Solid Waste Management in Urban India

Pammal, Tamilnadu Experience
-Best Practices, Challenges and Issues

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Guwahati, Assam
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Waste Generation

A function of people's consumption pattern and is based on their socio-economic condition.

Pammal – Selection Grade Municipality

- Pammal Total Pop: 75,000
- Floating Pop: 20,000
- Slum Pop: 15,000
- Streets: 618
- Storm water drains: 118 Mt
- Leather Industries: 323
- Total Area: 13.80 Sq.m
- Total Wards: 21
- Total Slums: 11
Waste Generation per day 35 to 37 tons

<table>
<thead>
<tr>
<th>Type of waste</th>
<th>Tons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pet</td>
<td>1.70</td>
</tr>
<tr>
<td>Plastics</td>
<td>3.70</td>
</tr>
<tr>
<td>Organic</td>
<td>5.00</td>
</tr>
<tr>
<td>Food waste</td>
<td>5.50</td>
</tr>
<tr>
<td>Tin</td>
<td>1.15</td>
</tr>
<tr>
<td>Glass/Rubber</td>
<td>2.40</td>
</tr>
<tr>
<td>Less scrap value waste</td>
<td>1.40</td>
</tr>
<tr>
<td>Drainage Silt</td>
<td>9.50</td>
</tr>
<tr>
<td>Municipality landfill area</td>
<td>4.70</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>35.05</strong></td>
</tr>
</tbody>
</table>
Waste Management in Pammal

- Collection
- Segregation @source
- Street Cleaning / Night Sweeping
- Transportation
- Processing
- Disposal
Recycling is a resource recovery practice

- Aluminium
- Beverage Tins
- Copper
- Steel
- Polyethylene
- Pet, glass, paper board, newspaper

Up cycling

- Carry bags, water pouch, laminates
PRECURING ORGANIC WASTES
Vermi Pits
Biogas to Power Generation

EGP - Methodology

Collection of food, slaughter House Waste

Grinding of waste

Anaerobic digester (50m$^3$)

Produces gas CH$_4$, CO$_2$

For lighting

For cooking

Organic manure for agriculture

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Food Waste</td>
<td>500 kg/Day</td>
</tr>
<tr>
<td>Biogas Production</td>
<td>50 Cum/Day</td>
</tr>
<tr>
<td>Electricity</td>
<td>5 Kw</td>
</tr>
<tr>
<td>Lights 75</td>
<td>3 -Streets</td>
</tr>
<tr>
<td>Liquid Fertiliser</td>
<td>225 Litter/Day</td>
</tr>
</tbody>
</table>
Temple Biogas

Project Temple Green

Cleanliness is next to Godliness. Let us save our precious environment for the generations to come.

2 cmt Per Temple/Day = 1 Kg of L.P.G/Day
A portable cylindrical structure with the top cut out to place the chimney. The drum size is about 100 cm height and 150 cm width made from Biomass Charcoal Briquettes.

<table>
<thead>
<tr>
<th>Biomass</th>
<th>Time period</th>
<th>Char yield (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Casuarina leaf litter</td>
<td>1hr 30 min.</td>
<td>42 to 45</td>
</tr>
<tr>
<td>Coconut leaves</td>
<td>1hr</td>
<td>32 to 35</td>
</tr>
<tr>
<td>Eucalyptus leaves</td>
<td>1½ hrs</td>
<td>38 to 40</td>
</tr>
<tr>
<td>Prosaphis stem</td>
<td>45-1hr</td>
<td>40 to 48</td>
</tr>
<tr>
<td>Ipomoea stem</td>
<td>1½ hrs</td>
<td>42 to 45</td>
</tr>
<tr>
<td>Lantana camera stem</td>
<td>1 hr</td>
<td>35 to 40</td>
</tr>
<tr>
<td>Pongamiya leaves</td>
<td>45 min</td>
<td>28-30</td>
</tr>
</tbody>
</table>
Upcycled Products
Good practices

- Waste prevention
- Recycling
- Composting
- Combustion

Pammal has comprehensive Integrated Solid Waste Management
Challenges

Good practice is dominated by technology

- High tech compaction trucks
- Fully automated collection system
- Incineration
- Advanced waste to energy
- compactor Trucks – High Packing materials & Little Organics
- Lack of underground sewerage system

- High Organic Content
- Low calorific value
- High Tropical rainfall
- Silts from drainage canal
- Widespread littering by Shop keepers,
- Office going residents
Way Forward

- Political will and commitment
Simple Appropriate affordable Solutions

Laying the Basis for improvements
Early System

- Extensive collection system
- Phasing out open dumps
- Replacing them with controlled disposal site

Documenting and Improving Recycling system

Pick and mix
adopt and adapt
Every ton waste Reduced, Reused, Recycled

A Ton of Waste that City Does not have to pay to collect and Dispose !!!!
Current Scenario

Widespread littering and dumping of MSW hamper India`s efforts to achieve MDG and combat Climate change

BY2020

The wastes will be 4 times more Requiring an area of 1500 sq.km

Are we ready for this challenge?
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Link 1: https://www.youtube.com/watch?feature=player_detailpage&v=OTNNXP3Navs
Link 2: https://www.youtube.com/watch?feature=player_detailpage&v=OTNNXP3Navs
Link 3: https://www.youtube.com/watch?v=u6n7mrF-FJw