National Policy Workshop Webinar Series

On

Countermeasures for Riverine and Marine Plastic Litter in India

12 - 22 May 2020

Session 3: Activities and Best practices to counter plastics litter by sustainable waste management and circularity

Collection and Channelizing Plastic Bottle Recycling via Reverse Vending System
Content

- Plastic in day to day life
- Plastic as waste (4-5)
- Recycle - Circular Economy (6-7)
- Biocrux - RVM as solution (8-12)
- Biocrux Profile (13-17)
- Challenges (18)
1907 to 2020 a Meteoric Rise in use
That leaves us with

26000 tonnes* of waste everyday

9000 Elephants

86 Boeing 747

10000 tonnes* of uncollected waste

Top Contributors are
1. Delhi
2. Mumbai
3. Bangalore
4. Chennai
5. Kolkata

Source: Economic Times and CPCB
Kerala Floods: nature gives us back

Mumbai Marine: Drive 2.15 lac Kg of plastic thrown back

What do we do with it? We throw it out of our reach and hence create
Dynamic ... Ever Changing

In B.C
1. Single use plastic is bad
2. Plastic is hazardous
3. It does not decompose
4. It is destroying ecosystem

Knee Jerk
Ban Plastic

In A.C
1. Water bottle
2. PPE, Food packets
3. Sanitiser Bottle

Allow Plastic
States have delayed plastic ban
Court have ruled to put measure to recycle it

Move towards Circular Economy
➤ Recycle
➤ Life cycle and look for upcycle
➤ Nature process
### Basic Challenges of Recycling across world:

<table>
<thead>
<tr>
<th>Contamination/ Mixed waste:</th>
<th>Increased Medical Waste:</th>
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<tbody>
<tr>
<td>- Difficult segregation</td>
<td>- Water bottles from Covid</td>
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<tr>
<td>- Unviable to segregate</td>
<td>- Containment zone</td>
</tr>
<tr>
<td>- Dumping site</td>
<td>- Mask (regular habit)</td>
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<tr>
<td>- Sea dump</td>
<td>- Disposal</td>
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<tr>
<td>- Forest dump</td>
<td>- PPE KIT</td>
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<td>- Sanitizer Bottles</td>
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### Segregation = Recycling

- Wet waste can be turned into compost
- Others can be creatively and resourcefully put into use
Model Built on insight:

“Creating an organized platform for waste producer and recycler, Providing every Indian/corporate an opportunity to contribute to the Plastic free Clean India - we do this by offering recycling options at point of consumption - with in arm’s reach.”
Established 360 degree cycle 100% Recycle petbottle waste with help of our associates...

1. Convert pet flakes into Resin which is used to make
   I. Paints
   II. Dustbin Identified vendor
   III. Toilet cabin
2. Pet is also recycled to Apparels, Caps and Bags

Above items can be sourced back to the clients for their use

Established Product developed from PET waste

A. Chemicals & FRP
B. Merchandise
Biocrux - RVMD (Reverse Vending Machine Digital)

Digital Reward system
1. Key Pad
2. Inserting mobile number
3. SMS Message as a reward
4. Customizable Message

20” screen for
1. Educating Video
2. Message
3. Advertisement
4. Branding 50 sq. feet space

Window to show flakes
1. Volume Reduced by 85%
2. Output Visibility
3. Visual check of bin full status
Annual Impact Of 1 Biocrux Machine

- + 8,64,000 pet bottle can be crushed annually
- +85% Volume reduction
- 17.2 tones of waste gets recycled per year
- 1,000 liters of crude oil saved per year on recycling of pet waste alone
- 10 times reduction in transportation hence saving in fuel & Carbon dioxides emissions
- 13 cubic yard of landfill freed per year
- 43.2 metric tons of Carbon dioxides emissions reduced
- 65KL-85KL of water saving
- Corporate can complete their ISO certification, Audit for waste

Sources:
- www.livesstrong.com/article/181103-the-effect-of-plastic-waste
- www.timeforchange.org/plastic-bags-and-plastic-bottles-co2-emission
- https://youtu.be/WwMn8Oty5M8
Plastic bottles were littered in the valley and on the SMVD track.

Initiative by Shrine Board with BIO CRUX RVM D

85% volume Reduction Flakes (Small Pieces)

Collected Conversion to Resin

46 Machine

Upcycled to Products

Impact: (PET Neutral Track)

1. More than 80 thousand bottles collected.
2. 100% recycling
3. No littering on the tracks on in the valley
4. No release of toxic pollution due to burning
5. Less vehicular traffic to ferry the waste to dispose in landfills

Case Study – RVMD (Vaishno Devi Shrine Board)
Biocrux introduces Smart Bin to support collection, Segregation and disposal of used face mask & dry post Covid-19 waste in smart way. Suitable to place in all over the city at public utility places, corporate offices & residential

Features

1. Automatic Sensor controlled mouth with 3 options: Sanitizer bottles, Face Mask and PPE kits
2. Touch Screen for instruction and selection of waste type
3. IOT based connect with each machine to track usage of machine, Bin full alert with login & password
4. Unique Digital reward mechanism - mobile based on waste deposited for end user encouragement
5. Bin full sensor on machine and to central team to ensure timely clearance & disposal

Capacity:
- Bin 1: 420 liter,
- Bin 2: 200 liter
- Bin 3: 220 liters
Presence..

400+ machines: 75+ cities

North:
1. J & K: Jammu, Srinagar, Katra, Ladakh, Pahalgam
2. Punjab: Chandigarh, Amritsar, Jalandhar
3. UP & Uttrakhand: Haridwar, Dehradun, Bareilly, Modinagar
4. Delhi: Najma Khan, Hyderabad House, Vigyan Bhawan
5. Rajasthan: Jaipur, Jodhpur, Jaisalmer, Ajmer

East:
1. West Bengal: Kolkata, Asansol, Malda, Siliguri
2. Orissa: Bhubaneswar, Puri, Cuttack
3. Jharkhand: Jamshedpur, Bokaro
4. Bihar: Patna, Bhagalpur, JCD
5. Assam: Guwahati, Lilabadi, Tinsukia

West:
1. Maharashtra: Mumbai, Pune, Nagpur, Solapur
2. Goa
3. MP: Indore, Bhopal, Chhindwara
4. Gujarat: Surat, Vadodara, Ahmedabad, Bhavnagar, Rajkot, Somnath, Jamnagar

South:
1. Karnataka: Bangalore, Mysore, Shivamogga, Tumkur
2. Telangana: Hyderabad/Secunderabad
3. Kerala: Thrissur, Thiruvananthapuram
Gallery of Deployments..

- Inorbit mall-Malad-2012
- Bangalore Railway station-2012
- With PM Shri Narendra Modi
- Reliance: Pillai College
- Coke CEO & CM of MP
- ONGC-Vadodra
- TCS-Green Corridor
- Elephanta Caves-2016
- With Varun Dhawan
- BMC-Ward 2016- With Diya Mirja
- Parle Machine -Banglore
- Rail Shivir: With RM Suresh Prabhu
- Bhopal: People queue to use machine
- With Uttarakhand CM
Challenges to RVM Industry

- Support from Government
  - Policy interventions and execution e.g. EPR detailing, Mandate to use recycled material.
  - A deposit system like other countries
  - Financial: Currently dependence on CSR
- Awareness at authority.
  - Installation but slow ramp up.
  - One machine to take every thing. (Despite MSW 2016 mandate of segregation)
- Habit of waste disposal – Indiscriminate littering.
WHY are we in stress today because of wastes?

WHO is responsible for this mess?

What is solution – are we looking for one time solution or sustainable solution??

Let's be a responsible Citizen

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