3R Implementation:
Municipal and Local Initiatives in Indonesia

Muhammad Zakaria
Ministry of Environment, Indonesia
presented in
Inception Workshop for 3RKH
Hanoi 26 April 2007
Contents:

A. Introduction
B. 3R Implementation & Best Practices
   1. Municipal Initiatives:
      • Bandung, Surabaya, Jakarta
   2. Local Initiatives:
      • Rawasari, Central Jakarta; Banjarsari, South Jakarta; Bekasi, West Java; Sukunan, Yogyakarta; Sanur Kaja, Denpasar, Bali.
   3. School and University
      • Green school Program; Senior High School 13; Brawijaya University (Malang East Java)
Domestic Waste: Composition

Waste Composition From Particular Sources

- Markets: 24%
- Street: 6%
- Public Facilities: 5%
- Industries: 1%
- Offices: 1%
- Commercial: 9%
- Compostable Organic Matter: 65%
- Others: 6%
- Drainage: 0%
- Households: 48%

Waste Composition

- Paper: 13%
- Wood, bamboo: 3%
- Plastic: 11%
- Fabric: 1%
- Rubber/Leather: 1%
- Metal: 1%
- Sand, Ceramic, ash: 1%
- Other: 3%
- Glass: 1%

Source: Ministry of Public Work, Indonesia, 1989
Domestic Waste: handling

- Collecting (40.09%)
  Transporting to legal & illegal dump site
- Buried (7.54%)
- Recycling (1.61%): composting, reuse/recycling
- Open Burning (35.49%)
  - River
  - Street
  - Park
  - Others (15.27%)

Source: National Statistic Agency-2001
3R’s Implementation in Bandung City

- **Garbage sliding** (February 2005) → Social conflict → No landfill site → emergency situation ("mountain"/stack of garbage in many parts of the city)
- **A collaboration** (MoE, Dept of Public Work, provincial govt, local govt and local community) to cope emergency situation → temporary dump site
- **Comprehensive measures** in managing domestic solid waste for the greater Bandung, based on 3R principle
- **The main objective** is to reduce the volume of solid waste inside the city prior transferring them to final treatment
- **The main measures**:  
  - segregation at sources  
  - transfer to clustered plant for further segregation and crushing  
  - transfer to producers of recycle center for composting as well as other recycle measure (paper and plastic).
- **December 2006**: Pasar Ciroyom launched as pilot project for optimization of MSW utilization
Plan for the 3R’s Implementation in Bandung City

Total waste collected: 3200 m$^3$/day

- Sarimukti Landfill Site
  - Residual (10%), 70 m$^3$/d

- Crushed Organic (180 m$^3$/d)
- Crushed Non organic (80 m$^3$/d)
- Compost Producers
  - Crushed Organic (180 m$^3$/d)
  - Compost (50 tones/day)
  - Recycle Producers

- Clust. Ciroyom 131 m$^3$/d
- Clust. Astanaanyar 127 m$^3$/d
- Clust. T. Cibeunying 120 m$^3$/d
- Clust. Tegalega 117 m$^3$/d
- Clust. Psr Cicadas 108 m$^3$/d
- Clust. Psr Gedebag 122 m$^3$/d

- Compost Producers
  - Crushed Non organic (80 m$^3$/d)

- Total waste collected 3200 m$^3$/day

- 725 m$^3$/day
- 2475 m$^3$/day
3R’s Approach in Bandung

Solid waste management by local government
(note: subject to cooperate with private sector)

- Segregation
- Composting
- Recycle
- Incinerator → energy
- Sanitary Landfill → Methane capture and energy (CDM)

Sources
(Houses, Markets, Offices, Terminals etc.)

TPS
(Temporary treatment site)
Small cluster

TPS
(Temporary treatment site)
City Zones

TPA
(Final Treatment)

Target Line of Solid Waste Volume

100%
80-90%
60-70%
50-60%
20-40%

- Community/sources based management → Reduce, segregation, composting, recycle
- Incentive by local government, eg:
  • To buy a compost
  • To give equipment or facilities
  • Using the principles of no service no money, no waste no charge

Local Community – NGO – Local Govt. – Provincial. Govt – Central Govt

Involvement Intensity
Organic garbage 70%
Non-organic garbage 30%
Recycle 26%
Non-recycle 4%

The role of environment Cadres

Domestic garbage
Final Dumping Site (80%)
Environment (20%)

Waste segregation
Compost processing

Environment Program: Surabaya & Jakarta Case
Waste Management Concept

Project Litterbug
Environment Program through Cadres

10-20 Houses

Program:

Garbage Segregation & Processing = REDUCE 96%

Organic 70%
1 - 2 household compost unit
or
Transferred into communal composting

Inorganic Recycle 26%
Non-organic garbage collection

“Mobilize Community as The Agent of Change”
SUCCESS STORY
Major Progresses of Replication

SURABAYA  No of Cadres

<table>
<thead>
<tr>
<th>Year</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>Q3-06</th>
</tr>
</thead>
<tbody>
<tr>
<td>No of Cadres</td>
<td>2</td>
<td>2</td>
<td>48</td>
<td>290</td>
<td>1200</td>
</tr>
</tbody>
</table>

SURABAYA  No of RTs

<table>
<thead>
<tr>
<th>Year</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>Q2-05</th>
<th>Q3-06</th>
</tr>
</thead>
<tbody>
<tr>
<td>No of RTs</td>
<td>2</td>
<td>6</td>
<td>17</td>
<td>50</td>
<td>150</td>
</tr>
</tbody>
</table>

JAKARTA  No of Cadres

<table>
<thead>
<tr>
<th>Year</th>
<th>Q1</th>
<th>Q2</th>
<th>Q3</th>
<th>Q4</th>
</tr>
</thead>
<tbody>
<tr>
<td>No of Cadres</td>
<td>180</td>
<td>256</td>
<td>1200</td>
<td></td>
</tr>
</tbody>
</table>

JAKARTA  No of RTs

<table>
<thead>
<tr>
<th>Year</th>
<th>Q1</th>
<th>Q2</th>
<th>Q3</th>
<th>Q4</th>
</tr>
</thead>
<tbody>
<tr>
<td>No of RTs</td>
<td>27</td>
<td>50</td>
<td>200</td>
<td></td>
</tr>
</tbody>
</table>
Composting – Rawasari – Central Jakarta
Supervise by Ibu Bebassari - BPPT
Banjarsari – South Jakarta
Bekasi
3R implementation ➔ 5 RT/210 household/800 people
Kampung Sukunan Yogyakarta
Kp. Sukunan, Yogyakarta
Household Solid Waste Management Program

Desa Sanur Kaja dan Sanur Kauh
Environmental Education Center
(PPLH - Bali)
2003 - 2006
Go Green School Program
A Competition to establish environmentally sounds school

• **Aims:**
  To establish model of school that has commitment and program that internalize environmental aspects in all school managements and activities.

• **Expected outputs:**
  – Development of environmentally sound curricula and school management
  – Development of community based education
  – Increase the physical environment around the school area and neighborhood.

• **Involving Parties**
  Ministry of Environment, Department of Education, KEHATI Foundation (Environmental NGO), CBE (Education NGO), Coca Cola (donor agency)

• **Step of Activities:**
  1. The best four schools are chosen based on their proposal and funds are given
  2. Implementation of program
  3. Monitoring and Evaluation
  4. Publication
Recycle : waste paper
Composting
Recycle : Plastic
Recycle: product exhibition
Senior High School 13
Recycle : campaign
Garbage bin
**Competition of 3R product for school children**

- **Joint program** Ministry of Environment, KPAI (NGO) and Tetra Pack (donor agency)
- Competition held in **Aceh** and **Jakarta**
- Participants are junior high school student
- Award by the Minister of Environment on the World Environmental Day – 5 June.
Brawijaya University
Thank you for your attention