CO-BENEFITS OF WASTE MANAGEMENT IN DEVELOPING COUNTRIES

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WASTE MANAGEMENT IN DEVELOPING COUNTRIES

Two Major Problems:

* Insufficient Collection

* Inadequate Final Disposal

 Most Cities do not Collect all Wastes Generated (<50%)

Uncollected Waste is often Thrown into the Streets, Vacant Lots, Bodies of Water, or Burned WASTE MANAGEMENT IN DEVELOPING COUNTRIES

Open Dumping is the Most Common Waste Disposal Method

Open Dumps Pollute the Air, Water and Land

Wastes Pose Significant Risks to Human Health and the Environment







WASTE COMPOSITION IN DEVELOPING COUNTRIES

High Organic Content:

- * Jakarta 74 %
- * Indian Cities 75 %
- * Ibadan, Nigeria 76 %
- * Kathmandu 80 %
- * Dhaka 84 %

Organic Waste Presents Problems and Opportunities

WASTE MANAGEMENT AND CLIMATE CHANGE

- Decomposition of Organic Waste in Dumps and Landfills (Anaerobic Conditions)
 Generates Methane
- Methane is about 20 Times Stronger than CO₂ as a GHG
- Landfills Account for about 11% of Anthropogenic GHG Emissions

OPPORTUNITIES

Recycling (Energy Savings) Diversion of Organic Waste from **Dumps and Landfills:** * Pig Farms * Composting

RECYCLING

Energy Savings from Recycling:
 * Glass 4 - 32 %
 * Paper 23 - 74 %
 * Steel 47 - 74 %
 * Aluminum 90 - 97 %

Energy Savings: Fewer Power Plants, Less Burning of Fossil Fuels ——>Reduced GHG Emissions

RECYCLING IN DEVELOPING COUNTRIES Relies on the Informal Recovery of Materials from Waste: Scavenging **World Bank: 1% of the Urban** Population: up to 15 Million Worldwide, with an Economic Impact of 100s of **Millions**

Scavengers Traditionally Poor, Ignored, Exploited, or Repressed

SCAVENGERS

- When Scavengers get Organized / Supported: * Create Jobs
 - * Reduce Poverty
 - * Conserve Natural Resources
 - * Protect the Environment
 - * Improve Industrial Competitiveness
 - * Save Cities Collection, Transportation and Disposal Costs
 - * Extend the Life of Disposal Sites

SCAVENGERS

In Beijing, Scavengers can Earn More than College Professors

Cardboard Collectors on the US-Mexico Border Earn up to 10 Times the Minimum Wage

Informal Refuse Collectors in Mexico City Earn 7 Times the Minimum Wage

SCAVENGERS

- Linis Ganda Program in Manila employs 1,500 former scavengers who recover 4,000 tons of recyclables / month, earning US \$ 5-20 / day
- More than 100 scavenger cooperatives exist in Colombia, recovering over 300,000 tons of recyclables / year

In Brazil, Scavengers Recover 90% of Materials Recycled by Industry. They Organized a National Movement, with 500 Cooperatives and 60,000 Members

Mexican Cardboard Collectors in the US



Linis Ganda Program in Manila



"Grito dos Excluidos" in Brazil



Processing of Recovered Materials



PIG FARMS / COMPOSTING

Benefits:

- * Can Reduce Substantially the Volume of Wastes for Disposal
 * Extends the Life of Disposal Sites
 * Prevents Pollution at the Disposal Sites

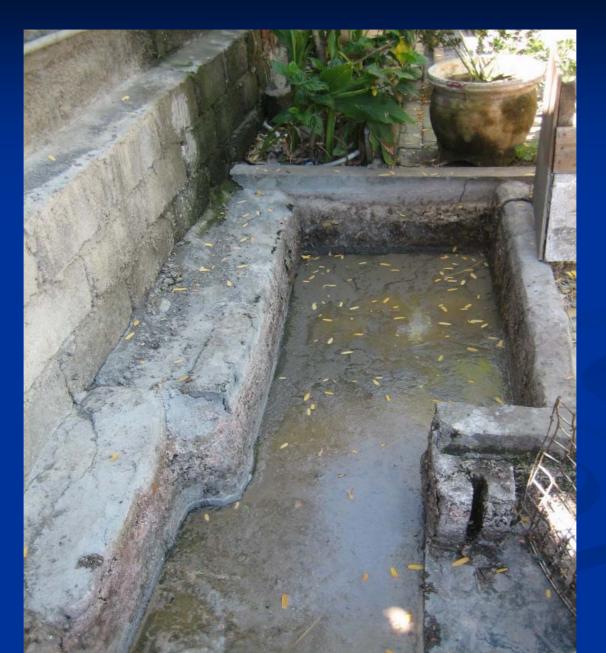
COMPOSTING

- Benefits:
 - * Produces a Product Useful in Parks, Agriculture, and Horticulture
 * Can Create Jobs
 * Can Deduce Devents
 - * Can Reduce Poverty









HOUSEHOLD COMPOSTING



COMMUNITY COMPOSTING



COMMUNITY COMPOSTING (1)

COMMUNITY COMPOSTING (2)



COMMUNITY COMPOSTING (3)



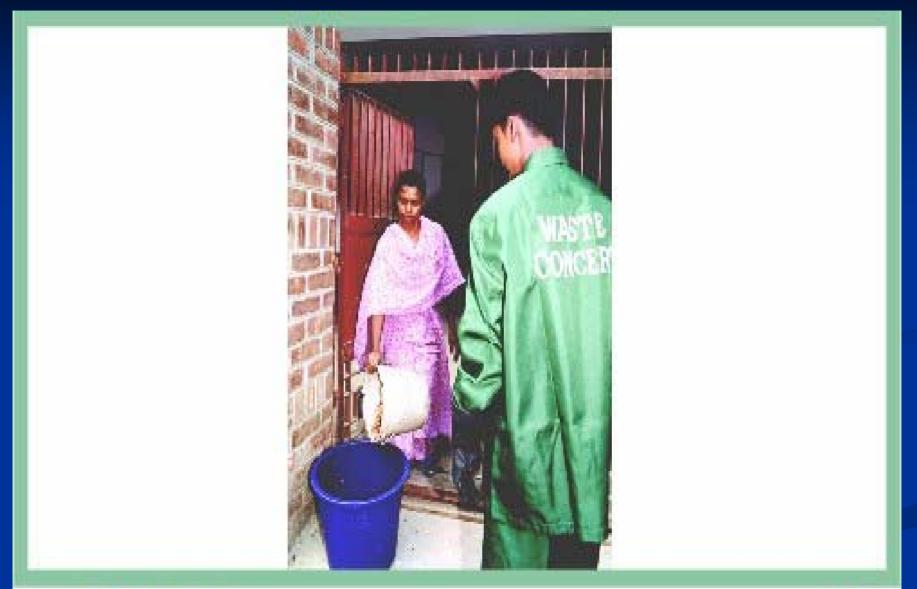
COMMUNITY COMPOSTING



WASTE CONCERN BANGLADESH

 First Composting Project Using CDM
 Reduction of 90,000 tons of CO2 equivalent per year

Will Create 1,000 Jobs



Description: Collection of Waste





Description: Collection of Waste



CONCLUSION

 Low-Tech, Low-Cost, and Labor-Intensive Systems can Render Social, Economic, and Environmental Benefits