



Solid Waste Management in Kathmandu City

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

Date: 10th February, 2010



Katmandu Metropolitan city at a glance



- ⌘ Kathmandu Metropolitan city is the only one Metropolitan city in Nepal.
- ⌘ City Area: 5081 ha (approx. 50. 67 sq km)
- ⌘ divided in 35 Wards for administrative and development purpose
- ⌘ It is capital city.
- ⌘ Elevation : 1350 m
- ⌘ Population: 730,841 (2002)
- ⌘ Household :152,155 (2001) 82,293 (1991)
- ⌘ Residential Buildings: 66,236 (2001) 53,311 (1991)
- ⌘ Household per Residential Building: 2.3 (2001))
- ⌘ Population growth: 4.64% per annum

Waste Management Policy & Laws

- ⌘ Solid Waste Management and Resource Mobilization act/rules , 1987
- ⌘ Municipality Act, 1990
- ⌘ National Solid Waste Management Policy , 1996
- ⌘ Environment Protection Act and Regulation 1997
- ⌘ Local Self Governance Act/ rules, 1996/ 1997
- ⌘ New solid waste management act- under process
- ⌘ Private Sector Participation through high level commission

Waste Production of KMC

Generation

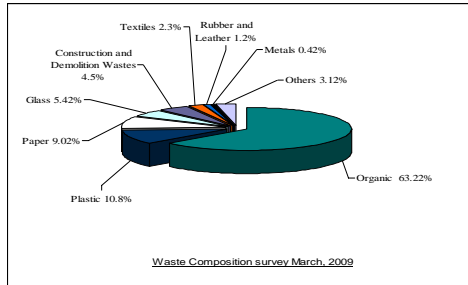
- ⌘ Waste Generation 0.3 kg/p/day

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 (%) app. 30 ton/day

Total waste = 355 ton/day

Waste Composition



Transportation

- ⌘ 64 primary vehicles collection to transfer station
- ⌘ 23 secondary vehicles (Multi compactor and Roll of truck) transfer stations to land fill 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
15 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



Recycling material collection center at Kathmandu



Loading recyclable materials



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 promotes the 3Rs

City Volunteers

- ☑ Mobilization of CVs in other programs such as promotion of household composting, research

Compost-Bin

School Program



Waste minimization activities to promote the 3Rs

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.



1. Sisdol Semi-aerobic Sanitary Landfill Pilot Project

Valley 1

Valley 2



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



Sisdol Landfill site



Sisdol Landfill site



Aeration pond & aerator



Road between sisdol and aletar, Bhadra 13, 2066



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



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

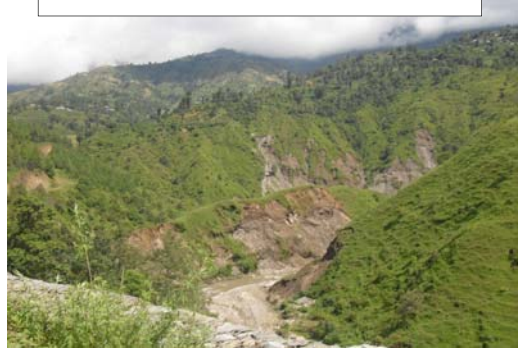
Major Challenges

- ⌘ 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

Long term Banchare landfill site



Thank You !