



AAETI

Anil Agarwal Environment Training Institute

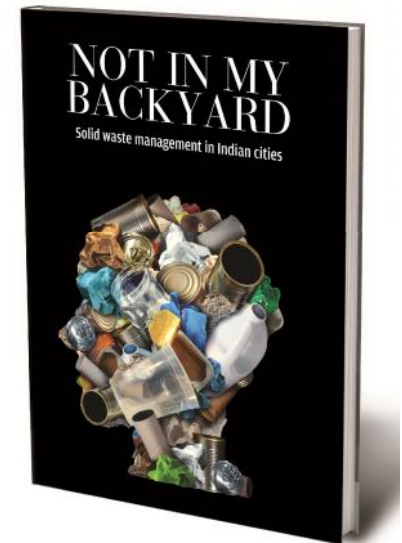
Knowledge Conclave

CSE'S JOURNEY ON WASTE MANAGEMENT

Not in My Backyard

Our major findings

- Started as survey to find cleanest city of India-asked all stakeholders in our DTE magazine to tell us **‘Which is the cleanest city in the country?’**
- The answers included cities of Mysuru, Allapuzha, Panaji, Bobbili and others
- Shortlisted 13 of these cities and our researchers spent 2-3 months each over a span of two years (2014-2016) to understand what makes a city clean?
- We found the following, firstly what makes a city clean, secondly how do we contest the issue of our obsolete data? Thirdly where do we go from here?



What makes a city clean?

Three cases – Clean, To an extent clean and Unclean

THE GOOD, BAD AND SMELLY

CSE rankings of cities based on their solid waste management system

Group	City
Group 1 Best: Segregation, processing and recycling of waste. Zero-landfill cities	Alleppey, Kerala
	Bobilli, Andhra Pradesh
	Panaji, Goa
	Mysuru, Karnataka
Group 2 Second-best: Clean cities; some segregation and some processing	Aizawl, Mizoram
	Pune, Maharashtra
	Surat, Gujarat
	Suryapet, Telangana
Group 3 Third-best: Have worked on cleaning the city but not on how to process and recycle the waste	Agartala
	Bengaluru
	Chandigarh
	Delhi
	Gangtok
	Shimla



Source: CSE survey, 2014-15

Order book at: <http://csestore.cse.org.in/not-in-my-backyard-dvd-combo-offer.html>

How much do we generate?

Obsolete data

- No clear idea on how much we generate
- Data on generation of solid waste is not based on measurement, but estimated
- Thumb-Rule is:
 - **Small cities: 0.3 kg/capita/day**
 - **Big cities: 0.5-0.6 kg/capita/day**
- But what is clear is that per capita waste generation is growing across country
- In a city like **Muzaffarpur with 4.5 lakh population, per capita waste generation is around 0.8-1 kg/day, where would be Metropolitans?**
- **Waste generation is linked to wealth** – *As we grow more wealthy, we generate more waste. The richest cities and states in India are generate most waste*

How much waste is generated?

Waste generation growth is outpacing population growth by 2-3 times

Solid waste generation in India

(Million tonnes/Year)

1991



2000



2011



2014



This figure does not add the quantum of waste managed by the informal sector, on an average about 10000 TPD

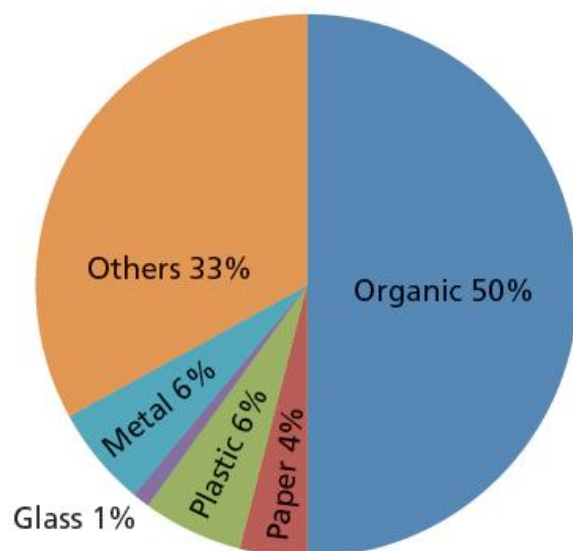
Source: Compiled from research papers and available documents (DEA and CPCB)

Composition decides technology, but in practice its otherwise

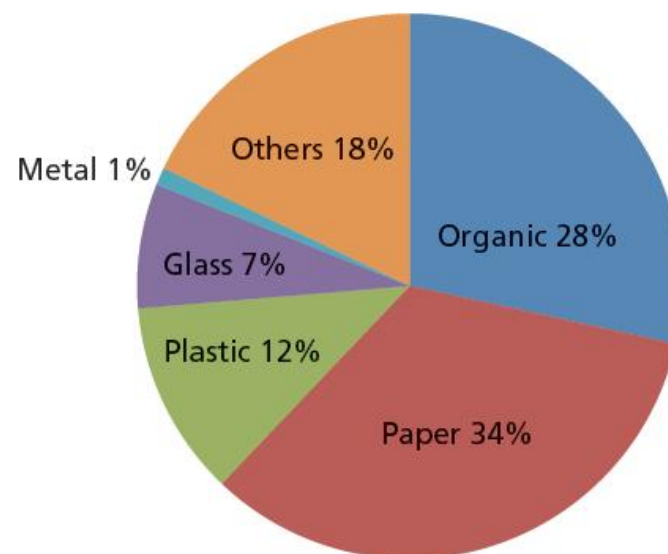
COMPOSITION OF WASTE

Half of the waste in South Asia is organic, while the organic fraction is less than one-third in OECD countries

South Asia



OECD countries



Source: *What a Waste*, 2012, World Bank paper

We concluded our report by suggesting our cities, stakeholders to change the following...

- Landfills are not the answer
- Segregate, segregate, segregate
- Charge and penalize
- Informal is critical
- Re-design contracts
- Good management is the issue
- Celebrate NIMBY

OUR IMPLEMENTATION WORK IN BIHAR

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Our work in Muzaffarpur, Bihar



Objective

- Achieve 100 percent source segregation -- houses, commercial areas, hotels, bulk generators to give segregated waste
- Promote decentralised waste management
- Compost/ generate biogas from wet waste
- Recycle dry waste
- Provide respect & dignity to Waste Collector
- **Make Muzaffarpur a CLEAN, ZERO LANDFILL CITY**

What have we achieved so far...

- Approx. 5 Lakh population, 49 wards and 8 circles, 1500-3000 HHs per ward
- 270 metric tons of waste daily (as per our estimates)
- Propagation complete in HHs in 22 wards and all commercial shops
- 440 composting pits to handle wet waste from entire city
- Over 80% Households giving segregated waste
- Collectors earn 2000 INR/ month by selling dry recyclable waste

Only city in Bihar to have achieved this. State Urban Department has asked all ULBs in Bihar to adopt this model

**A NEED TO GET CITIES TOGETHER TO
ACT....INCEPTION OF FORUM OF CITIES**

Forum of cities that segregate

- Launched on 12th December, 2017
- Attended by 20 cities from 13 states, request received from 14 other cities thereafter



Forum Cities

City	State
Panchghani	Maharashtra
Balaghat	Madhya Pradesh
Patna	Bihar
Indore	Madhya Pradesh
EDMC	New Delhi
Thiruvananthapuram	Kerala
Mysuru	Karnataka
Alappuzha	Kerala
Bengaluru	Karnataka
Gangtok	Sikkim

City	State
Bobilli	Andhra Pradesh
Amdavad	Gujarat
Greater Hyderabad	Telangana
Bhopal	Madhya Pradesh
Gurugram	Haryana
SDMC	New Delhi
Vajiapur	Maharashtra
Gaya	Bihar
Imphal	Manipur
Muzaffarpur	Bihar

What will we work on with **Forum Cities**

- Developing knowledge exchange platform for participating cities on solid waste management (SWM)
- Training and capacity building on source-segregation model of SWM
- Tracking the progress of cities
- Forum cities to become pioneer cities and handhold other cities on technical, economic and social aspects of SWM
- Collate feedback and inputs from the forum cities and provide policy-relevant information to the state governments and Centre on SWM
- Documentation of best practices on forum website

**WHY INSTITUTIONS NEED TO COME
TOGETHER IN THIS MOVEMENT OF
CLEANLINESS?**

Why SWM important for universities/ colleges?

It is critical for educators to pass on best practices related to environment

As per SWM Rules, 2016, onus of waste has been put on generator

Form a group for knowledge sharing,
Managed by GSP team

As per SWM Rules, 2016, institutions to create systems to support segregation and in situ management of waste

The rules put schools and institutions under the bulk generator categories.

- ✓ *All institutions with more than 5,000 sqm area shall ensure segregation of waste at*
- ✓ *facilitate collection of segregated waste in separate streams*
- ✓ *handover recyclable material to either the authorized waste pickers or the authorized recyclers.*
- ✓ *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.*

Bestpractices to adopt



Segregation into at least three streams: wet dry and domestic hazardous waste



Composting/ treatment of wet waste in situ



Give recyclable waste to authorized vendors (paper, plastic, e-waste, glass, metal)



Give sanitary and biomedical waste for incineration

Green School Program

Handholding 5 schools of Delhi for better waste management – ASN, Mother's Global, Modern Public, Queen's Valley and Katha Lab school



Why we need your support?

- Institutions can be the real game changers in the mission of cleanliness
- Waste management is social engineering, schools, colleges play a big role.
- Our work on the ground as well as our study of effective waste management systems clearly highlights the importance of institutions in being the harbingers of change



Thank you

