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Chemical Analysis of Ahmedabad's MSW collected at disposal side:-

- A) Carbon/Nitrogen ratio generally varies from 30 to 50.
- B) Lower Calorific Value (LCV) for MSW is < 1000 K Cal/Kg.
- C) Moisture in MSW varies from 30% to 55%.

Note: Waste comes at disposal site without segregation, i.e. Mix MSW.



Data based on waste characterization done by Abellon Clean Energy, 2010





Initiatives taken for Solid Waste Management in Ahmedabad



Initiative taken by AMC in SWM



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1. Mobile Court Initiative for Littering & Nuisance

AMC launched **country's first Sanitation Mobile Court** on 4th June, 2009 dedicated to contain littering.

Till 21/08/2012, **total 95,566** cases have been registered and **Rs. 3.25 Crore** penalty levied from such offenders.



Initiative taken by AMC in SWM :



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2. Project for AWARENESS

Started a Project for IEC (Information, Education, Communication) Activities and Awareness Generation among the General Public Towards Cleanliness, Waste Treatment & Waste Disposal

- To form Participatory Committees and conduct Group meetings in the Wards
- Publicity through Television Channels / Local Cable Network
- Advertisement in Newspapers
- Preparation & Distribution of pamphlets
- Preparation & Erecting of Banners
- Preparation & Exhibiting of Awareness Creation slides in Cinema Theatres
- Conducting Street plays
- Organizing of rally involving School & College students
- Imparting Awareness training to Municipal staff and Councilors
- Conducting miscellaneous events



Initiative taken by AMC in SWM :



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3. Proposed Capping of Present Dump Site and Methane Gas Extraction, Processing and Supply to near by industries / Generation of Electricity (under planning)

- AMC is presently disposing the waste at existing dumping site having total area of about 84 acres. About 65 acres of land is accumulated with heaps of garbage having 15-20 meter height.
- Methane gas in ample quantity is entrapped in the heaps.
- AMC has given consent to Cargo Power & Infrastructure for taken up feasibility study (at its 100% cost) for the project and if the study will show positive sign then Cargo will develop the project on PPP mode with its 100% investment. The time limit for submission of study report is 31/12/2012.



Initiative taken by AMC in SWM :



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4. Transfer Stations (under construction)

ADVANTAGES:

Savings in Transportation Cost

Reduction in Pollution

Easement of Traffic Conjunction

- **Six Transfer Stations** of about **400 MT capacity** each to be set up in **Five Zones**.
- Total 12 Stationary Compactor and **60 Large Containers** (20-25 CMT Capacity which can carry 10 to 12 MT of MSW). There will be **2 Stationary Compactor** and **10 Large Containers** each transfer Station.
- **40 Large Hook Loader Vehicles** have been proposed to transport waste from Six Transfer Stations to the Disposal Site / Treatment Plant.



Stationary compactors at transfer station



Hook Loaders for trasportation from transfer station





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Initiative taken by AMC in SWM :

5. Project for Recovery of Dry Recyclables (under planning on a larger scale)

- The focus is on segregation of Solid Dry Recyclable Waste at the source i.e. at the Household Level & and also to create Awareness for People's Participation.

Benefits

- Incentive to households for waste Segregation
- Enables cleaner waste streams – increases usability of waste



Initiative taken by AMC in SWM :



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6. Decentralized Model for Biodegradable waste: Effective Utilization of Garden / Hotel Kitchen Waste

- AMC started this Pilot Project on Sep 11.
- Daily Garden, Hotel Kitchen and other Green waste is converted into **Organic Manure** with the help of Excel Industries Ltd.'s Organic Waste Converter (OWC) Machine on **PPP mode**.
- OWC Machine with capacity of converting **200 kgs biodegradable waste into compost** has been put on experimental basis for 60 days to observe the process and effectiveness of the machine.
- Such small project to convert biodegradable waste to compost is useful for residential societies, big hotels, canteens, etc.
- AMC wishes to encourage such decentralized mode.



Initiative taken by AMC in SWM :



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Decentralized Model for Biodegradable waste: Effective Utilization of Garden / Hotel Kitchen Waste

Eco Club:

- Registered members can give their green waste at site and they will get **credit points**.
- Green waste can produce **30 per cent organic manure** which is returned to the member without any charges.
- Electronic weighing scale is used for weighing.
- Organic manure will be given in **900 grams packet** to the members in eco compostable 'True Green' bag.
- Time for Eco Club activity: 8 am to 10 am and 4 pm to 6 pm.



Initiative taken by AMC in SWM :

Decentralized Model for Biodegradable waste:
Effective Utilization of Garden / Hotel Kitchen Waste



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Organic Waste Converter Machine



Waste batch size: 50kg, Power: 8HP 3Phase



Initiative taken by AMC in SWM :



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7. Solid Waste Processing Planning

AMC has received various offers from experienced Companies for processing MSW on PPP mode.

AMC has awarded consultancy to **Deloitte Touche Tohmatsu India Pvt. Ltd.** for Technical, Commercial and Financial Evaluation.

The selection process will be completed in very soon for contract of waste treatment for **3000 MT** daily.



Initiative taken by AMC in SWM :



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8. Preparation of Ahmedabad SWM Master Plan for 2031

AMC has decided to prepare a Solid Waste Master Plan for 2031 with the help of **Urban Management Centre**.

The following details shall be covered in the Master Plan:

- 1) Introduction to SWM Master Plan – A Country Overview
- 2) Profile of Ahmedabad City
- 3) Existing SWM System in Ahmedabad
- 4) Solid waste characteristics
- 5) Current (leading) waste management practices
- 6) Strategy & Options for SWM in Ahmedabad
- 7) Planning for 'Zero Waste' management system
- 8) Institutional strengthening and training
- 9) Capital Investment Plan
- 10) Monitoring & Evaluation



Initiative taken by AMC in SWM :



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9. Preparation of Public Health Bylaws

Recently AMC has given work order to prepare **Public Health By-laws** keeping in mind of all present requirement & future planning for better administration to **All India Institute of Local Self Government**



Initiative taken by AMC in SWM :



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10. Scientific and safe disposal of Carcasses of animals & waste from slaughter house, fish market, meat market etc.

- Recently AMC has issued an Expression of Interest for Design, Construction, Operation & Maintenance of a **daily 10-15 tons processing plant on Public Private Partnership** mode for **30 years**



Initiative taken by AMC in SWM :



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11. Scientific disposal of Construction & Demolition Waste

- AMC has issued an Expression of Interest for Design, Construct, Operate & Maintain a daily **300 tons processing plant** for Construction & Demolition waste and collection & transportation of such waste from city area on **Public Private Partnership mode for 30 years.**



Initiative taken by AMC in SWM :



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12. e-WASTE MANAGEMENT

For effective implementation of **e-waste (Management and Handling) Rules, 2011** in Ahmedabad, AMC in coordination with **GPCB** and with the help of **Corporate Sector** is planning to establish **points system** for e-waste collection, **safe transportation and safe storage** of the same.

Ernst & Young is preparing a Roadmap for the same on PPP basis.



Initiative taken by AMC in SWM :



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13. Involving Community for Clean, Green & Beautiful City

Rotary Club of Ahmedabad - Prahladnager and all other Rotary Clubs of Ahmedabad are planning join AMC's A clean and Green City under **Adopt a Street** .

Rotary Club will invite residents to adopt a street as a volunteer. Such registered volunteer will take care of such street for cleanliness, make aware all residents of that street about sanitation, facilitate AMC for its various schemes for sustainable solid waste management system in that area & community..



Initiative taken by AMC in SWM :



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14. Development of Roadmap for Zero Waste Ahmedabad

AMC participated at the **Special Event of ISWA World Congress 2011** and agreed on the **“Declaration for Zero Waste Ahmedabad” by 2031**. AMC has signed a Memorandum of Understanding with **UNCRD (United Nations Center for Regional Development, Japan)** which is providing technical assistance for developing a **“Roadmap for Zero Waste Ahmedabad”**.

For this initiative AMC had a detailed Multi-stake holders' consultation meeting with the help of UNCRD Japan on 18th April, 2012 for developing a **Draft Road Map**. This draft is at the verge of finalization and next Multi-stakeholders consultation on the Pre-Final Draft Road Map for Zero Waste Ahmedabad is on 12th September, 2012. This meeting is jointly organized by the **AMC & UNCRD with the support of Zero Waste South Australia**.



Initiative taken by AMC in SWM :



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From this potential technical support from **UNCRD in developing a “Road Map for Zero Waste Ahmedabad”**, AMC will move forward for increasing resource efficiency and reduction of waste, development and implementation of policies for resource efficiency and environmentally sound waste management, development and enforcement of policies, strategies, laws, regulations and also involve continued, new & innovative public-private partnerships among industry, governments, academia and other non-governmental stakeholders aiming to enhance capacity and technology.



Initiative taken by AMC in SWM :



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By adopting this Zero Waste concept in City of Ahmedabad with the help of UNCRD, not only Ahmedabad but would also serve as the root or catalyst for policy changes at National level in realizing resource efficient and zero waste societies in India.





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SUSTAINABLE SOLID WASTE MANAGEMENT

Water

Air

Soil

Triggers



Wise

Approach to

Sustainability

Through



SOLID WASTE MANAGEMENT





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THANK YOU VERY MUCH !



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SOLID WASTE MANAGEMENT

