CONSTRAINTS AND CHALLENGES IN MSW MANAGEMENT AT TIRUMALA HILLS

Presented by
P.V. Naga Raju, M.E., M.I.S.T.E
Dy. Exe. Engineer, TTD

&

M. Sreenivasulu, M. Tech, MIE
Dy. Exe. Engineer, TTD
There is no place in the Universe equal to the holy hills of Tirumala and there is no equivalent Lord to Lord Venkateswara.

Tirumala, the “Seven Hills” is abode of Lord Venkateswara.

Located at an altitude of 2,854 ft. above sea level and extends about 10.33 sq.miles.

Comprises seven peaks representing seven hoods of Adiseshu.
On an average, daily around 65,000 (24 million/year) pilgrims visit Tirumala for darshan of Lord Venkateswara and on peak days it reaches even 1,00,000 mark.

Tirumala is connected from Tirupati by 2 Ghat Road ways and 2 Pedestrian footpaths. The A.P. State Road Transport Corporation runs around 1,500 trips of buses per day.
TIRUMALA TIRUPATI DEVASTHANAMS

Sri Tirumala Temple
Pushkarini water is being treated continuously through 5MLD capacity pressure filters.
ACCOMMODATION & FREE FOOD: TIRUMALA

ACCOMMODATION:
No. of Rooms : 7,400
No. of PAC – A Novel concept : 04
Capacity (Approx.) : 45,000

FREE FOOD:
TTD is providing Annaprasadam (free meals) through ‘Annadanam Trust’ since 1985.
Around 52,000 pilgrim being served a day with 4,000 pilgrims in a single sitting.
Zero waiting time.
Apart from this, 40,000 pilgrims provided free food waiting in compartments, queue lines and foot paths.
EXISTING PRACTICES ON

WATER SUPPLY & SANITATION

LIQUID WASTE MANAGEMENT

SOLID WASTE MANAGEMENT
Average daily requirement is 25 lakh gallons and 39 lakh gallons during peak days.

Tirumala water supply is being met from Borewells and Kalyani dam at Tirupati and PPV dam, Akasaganga dam, KP Dam & Gogarbhham dams at Tirumala.

Water is being treated in 12.8 MLD Centralized filterisation plant located at centre of Tirumala town and purified water is distributed in Tirumala town.

64 Nos. of RO water treatment units are provided in Annaprasadam, Rest houses, Q-complexes, footpaths etc., to ensure highly safe drinking water to the Pilgrims.
Entire Tirumala is covered with Under ground drainage sewerage network with 4 Nos. of localized Treatment plants for a total capacity of 9.50 MLD.

5.5 MLD Tertiary Treatment plant since commissioned, to bring the sewage to the potable standards and is being utilized for gardening purpose.
SOLID WASTE MANAGEMENT PRACTICE AT TIRUMALA
TTD is making all efforts to keep the Tirumala hills clean & green, keeping in view of the serenity and sanctity of Tirumala.
The system of Facility Management Service (Housing keeping) is followed by involving 1880 work forces for which 2630 multi purpose workers utilised for cleaning and sanitation and to maintain cleanliness in Tirumala Town ship.

Dual dust bin system (Red & Green dust-bins) is maintained in cottages/choultries/Rest houses, PACs and all other areas, to collect bio-degradable and non-biodegradable materials separately and to achieve source segregation.
About 40 tones of Solid waste is being generated on normal days and up to 60 tones during peak days.

The general composition of garbage is 91.00% of organic waste and remaining inorganic waste consists of plastics, glass, metals, Paper cardboards, leather, cloth, coconut coir/shell etc.

10 Tractors & 100 workers are being engaged for collection & transportation of garbage to the disposal point.

The Bio-medical waste generated in TTD hospitals was scientifically disposed as per A.P.P.C.B through M/s A.W.M Consulting Ltd., Tirupati

Awareness is created through P.A system & S.V.B.C Channel.
Segregation & Cleaning
M.S.W Plant at Tirumala
Waste Receipt & Weighing

Transfer to waste receipt shed.
Unloading of containers

Waste Segregation

Organic waste

Composting (windrow)

Rejects

Recyclables (Metals, plastic etc)

Sold to scrap dealers

Compost

Baggage and storage unit

Landfill
Shredder, Trommel screens of 40mm, 14mm rotary with required conveyors for processed mass and for rejects, 6mm Vibro screen and Destoners.
Rotary

Bucket elevator
De-stoner & Final manure
Under “SWACHH BHARAT” Mission
Tirumala selected one among ten Swachh Iconic Places by Government of India in which Rs 1.50 Crores was granted for Solid Waste Management exclusively
M.S.W processing facility was built by a M/s Mahindra & Mahindra in the year 2004 under BOOT system for 20 years and had operated the facility till 2011 with capacity of 50MT.

Due to the variation in generation of waste and other technical constrains like segregation, supply of full quantities, etc., M/s Mahindra & Mahindra had handed over the facility to TTD.

Because of floating population in Tirumala, we are facing difficulty in maintaining two bin system and 100% segregation at source.

TTD has invited tenders for O & M activities of MSW and the finalization of work is under progress.
Present Practice M.S.W Management in Tirumala

- The degradable waste is disposed by landfill technique by earthen blanket method.

- The Monthly about 20 tonnes of plastic waste is being segregated and treated at Tirumala by converting into chips for recycling, through private agency selected on tender basis.
Tirupati is a Municipal Corporation in which dry waste garbage exists 190 MT daily. The same was dumping at Ramapur.

The Municipal Corporation has tie up with Jindal Power Factory and the plant will proposed to construct at Tatikonda of Chandragiri Mandal in an extent of 22 acres.

Accordingly MoU on March 2016 to produce 6 Mega watts power with proposed garbage supply 365 MT in collecting with following Municipalities.
The Balance 12 MT will be taken from existing dumping yard at Ramapur as above.

<table>
<thead>
<tr>
<th>S No</th>
<th>Name of the Town</th>
<th>Quantity of dry Garbage</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Tirupati Municipal Corporation</td>
<td>190</td>
<td>MT</td>
</tr>
<tr>
<td>2</td>
<td>Chittoor Municipal Corporation</td>
<td>65</td>
<td>MT</td>
</tr>
<tr>
<td>3</td>
<td>Sri Kalahasti Municipality</td>
<td>48</td>
<td>MT</td>
</tr>
<tr>
<td>4</td>
<td>Venkatagiri Municipality (Nellore Dt.)</td>
<td>18</td>
<td>MT</td>
</tr>
<tr>
<td>5</td>
<td>Nagari Municipality</td>
<td>16</td>
<td>MT</td>
</tr>
<tr>
<td>6</td>
<td>Putturu Municipality</td>
<td>16</td>
<td>MT</td>
</tr>
<tr>
<td></td>
<td><strong>TOTAL:</strong></td>
<td><strong>353</strong></td>
<td><strong>MT</strong></td>
</tr>
</tbody>
</table>
Present Practice MSW Management in Tirupati

- Wet Garbage will be collected from door-to-door collection, vegetable collection and total wet wastage comes around 20 MT.
- This is converted into vermicompost at Tukkivakam, near Renigunta and will be exposed to windrow compost by adding culture.
- The final manure will come to near about 6 to 8 MT.
- The balance 12 MT will be recycle to dumping yard
In spite of lot of difficulties and challenges with regard to segregation and O & M of MSW plant, TTD is making efforts to achieve the 100% Bio-Degradable usage at Tirumala and to maintaining the green environment.
“Service to Devotee is Service to God”

Thank You