Kitakyushu Initiative for a Clean Environment
International Workshop on Community-based Solid Waste Management and Supporting National Policies

1. CDM-applied composting project by Waste Concern in Dhaka
2. Economic Analysis of a composting centre and CDM application potential

27-28 August 2008  Surabaya City, Indonesia
Toshizo Maeda, IGES Kitakyushu Office
Number of Household Compost Baskets and Compost Centres

Waste management project in Surabaya, Indonesia
Waste management project in Surabaya, Indonesia

Weight of waste transported to Benowo Landfill

1,500-1,600t/d

2007

Total waste reduction: **200t/d** (over 10% reduction in 3 years)
- Market organic waste reduction: **20-30t/d** (at 14 compost centres)
- Household organic waste reduction: **40-50t/d** (by 40,000 baskets)
- Others: **120-140t/d**  ← Recycling
Waste Concern’s achievement in Dhaka

- Started a community compost centre (1,000m²) in 1995; 3t/d of waste collection from 1,400 households
  - Replicated: 1.75t/d for 800 hhs & 2t/d for 1,000hhs
  - Replicated in 26 cities and towns (UNDP and ESCAP)
  - 7t/d compost centre in Katchpur in 2008
    - Compost production: 2t/d (30% of input)
    - Compost sold at: USD65/t → **USD130/d**
    - GHG reduction: 0.5t-CO2/year/t-waste reduction
    - CER price: USD15/t-CO2 reduction
    - 7t/d waste reduction → 3.5t-CO2 reduction → **USD52/d**
- 130t/d-plant → 700t/d-plant --- CDM registered in Dec 2005
- SWM cost by Dhaka City: USD28/t (cost saved: **USD200/d**)

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7t/d-waste Composting Center in Dhaka by Waste Concern

1. Temperature monitoring
2. Workers
3. Oxygen monitoring

*Photo courtesy by Waste Concern*
Business model of PUSDAKOTA’s compost centre

- Waste collection: 1.4t/d (= 40t/m) from 1,000 households
- Compost production: 10t/m (25% of input)
- Income: 10t/m x USD100/t = **USD1,000/m**
- Expenditure: **USD700/m** (labor, fuel, admin costs; USD17.5/t)
- Profit: **USD300/m** ← Compost centre is profitable! (Access to the market is the constraint.)

- CER/VER unit cost: USD5/t-CO2 (assumption)
- CO2 reduction rate: 0.5t-CO2/t-waste reduction (assumption)
  → 40t/m x 0.5 x USD5 = **USD100/m**
- SWM cost: USD10/t-waste (assumption)
  → 40t/m x USD10/t = **USD400/m** (cost saved)

← Local governments can support community compost centres!
Business model of Surabaya City’s compost centre

- Waste collection: 5t/d (= 150t/m) from vegetable markets
- Compost production: 30t/m (20% of input)
- Income: 30t/m x USD100/t = **USD3,000/m**
- Expenditure: **USD2,600/m** (labor, fuel, admin costs; USD17.5/t)
- Profit: **USD400/m** ➞ Compost centre is profitable! (Surabaya City is not selling the compost though.)

- CER/VER unit cost: USD5/t-CO2 (assumption)
- CO2 reduction rate: 0.5t-CO2/t-waste reduction (assumption)
  ➞ 150t/m x 0.5 x USD5 = **USD3,750/m**
- SWM cost: USD10/t-waste (assumption)
  ➞ 150t/m x USD10/t = **USD1,500/m** (cost saved)

← Local governments can setup market-waste compost centres!
Surabaya City’s compost centres
Business model of Surabaya City’s waste reduction

- Organic waste collection: 60t/d (= 1,800t/m)
- Compost production: 360t/m (20% of input)
- Income: 360t/m x USD100/t = **USD36,000/m**
- Expenditure: USD31,500/m (USD17.5/t-waste)
- Profit: **USD4,500/m**
- CER/VER unit cost: USD5/t-CO2 (assumption)
- CO2 reduction rate: 0.5t-CO2/t-waste reduction (assumption)
  \[ 1,800t/m \times 0.5 \times USD5 = **USD4,500/m** \]
- SWM cost: USD10/t-waste (assumption)
  \[ 1,800t/m \times USD10/t = **USD18,000/m** \] (cost saved)
  \[ 200t/d \text{ reduction} \Rightarrow **USD60,000/m** \] (cost saved)

← Local governments should promote composting!
“Clean & Green Campaign” in Surabaya
Business model of composting: Conclusion

- Business model of a compost centre is profitable (without CDM contradicts with “additionality”).
- CDM can enhance the profitability. (It can be applied by consultants and other agencies.)
- SWM cost reduction is larger than the profit made by selling the compost.

→ Local governments can support compost centres.