



# **METHANE TO MARKET**

## **Implementation of Project after Prefeasibility study**

**Dr. Amiya Kumar Sahu**

2<sup>nd</sup> March, 2010



# About us

## National Solid Waste Association of India (NSWAI)

- ❑ Formed on 25th January 1996.
- ❑ National Member of the International Solid Waste Association  
(ISWA) Vienna.
- ❑ Provides forum for exchange of information and expertise in the field of Solid Waste Management at the national and international level.



# About us

- ❑ **Advice to Waste Managers to use the proper technology for compilation of Municipal solid waste (Management and Handling) Rule,2000**
- ❑ Promote Education and Awareness in waste Management through workshops, conferences and seminars.
- ❑ Promote innovative technologies, research through educational Institution

# Landfill Gas... Energy From Waste



- Methane generated when wastes in a landfill decompose anaerobically which is captured and converted and used as an energy source.
- In many countries a number of these systems are being installed or have recently been installed.
- Financed from Carbon Emission Reduction (CER) credits issued by the EU's Climate Change body.



# Various Methods of Methane Recovery from Waste

- ❑ **Capping Method**
  - Old dumps covered with geo synthetic layer
  - Requires long term maintenance and uncertain design life
  - **How safe is this method?**
  - e.g. Gorai (Mumbai)
  
- ❑ **Secured landfill**
  - Scientific method of waste disposal system
  - UK, Argentina, USA
  
- ❑ **Agro based (Special Category)**
  - Mostly biodegradable waste –anerobic
  - France ,Denmark etc



# Feasibility

Cost of installation of **power generation**, and on the profitability of generating **energy from waste**.

## ❑ **Quantity of waste**

A landfill with 1 million tons of waste-in-place can typically support an 800 kilowatt (kW) to 1 MW electricity generation project

## ❑ **Waste Placement History**

Older waste produces less methane.

## ❑ **Waste Composition**

Organics produce high quantities of methane.

- ## ❑ **Site Conditions :**
- Status of Landfill Operation
    - Open dumps
    - Recently closed (less than 5-7 years)



# Advantages

- Reduces Green house gas emissions.
- Production of electricity.
- Suppression of odors & the elimination of potential explosions.
- Gains from Carbon Credits



# Limitations

- ❑ High risk investment in developing nations .
- ❑ Requires large space.
- ❑ Lack of proper design.
- ❑ Possibility of Miscalculation and prediction of LFG quantity





# Evaluating the Technology

A lot of the schemes have been disappointing because the amount of gas and power generated , and as a result Carbon Credits paid has been falling well below predictions of yield.

**What option is the most *cost-effective in financial terms?***



# NSWAI Role

## NSWAI Promotes

- Awareness MSW Rule, 2000 among city managers
- 4 R principle
- To construct Secured Landfill
- Environmental Sound Technology

# Waste Reduction



4R



*The final waste should be disposed in secured landfill*

# Lahore Composting Project .....CDM



<b>Technology used</b>	Aerobic windrow type composting
<b>Total estimation of overall emission Reduction of CO2</b>	760,801 tons
<b>Total number of crediting years</b>	7

<b>Sale of Carbon Credits(@US\$11/tons of CO2)</b>	<b>0.858</b>
<b>Sale of 5591 metric tons of compost/year(@Rs.250 per 50 Kg bag)</b>	<b>0.940</b>
<b>Total Estimating annual Revenue</b>	<b>1.798 \$million</b>



# Recommendation

- ❖ Methane to market should be from sanitary landfill.
- ❖ Feasible for metropolitan preferably in the outskirts of the city.
- ❖ Feasible in centralized facility for small municipalities.
- ❖ Final waste after 4R practice should be disposed in secured landfill.



# Recommendation

- ❖ Emphasis on post closure monitoring.
- ❖ Use of landfill as a recreational ground.
- ❖ Cattle livestock and poultry waste can be utilized in Methane to Market.



# THANK YOU

**NATIONAL SOLID WASTE ASSOCIATION OF INDIA**

**Website**    [www.nswai.com](http://www.nswai.com)

**E mail**     [nswai@envis.nic.in](mailto:nswai@envis.nic.in)

**phone**      91-22 29207577