Solid Waste Management in Kathmandu City

Ganesh Rai, Chief Executive Officer
Kathmandu Metropolitan City Office
Kathmandu, Nepal

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Waste Management Policy & Laws

- Municipality Act, 1990
- National Solid Waste Management Policy, 1996
- Environment Protection Act and Regulation 1997
- New solid waste management act- under process
- Private Sector Participation through high level commission

Waste Production of KMC

**Generation**
- Waste Generation: 0.3 kg/p/day

**Collection**
- Domestic waste gen. App.: 265 ton/day
- Commercial waste (12%) app.: 30 ton/day
- Street Waste (12%) app.: 30 ton/day
- Waste from VDC (%): 30 ton/day

Total waste = 355 ton/day
**Waste Composition**

- Glass: 5.42%
- Construction and Demolition Wastes: 4.5%
- Textiles: 2.3%
- Others: 3.12%
- Metals: 0.42%
- Rubber and Leather: 1.2%
- Plastic: 10.8%
- Paper: 9.02%
- Organic: 63.22%

*Waste Composition survey March, 2009*

**Transportation**

- 64 primary vehicles: collection to transfer station
- 23 secondary vehicles (Multi compactor and Roll of truck): transfer stations to landfill site for final disposal
- 300 to 350 tons every day.

**Roll Of Truck**

Modern waste transfer vehicles (provided by Government of Japan)

- Total 21 nos.
- 17 for KMC & 4 for LSMC
- 1.5 cubic meter roll off containers (6 ton)

**Major activities**

- 60-65% of the waste generated in city are organic
- Promoting household composting and community composting
- NGOs/CBOs are actively working on 3R activities but often fail to fit in the bigger picture due to lack of communication, networking and other factors
- NGOs/CBOs have been involved in various SWM activities including collection services, awareness, and 3R activities
- Most of the NGOs/CBOs have carried out small-scale 3R activities at the community- or tole- levels
- Majority of NGOs faces financial problems and cannot expand their activities nor ensure sustainability

**Waste minimization activities to promote 3Rs**

**Community Participation and training programs**

- Interaction with local community groups, NGOs, and clubs to support local initiation in 3R activities
- KMC made an effort to reach households through local ward offices and community groups
- KMC’s CMU has provided special programs like formulation of local-level solid waste management action plans, delivery of training programs on 3R activities, household composting and promotion of 3R
- The training programs have been very helpful and many of the participants have started composting, reducing, reusing and recycling their waste after the training program
Waste minimization activities to promote 3Rs

- Public Awareness Campaign and Training program
  - KMC has also developed different promotional materials - 3R activities to raise public awareness programs
  - Radio jingles are aired on Metro FM
  - Produced several TV programs on household composting and 3Rs activities and aired them on national TV.
- Public Exhibitions

Waste minimization activities to promote the 3Rs

- City Volunteers
  - Mobilization of CVs in other programs such as promotion of household composting, research
- Compost-Bin
- School Program

Community Recycling Centres (CRC)

- Estd 2005 and supported up to 6 months by JICA
- Promote Recycling by making it easy & accessible to the public
- Buy recyclable materials and compost
- Sell Recycled products and compost
- Provide information on SWM & Recycling
- 750 households has been composting household level at 21 ward.

Sisdol Landfill Operation

- Opened on 5 June 2005 - Environment Day
- May 6, 2006 Full Operation started
- Daily Waste transfer from KMC & LSMC 325-375 ton/day

Activities at Sisdol Landfill

- Daily Capping: 10 cm Soil Covering
- Leachate Treatment - Aeration, Recirculation, Evaporation
- Increase of Gas Vent Pipe Length
- Maintenance of Gas vent Pipe
- Operating by KMC & LSMC
**Operation Flow**

1. Weighing by weighbridge
2. Unloading Waste
3. Spreading Waste
4. Soil Covering

**Sisdol Landfill site**

- Before Operation (Dec. 2005)
- After Operation (Dec. 2005)

**Sisdol Landfill site**

- Landfill site (February 2007)
- (July, 2006)

**Aeration pond & aerator**

**Aletar Landfill Operation**

- Opened on 31 August 2009
- Used by KMC, LSMC and villages around Kathmandu city
- Daily Waste transfer from Kathmandu Valley: 400-450 ton/day
- Daily Capping: 10 cm Soil Covering
- Leachate Treatment - Aeration, Recirculation, Evaporation
- Increase of Gas Vent Pipe Length
- Maintenance of Gas vent Pipe
Scenarios of Aletar Landfill site

Construction of Platform for unloading waste

Retrning vehicles from sisdole

Loaded container at site

Solutions

- Alternate landfill site
- Short distance between city and landfill site
- Purchase of new environmental friendly vehicles - 108 Chinese vehicles will be coming within three months
- Introduction of new rule and regulations
- Clear strategy of involvement of private sectors
- Introduction of new methods and technology
- Commitments and Discipline

Major Difficulties of Operation

- Lack of Heavy Equipment
- Leachate
  - Volume of Leachate Flow
  - Lack of Electricity
- Solid Waste Data Management
  - Lack of Electricity
- Clogging of vent Pipes
- Road Maintenance
- Closing due to local people opposition

Major Challenges

- Only one transfer station - all waste generated in city have to collect; Only one landfill site
- Long distance
- Old vehicles - tractors, tippers
- Increase efficiency in waste collection
- Confidence among the stakeholders (public, communities, Private Sectors, NGOs, CBOs, and Government)
- Increase involvement of public & community in SWM
- SWM is getting expensive - how can we make effective and "sustainable"
- Extend the life of landfill site
Present Situation

- Public bidding (expression of interest) Dec. 2009
- Finalization of the selection of the best proposal by the end of 2010
- The government will enable the waste problems converted into the multi-beneficial waste industry through PPP venture

Thank You!