

Sustainable Rural Waste Management - Cases and Lessons

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Composting in 6 Asian countries

Covered countries:

Bangladesh,
China, India,
Indonesia, Sri Lanka, Thailand.



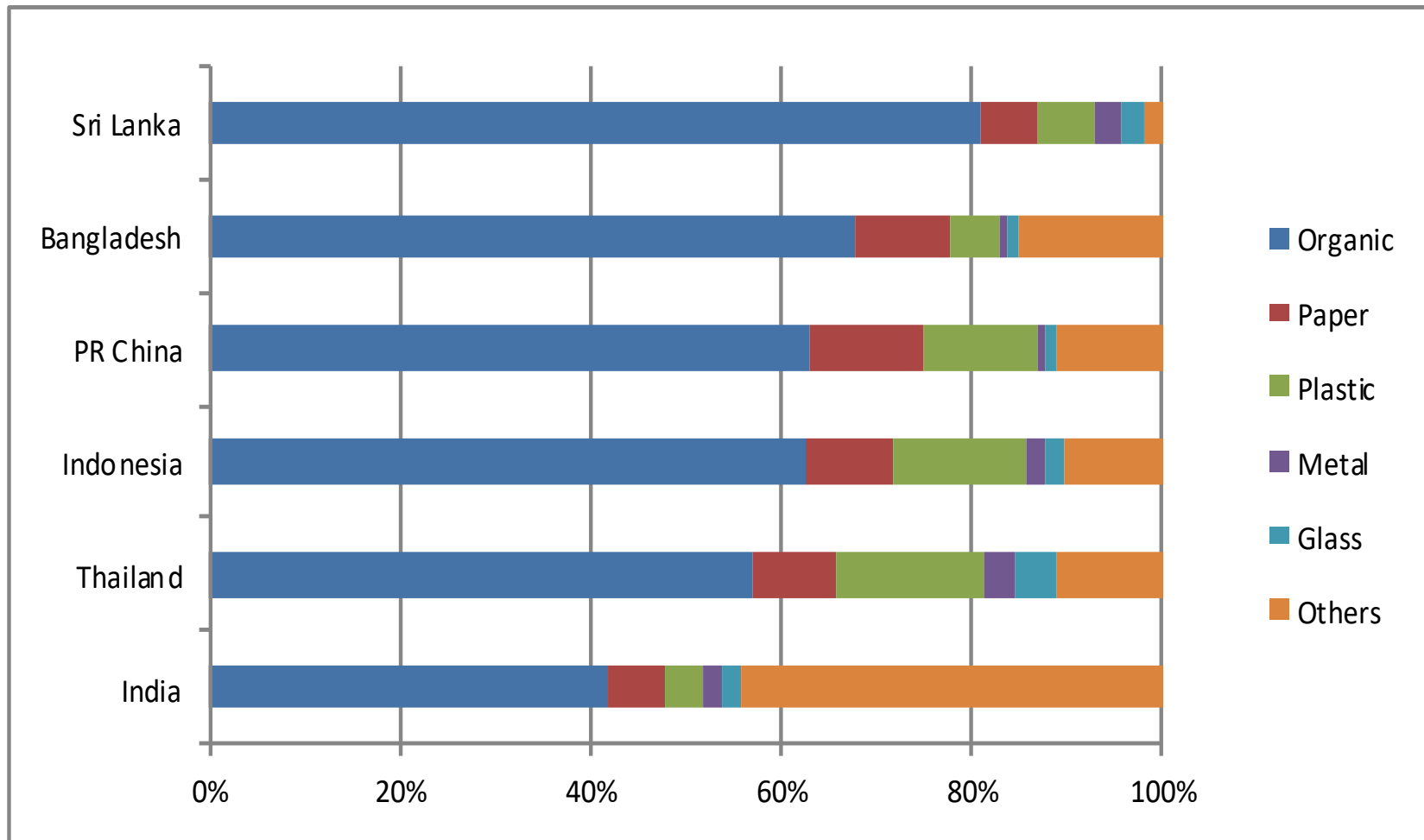
Source: Google Map

Collaboration with ADB, ESCAP

Why Composting?

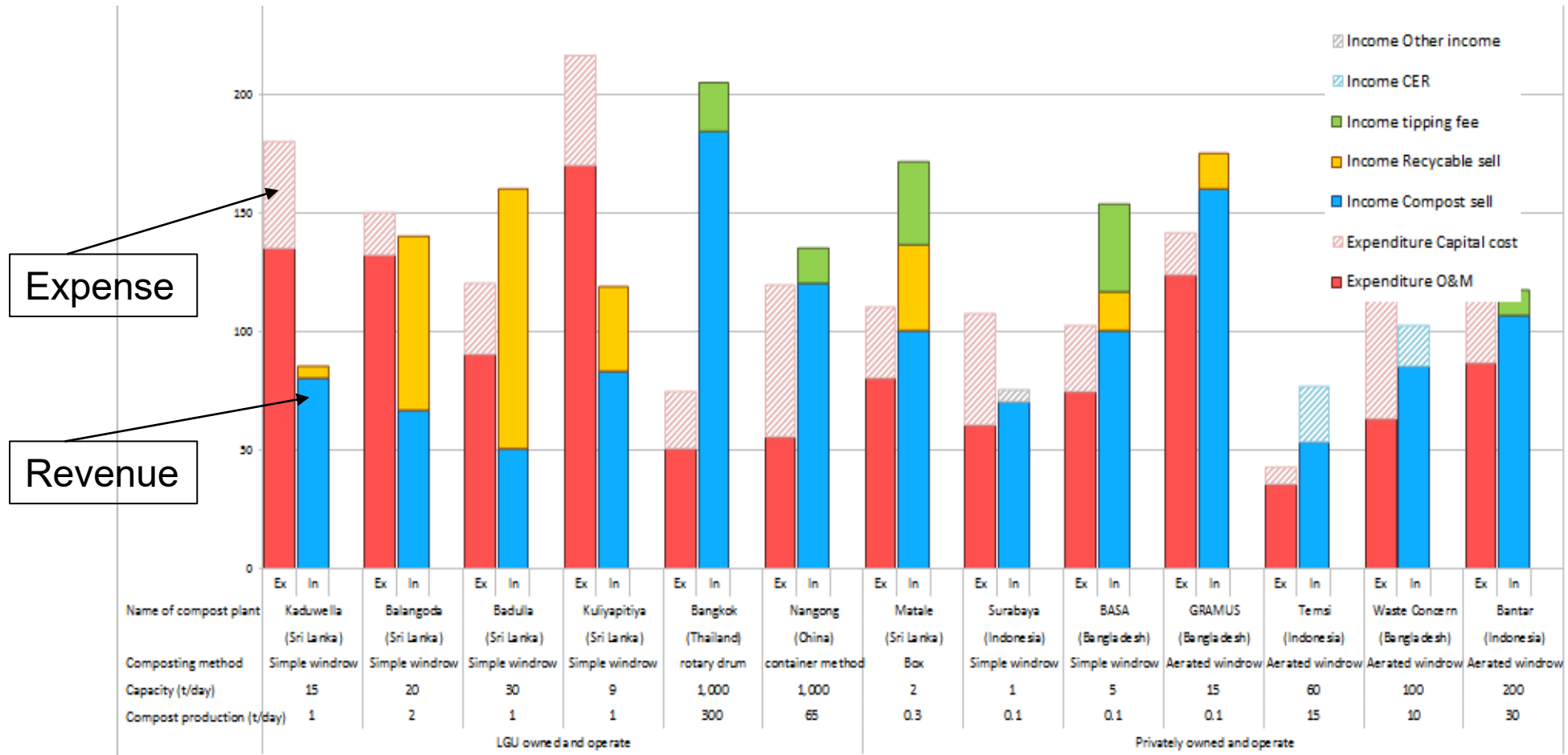
- **Nature of waste in developing countries**
- **From wastes to resources:**
(3R and Resource Efficiency)
- **Reduction of waste** before treatment / final disposal
(Combination with other WM technologies)
- **Revenues** by selling the compost
(Business opportunity and income generation)
- **Job creation** (poverty reduction)
- **Improved soil condition** (Nutrients for Agriculture)
- **Clean and green living environment** (Env)

Large organic portion of MSW in developing countries



Source: Premakumara, 2013

Cost/benefits analysis



Decentralized Vs Centralized Composting



Decentralized

Low and simple technology
Labour intensive



Low capital
Low O & M
Low transportation



Interacts with neighborhood
Provides no. of jobs
Awareness generation
Organic neighborhood farming

Centralized

Highly technical
Less labour

High capital
High O & M
High transportation

Low interaction
Highly mechanised
Individual awareness
Mostly sale purpose

Small/Large scale compostings

Decentralized/small-scale composting (household/community)



Barrel compost
Colombo, Sri Lanka



Takakura basket
Surabaya, Indonesia

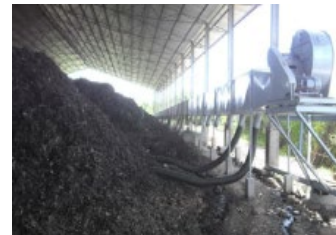


Simple windrow
Dhaka, Bangladesh

Centralized/large-scale composting (need transfer station, landfill site out of city)



Larger windrow
Fukuoka, Japan



Aerated windrow
Bali, Indonesia



In-vessel (rotary drum)
Bangkok, Thailand

Clean Environment (Surabaya, Before and After)



Achievements in community streets



Gundih



Pegirian



Kampung Surabayan



Demak timur



Tanjungsari



Ketintang



Kebonsari



Asemrowo



Jambangan



Kebraon



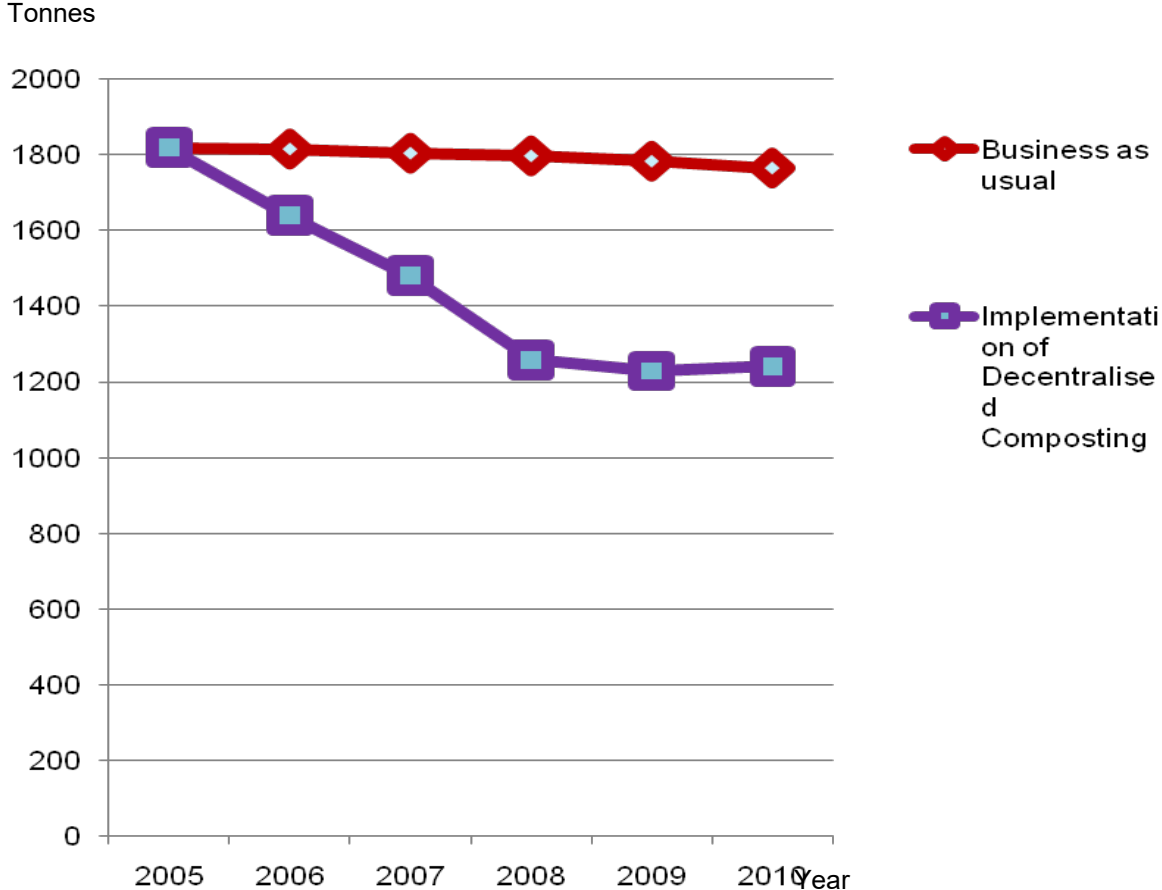
Pakis



Babat Jerawat

Achievement: Reduction of waste to be final dumped

30% waste reduction to be landfilled by 5 years



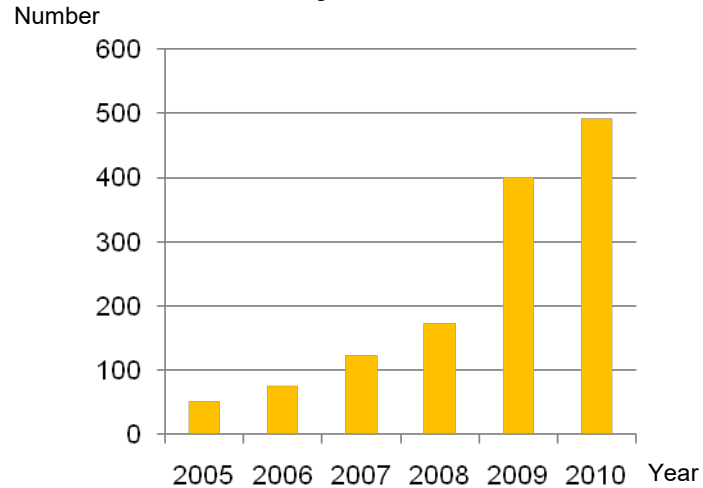
Source: Ema, 2011

Key Challenges

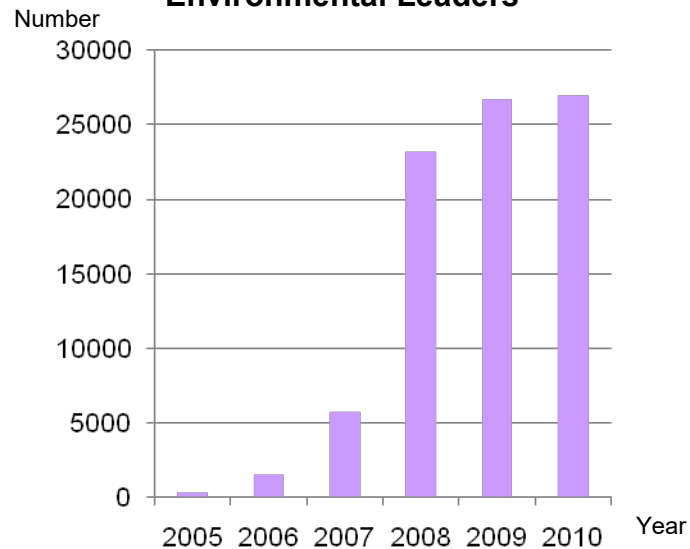
- Participation/Involvement of the community
 - Education of the public
 - Incentives & motivation
- Information sharing
 - Learn from successful cases
 - Replication in other communities
- Political leadership/support
- Market / Sales of the product

Training of Environmental Leaders for community mobilisation

Community Facilitators



Environmental Leaders



Source: Ema, 2011

Organic-inorganic waste sorting
Waste segregation training

USE TRAINING OF THE TRAINER YOUNG LEADERS
Explaining how to use compost baskets

Recycling trainings
Manufacturing bags from waste

Turn waste into blessing

Meeting of Environmental Cadres

Activities of Environmental Cadres

Environmental Event

Pemberdayaan Masyarakat Lewat Kader

10-20 rumah

Penghijauan
Tanaman obat keluarga

Program: Waste Segregation & Treatment = Reduce 96%

Organic : 70%
1-2 barrel of composter
10-20 basket of composter
Transported to TDS and processed with communal composter

Inorganic : 26%
Inorganic waste collection

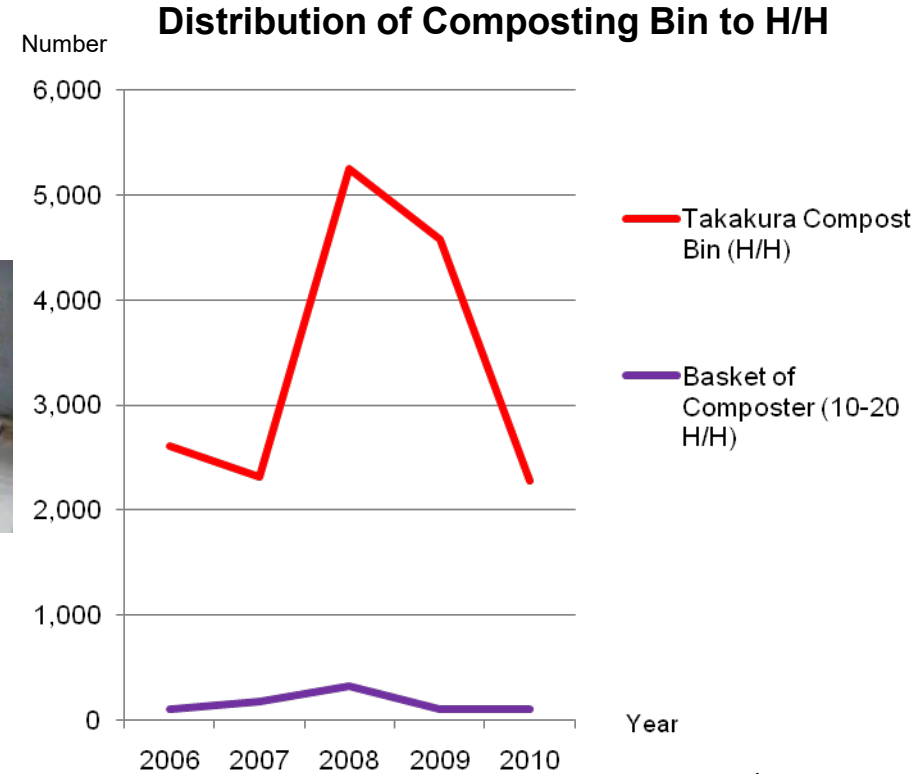
Developed training materials for awareness raising

Source: Rismaharini, 2011

Initial support for composting programmes



Distribution of compost bins to attendees in training and residents willing to do (Over 20,000 H/H)



Source: Rismaharini, 2011



Provide necessary support for starting community composting centres: cleansing tools, composting tools, lands and capital cost for building, and buying composting equipments for city greening

Establish Waste bank system (Incentives)



SEPARATION



DEPOSIT TO WASTE BANK



WEIGHING



RECORDING SAVING IN TELLER

WASTE BANK IN SURABAYA



RW X Kel. Gundih



RW II Kel. Dukuh Setro

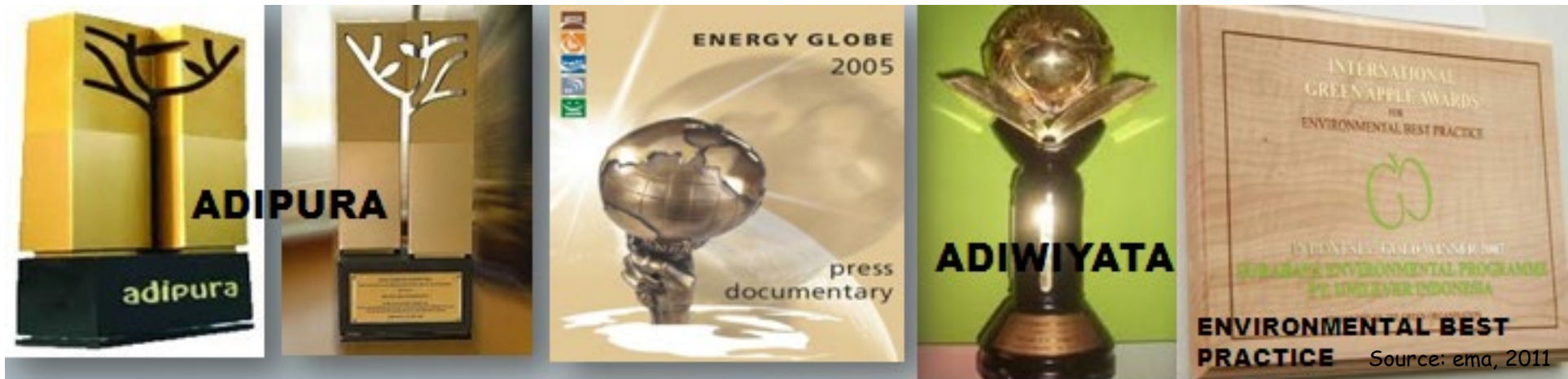


Motivation of Staff and Local Politicians

Capacity building (locally and internationally) for staff and local politicians

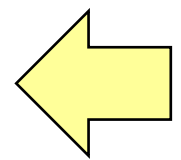


Recognition of its efforts at national and international level



Development of Recycling Community, Surabaya

Educated women to start H/H business from recycling materials through waste banks



Educated residents to separate waste at source and use of compost bin



Educated residents to start organic farming at H/H and community



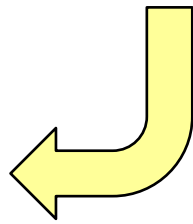
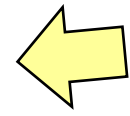
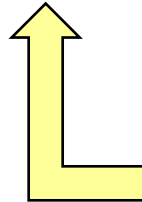
Model community for community based SWM (1,200 H/H)



Collected H/H waste separately



Rest sell in Market



Collected organic waste is treated at composting center

Expansion to other communities through public awareness campaign

Counseling activities



**counseling
To student**



**Counseling to
Businessman**



**Counseling to
community**



**Counseling to
officer**

Environmental campaign



Socialization in school



Thank you