



Making 'Mission Zero Waste' A Reality Through the Reduce, Reuse and Recycle Principle

**Swachh Bharat Mission (Urban)**

**EIGHTH REGIONAL 3R FORUM IN ASIA  
AND THE PACIFIC**

9-12 April, 2018 Indore, Madhya Pradesh





# India- Municipal Solid Waste (MSW) Landscape

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## Solid Waste Management

*As Submitted by M/oHUA in PMO Report of February, 2018*

|  |  |
|--|--|
| <b>MSW Generation</b>                            | <b>- 1.43 lakh Tonnes per day</b>      |
| <b>MSW Processed/Treated</b>                     | <b>- 35,602 Tonnes per day (24.8%)</b> |
| <b>No. of wards with 100% D2D collection</b>     | <b>- 61,846 (73% of wards)</b>         |
| <b>No. of wards with 100% Source Segregation</b> | <b>- 30,749 (36% of wards)</b>         |

**India's rapid urbanization and burgeoning population have greatly increased the challenges of solid waste management in the country...**

## Solid Waste Composition

| Type          | Total (Metric Tonnes) | %   |
|---------------|-----------------------|-----|
| Biodegradable | 62,510                | 47% |
| Paper         | 10,640                | 8%  |
| Rubber        | 11,970                | 9%  |
| Metal         | 1,330                 | 1%  |
| Glass         | 1,330                 | 1%  |
| Rags          | 6,650                 | 5%  |
| Others        | 5,320                 | 4%  |
| Inert         | 33,250                | 25% |

**We need to change our perspective of how waste is viewed.**

**Waste can also be an asset.**

# Everything we discard has value...

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**Compost**

Biodegradable waste  
can be converted into  
assets...



**Biogas**



**Agarbhatti**



# Even dry waste fractions can be converted into valuable products...



**C&D Waste/ Fly Ash from Industries**



**Building Material, pavers and blocks**



**Reclaimed Wood**



**Furniture**



**Used Tyre**



**Furniture & Fashion Accessories**



**Animal Dung & Cloth Rags**



**Paper Products**



**PET Bottles & Other Plastic Waste**



**Apparel & Accessories**



**Glass Bottles**



**Home Decor**





## IT IS TIME FOR US TO COMMIT TO...

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### ZERO WASTE

Waste management and planning approaches which emphasize waste prevention as opposed to end-of-pipe waste management.



### ZERO BURNING

Solutions that aim to completely eliminate burning of waste



### ZERO LANDFILL

Solutions that prevent diversion of waste to landfills



### ZERO POLLUTION

Innovations that avoid pollution of our land, air and water bodies from all type of waste

# How?

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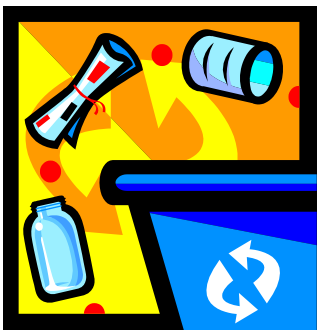
## **REDUCE**

Reduced quantities of waste would decrease burden on collection services as well as treatment and final disposal facilities



## **REUSE**

Reuse of waste will reduce the amount of waste reaching landfills



## **RECYCLE**

Recycling of waste into value added products will encourage sustainable consumption while offering employment and entrepreneurship opportunities



# Swachh Bharat Mission (Urban)



## Major Objectives

**Eradication of Open Defecation in all 4041 Statutory towns**

**100% Scientific Solid Waste Management in all 4041 Statutory towns**

'Mission Zero Waste' synergizes well with SBM's objectives and through this approach the mission aims to encourage cities, industries and other stakeholders to look at Waste as a resource.

## Implementation Components

Individual household toilets

Community toilets/Public toilets

Solid waste management

0.66 crore IHHL  
5 lakh CT/PT seats

Information, Education and Communication (IEC)

Capacity Building (CB)

Awareness  
Outreach  
Advocacy

# GoI Policy Interventions to encourage conversion of Waste to Wealth

35% provided as Viability Gap Funding/Grant by Government of India for all Solid Waste management projects

## Waste to Compost

- M/o Chemicals & Fertilizers has notified policy on promotion of City Compost providing Market Development Assistance of Rs. 1,500 per tonne to fertilizer companies/ ULBs/Compost manufacturers

## Waste to Energy

- M/o Power has revised the Tariff Policy 2006 under the Indian Electricity Act, 2003, making it mandatory for State DISCOMS to purchase power from Waste-to-Energy plants.
- Central Electricity Regulatory Commission (CERC) has notified Generic tariff for Waste-to-Energy at Rs. 7.04 per unit and for RDF (Refuse Derived Fuel) at Rs. 7.90 per unit

## Plastics in Road Construction

- M/o Road Transport and Highways has notified use of plastic waste in bituminous mixes in construction of National highways

## C&D Waste Management

- Central Public Works Dept. has notified mandatory use of recycled portions of C&D Waste in construction activities, if the same is available within 100 kms. of the construction site.

# Waste to Wealth Status



## Waste to Compost

**Waste to Compost Potential : 54 Lakh TPA**

|  | As on Date* |
|--|-------------|
| <b>No. of Functional plants</b>                          | 145         |
| <b>Input capacity of Functional plants (TPA)</b>         | 62.3 Lakhs  |
| <b>Total production of city compost (TPA)</b>            | 13.11 Lakhs |
| <b>No. of plants under construction</b>                  | 150         |
| <b>Input capacity of plants under construction (TPA)</b> | 33.48 Lakhs |



## Waste to Energy

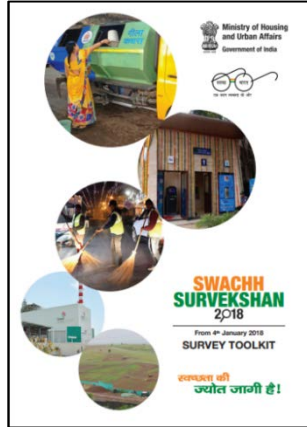
**Waste to Energy Potential : 511 MW**

|  | As on Date* |
|--|-------------|
| <b>No. of Functional plants</b>                              | 7           |
| <b>Production Capacity of functional plants (MW)</b>         | 88.4        |
| <b>No. of plants under construction</b>                      | 56          |
| <b>Production capacity of plants under construction (MW)</b> | 415         |

# Monitoring progress on Waste to Wealth

## Swachh Survekshan

– Competitive framework for evaluating progress and expediting efforts



- City ranking survey on mission-related parameters, to foster competition among cities as well as monitor progress under the mission,
- First ever Pan India Sanitation Survey impacting around 40 crore citizens
- Largest ever swachh survey in the world

### Survey methodology

1

ULB documentation

2

Independent observation and verification

3

Citizen feedback

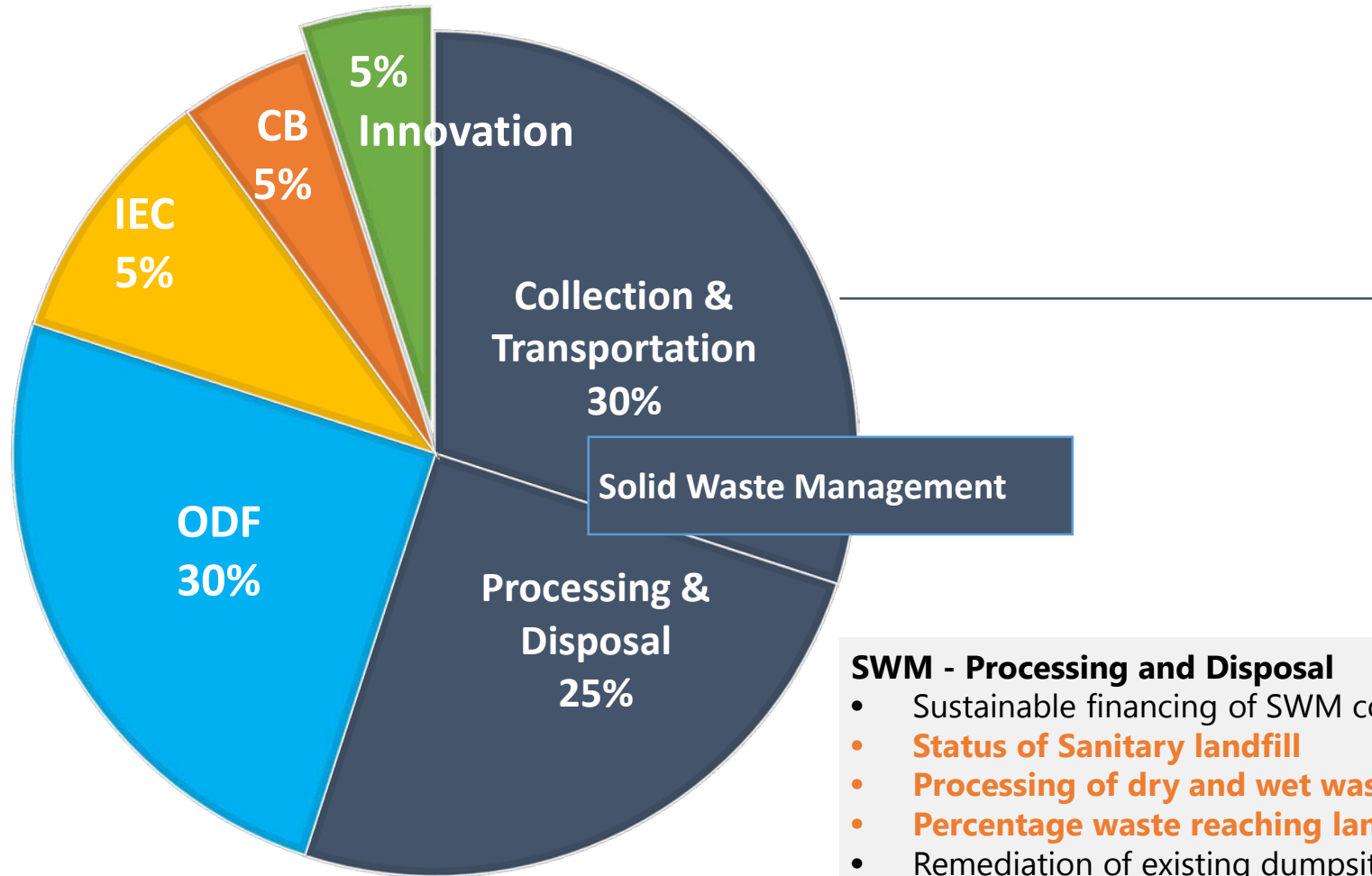
### Top ranked cities-SS 2017

### Bottom ranked cities -SS 2017

| Rank | City (ULB)           | Award Category       | Rank | City (ULB)      |
|------|----------------------|----------------------|------|-----------------|
| 1    | <b>Indore</b>        | Cleanest City        | 434  | <b>Gonda</b>    |
| 2    | <b>Bhopal</b>        | Second Cleanest City | 433  | <b>Bhusawal</b> |
| 3    | <b>Visakhapatnam</b> | Third Cleanest City  | 432  | <b>Bagaha</b>   |
| 4    | <b>Surat</b>         | Fourth Cleanest City | 431  | <b>Hardoi</b>   |
| 5    | <b>Mysuru</b>        | Fifth Cleanest City  | 430  | <b>Katihar</b>  |



# Swachh Survekshan 2018- SWM Focus



## SWM - Collection & Transportation

- Percentage waste segregated into wet and dry
- Onsite composting by RWAs/Bulk generators/ Parks
- Sweeping and cleaning and provision of twin bins in commercial areas
- Door-to-door waste collection system
- Efficient Transportation of waste
- Formal integration of informal waste pickers
- Eradication of Garbage Vulnerable Points
- Vehicle Tracking System
- Staff attendance system linkage with payroll
- Spot Fine
- Provisioning of Personal Protective Equipment

## SWM - Processing and Disposal

- Sustainable financing of SWM costs
- Status of Sanitary landfill
- Processing of dry and wet waste
- Percentage waste reaching landfill
- Remediation of existing dumpsite
- City compost

# Star Rating Protocol for Garbage Free Cities

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A **star rating framework** in consultation with cities to ensure **no visible garbage and enhanced waste processing in all cities/towns**

The framework has been developed in **consultation with states and cities**

**Third party certification** at 3, 5 and 7 star stages

Star rating framework launched on **20th January 2018**

Rigorous capacity building of ULBs to begin from 18<sup>th</sup> April 2018

# Star Rating Protocol for Garbage Free Cities- Key Components

**SEVEN STAR RATING** devised to ensure **holistic evaluation across entire SWM Chain**

A **star rating framework** in consultation with cities to ensure no visible garbage and enhanced waste processing in all cities/towns, launched on 20<sup>th</sup> January 2018

- 1 Door to Door Collection** 
- 2 Segregation at Source** 
- 3 Sweeping of public, commercial & residential areas (no visible eyesores)** 
- 4 Waste Storage Bins, Litter Bins and Material Recovery Facility** 
- 5 User Fees, Penalties, Spot Fines for littering and enforcement of plastic ban** 
- 6 Bulk Waste Generators Compliance** 
- 7 Scientific Waste Processing, Scientific Landfilling and C&D Waste Management** 
- 8 Citizen Grievance Redressal and feedback system** 
- 9 Eradication of crude dumping of garbage and dump remediation** 
- 10 Cleaning of storm drains and surface of water bodies** 
- 11 Visible beautification in the city** 
- 12 Waste reduction** 

**S**INGLE METRIC

**M**EASURABLE

**A**CHIEVABLE

**R**IGOROUS VERIFICATION

**T**ARGETED TOWARDS OUTCOMES

# Additional features of Star Rating Protocol

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## ACHIEVABLE PROGRESS

Each additional star has **increasing levels of stringency** to facilitate city's journey towards 'Swachhata'

## ASPIRATIONAL

Seven star rating includes **aspirational criteria** such as beautification & reduction in waste generated by the city.

## PARTICIPATORY

For obtaining a rating, **citizen groups are to be involved** by the way of citizen declarations

## TRUST COMPONENT

The **assessment & verification for 1, 2 and 4 Star are to be carried out by cities** themselves therefore based on trust

## SUSTAINABLE

**Six levels of ratings** for cities to **continuously work towards next best rating** therefore sustaining & strengthening existing SWM

## INTER-LINKED

To ensure overall liveability, city has to be **certified as Open Defecation Free in order to apply for 3 Star and above** rating



# Waste Reduction-Suggested Interventions

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## 1. Reduce

- Reduce/ Ban usage of plastics and disposals in the city
- Motivate shopkeepers/vendors to tie-up with eco-friendly bag vendors and introduce an incentive for adoption of this approach
- Make 'accessories' in hotels available for a price, rather than being given free, to reduce their usage
- Introduce Extended Producer Responsibility in accordance with SWM Rules 2016

## 2. Reuse

- Achieve 100% source segregation
- Establish Material Recovery Facilities across the city
- Establish a deposit refund system
- Encourage composting at source / proximity to waste generator
- Recycled C&D waste to be mandatorily used in construction

## 3. Recycle

- Carry out awareness campaigns regarding 3R
- Establish recycle marts in collaboration with organisations/individuals working in the recycling space

# Source Segregation is key to 3R...

## IEC Campaigns to encourage Segregation at source

Multimedia campaign, featuring Shilpa Shetty, to address the issue of littering and encouraging segregation of waste into wet and dry (in green and blue bins)



## IEC Campaign to promote Composting 'Compost Banao Compost Apnao'

Multimedia campaign, featuring Amitabh Bachchan, to encourage various stakeholders (individuals, households, banquet hall owners, families, farmers, etc.) to make compost from their generated wet waste

# Focus on Segregation in the Swachh Survekshan IEC Campaigns

## Encouraging cities to get a better score in the survey

Multimedia campaign, featuring various celebrities including Shahrukh Khan, Sachin Tendulkar, Ayushman Khurana, Anil Kapoor, Deepa Malik

### Focus areas

- Do not litter
- **Segregate your waste (for individuals)**
- **Segregate and manage your waste (for RWAs and commercial establishments)**
- Use Swachhata app to support your ULB in improving cleanliness in your city

## TV Commercials



Source Segregation

## Celebrity Messaging for TV Commercials



# **Best Practices**

**Initiatives by States, Cities, Industry and Individuals to promote 3R**



# The problem of Plastic Waste and State initiatives to tackle the menace



## State Initiatives to tackle the problem

- **Maharashtra Plastic and Thermocol Products Notification, 2018** bans the manufacture, usage, sale, storage and transport of products made from plastic and thermocol across the state.
- The states of **Sikkim** and **Himachal Pradesh** have also implemented similar bans

## PLASTIC WASTE POSES A HUGE THREAT TO MARINE ECOLOGY

There are **8 million** tonnes of plastic waste entering the ocean every year

The total plastic in the ocean amounts to **150 million tonnes**

Plastic packaging accounts for **62%** of all items recovered in coastal clean-up efforts

In 2014, there was **1 kg of plastic in the ocean for every 5 kg of fish, and by 2050 there will be more plastic than fish**

Government of India is hosting the World Environment Day at a global level in New Delhi in collaboration with UN environment. The theme for this year is **“Plastic Pollution”**.

# Ways by which plastic can be reduced

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-  **Encourage citizens to reduce, reuse and recycle plastic products** as a part of a daily routine
-  **Ban single use plastic** including water bottle, take-away coffee cup, lunch wrapped in disposable plastic packaging, plastic bags, disposable food service cups, plates and containers made of polystyrene foam; plastic straws, etc.
-  **Encourage use of biodegradable and other types of compostable utensils and bags** that are both durable and inexpensive and reusable. Open the market for manufacturers in this space
-  **Implement innovative bans and recycling fees** to encourage citizens to reduce the use of plastic and incentivize them to recycle plastic



# States leading the way in 3R...

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**Kerala**



## **Leading the way in Decentralized Waste Management**

Most Cities in Kerala have installed pipe compost and bio gas plants at the household level

## **Shining example of a state that is slowly becoming Zero Landfill**

165 out of 168 ULBs have become '0' landfill because of the Zero Waste Model being replicated in cities of Chhattisgarh

**Chhattisgarh**



**Goa**



## **Best Practice for Segregation of Waste**

Segregation of Waste into Minimum 5 fractions enables their conversion into useful assets

# Cities leading the way in 3R...

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## Alappuzha



**Among the top five cities in the world** recognized by the United Nations Environment Programme (UNEP) as success stories in fighting the problem of solid waste.



## Ambikapur



**The Zero Waste Model of Chhattisgarh's cleanest city, Ambikapur,** has resulted in the city having no open dumping yards, segregating over 90 % of its waste and generating ₹13 lakhs every month through its recycling efforts.



## Panaji



**Panaji a bin less and landfill less city where residents** segregate waste at source (into Min. 5 fractions). The city claims 100% door to door collection. Most residential societies have composting units and kitchen gardens in place for utilizing the compost produced

# 3R in the News...

## How Chhattisgarh's Ambikapur Is Turning Its Trash Into Treasure

Not only has Ambikapur managed to become a zero waste city, but has also economically empowered women and generated revenue from recycling in the process

Chhattisgarh, Independence Day, Waste Management | Written By: [Simar Singh](#) | August 11, 2017 9:15 PM | 1

### HIGHLIGHTS

1 Ambikapur is Chhattisgarh's cleanest city according to the Swachh Survekshan

Chhattisgarh's cleanest city, Ambikapur, has no open dumping yards, segregates over 90 per cent of its waste and generates ₹13 lakhs every month through its recycling efforts. And all this has been achieved in a short two years thanks to its move towards a decentralised waste

## Mysuru, a city turning India's mountain of trash into cash

About 1 million citizens in Mysuru are in the vanguard of a campaign by Narendra Modi to clean up the country and recycle rubbish into compost and electricity

Last Published: Tue, Jan 02 2018. 01 23 PM IST

Bibhudatta Pradhan

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**New Delhi:** It's 6:30am in the city of Mysuru and the streets are full of the sound of whistles blowing as workers in olive green aprons and rubber gloves begin a door-to-door search. They have come to collect one of India's biggest untapped resources: garbage.

The about 1 million citizens in the southern city, also known as Mysore, are in the vanguard of a campaign by Prime Minister Narendra Modi to clean up the country and recycle rubbish into compost and electricity. The task is gargantuan, but the approach in Mysuru—combining the availability of cheap labour with traditional methods and modern plants—shows how the country might overturn its image of ubiquitous trash.

India's cities are among the largest garbage generators in the world, producing about 62 million tonnes of waste every year. Only about 82% of it is collected and only 28% of that is treated and processed. Most goes into landfills, open dump sites or is just left on the ground, often clogging rivers and drains.

The recent rapid expansion of India's economy has moved its reputation for poor sanitation and dirty streets into a full-blown crisis. Rising wealth and

## Kerala's 'zero-waste' Alappuzha among top five cities in UN list to successfully manage solid waste

India TK Devasia Dec 01, 2017 13:19:13 IST

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The waste management system being implemented in Kerala's coastal town of Alappuzha has been recognised by the United Nations Environment Programme (UNEP) as **one of the five models across the world for fighting the pollution menace.**

Alappuzha, often called "the Venice of East", has been listed in the UNEP environment report entitled, '**Solid approach to waste: how five cities are beating pollution**' alongside cities like Osaka in Japan, Ljubljana in Slovenia, Penang in Malaysia and Cajica in Colombia.

The Centre for Science and Environment (CSE) had also lauded the unique initiative and the town that attracts tourists from all over the world emerged as the cleanest city in the country in the survey conducted by them in 2015-16. It was also presented as a zero-waste model at the Paris Climate Conference in 2015.

## Maharashtra bans plastic bags and single-use plastic items

According to the Maharashtra Plastic and Thermocol Products (Manufacture, Usage, Sale, Transport, Handling and Store) Notification, 2018, the manufacture, usage, sale, storage and transport of products made from plastic and thermocol will be banned with immediate effect across the state.



# Industry Initiatives to promote 3R



**Eco-friendly cutlery and food packaging material**



**PET bottle recycling systems**



**Low cost decentralized solution for processing of waste**



**Eco friendly sanitary napkins**



**Biodegradable shopping bags**



**Sustainable Furniture made from TetraPak**



**Fly ash bricks made from industrial waste**

# Economic & Environmental Impact of 3R

## Swachh Bharat Mission Convergence

### National Urban Health Mission

Spreading the message of 3R in the context of sanitation through ASHA workers

### National Urban Livelihoods Mission

Involvement of Self Help groups in waste Management –collection, transportation and processing of waste

## Impact

### ENVIRONMENT

- **Reduction in carbon footprint** due reduced emissions from burning of waste, reduced use of non-biodegradables, etc.
- **Improved health and well-being and quality of life of citizens**

### ECONOMIC

- **Livelihood generation and self employment opportunities** (esp. for women) through Waste Management
- **Encouraging waste entrepreneurship**- Buy back/market for products of processing due to existing Waste to Wealth policies



**Thank You**

