City-City Cooperation for Sustainable Waste Management

- Technology Transfer through N-S-S network

9 Sep 2013
IPLA Global Forum 2013
Boras, Sweden

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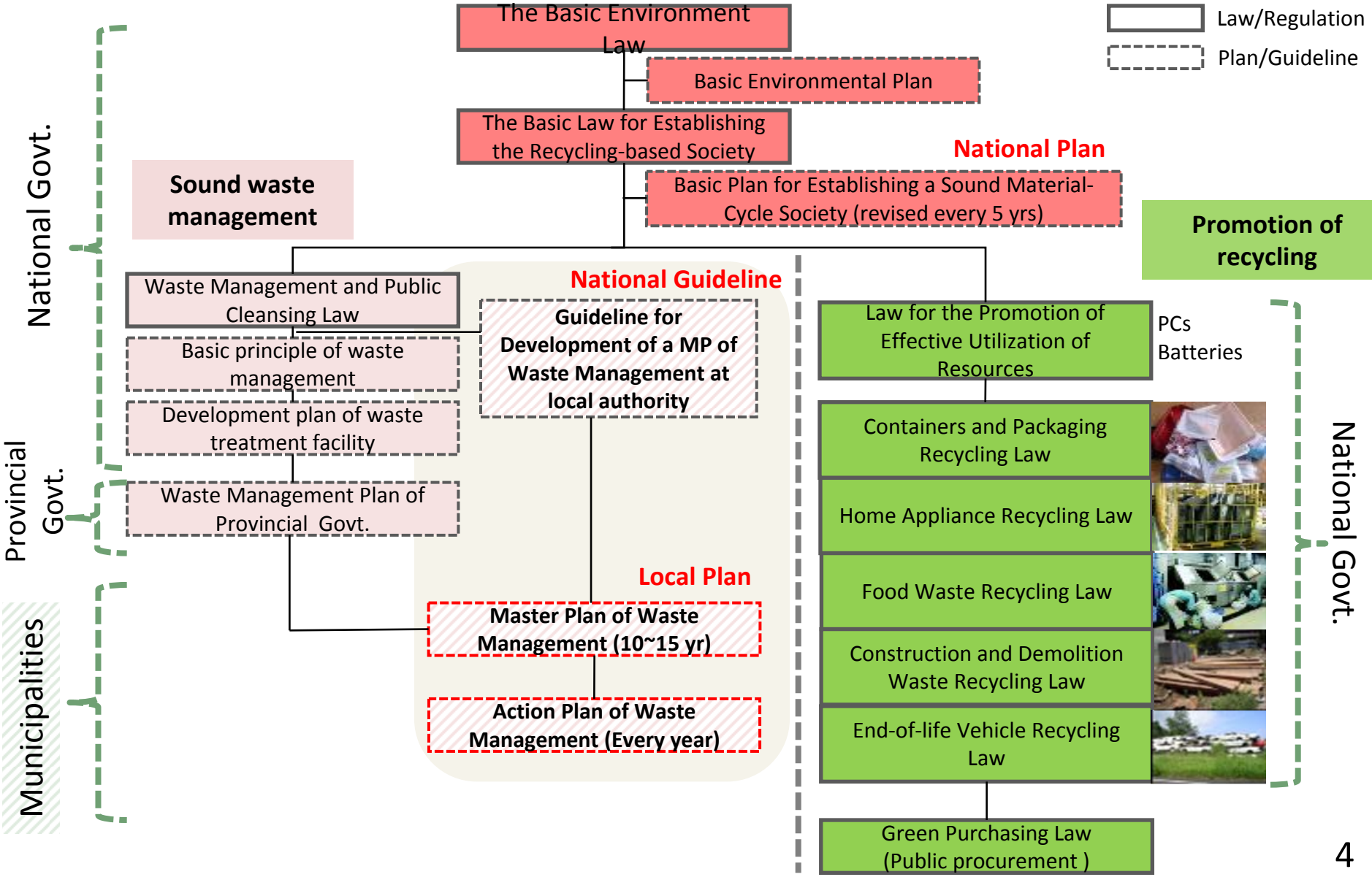
Waste Management & Future of Cities

- Global Perspectives
  - emerging economies and population booming
  - limited resources' availability
  - global environmental concerns
- National/Local Perspectives
  - sustainable management of the society (social, environmental & economic: shortage of landfill sites, management cost, NIMBY etc)
- Well shared unique position of "Cities";
  Only cities;
  - know the real condition,
  - can take integrated approach, etc.

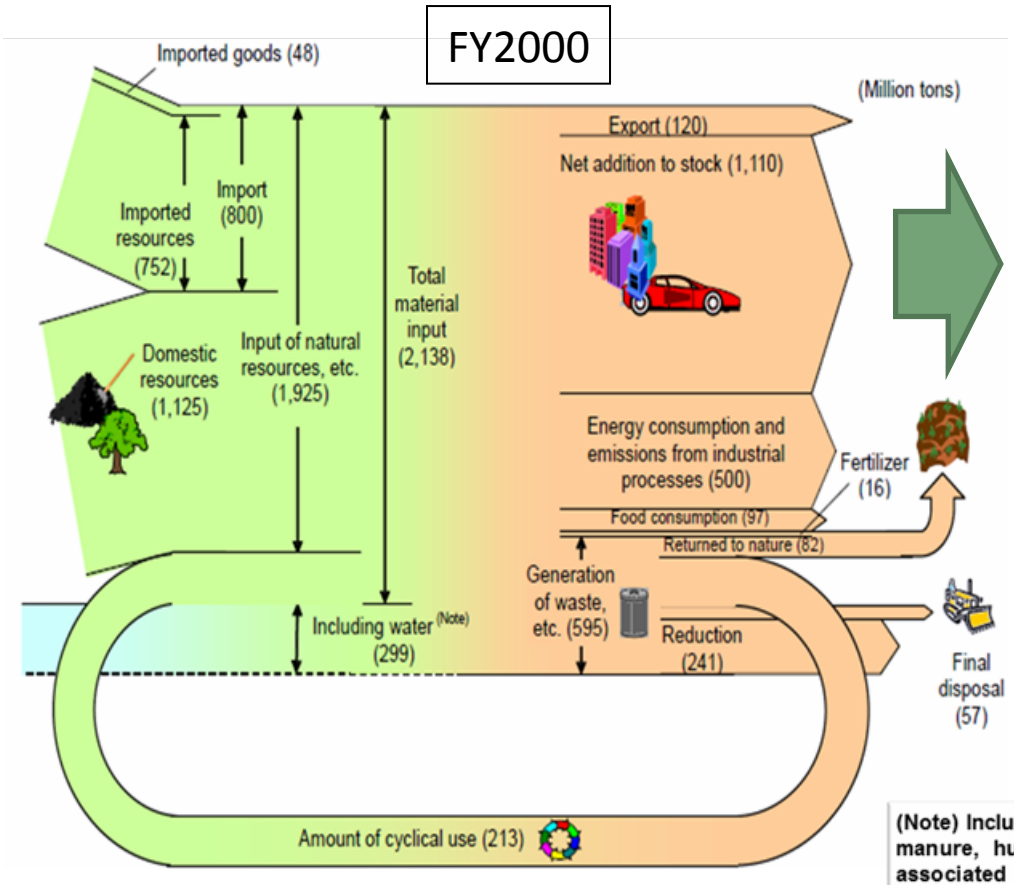
Planning and Implementation

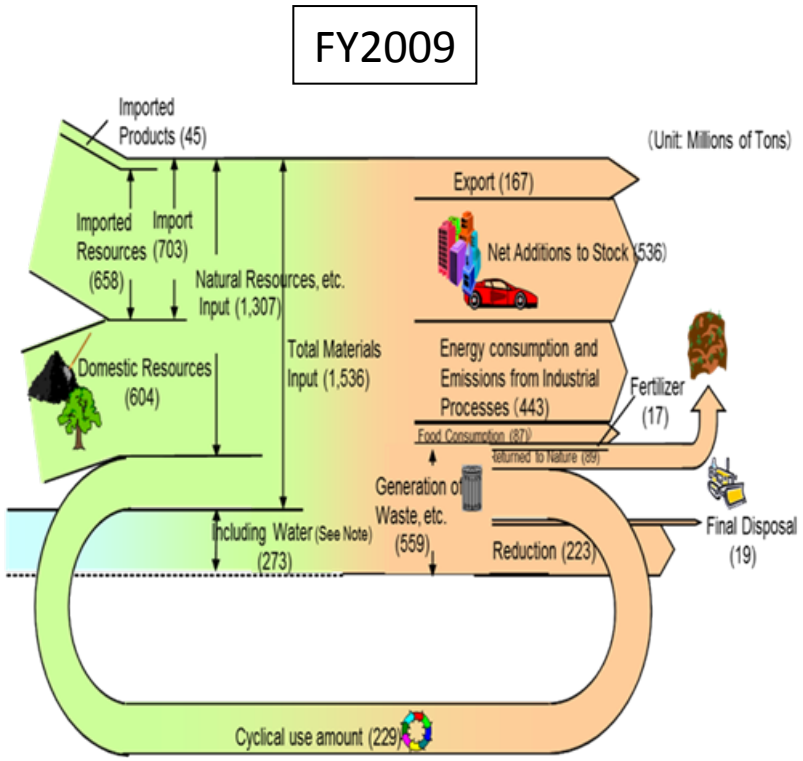
- Implementation is “ALL”
- Critical components for implementation
  - level of commitment (leadership and citizen participation)
  - capacity (technical, financial)
- Understanding of different conditions & different solutions,
  - No single answer applicable to all
- Goals and Tools
  - zero waste/3R approach
- Cooperation with, and support of other stakeholders
- IPLA ?

Structure of national regulations and local functions for waste management in Japan



Japanese approach based on 3R (Material flow)



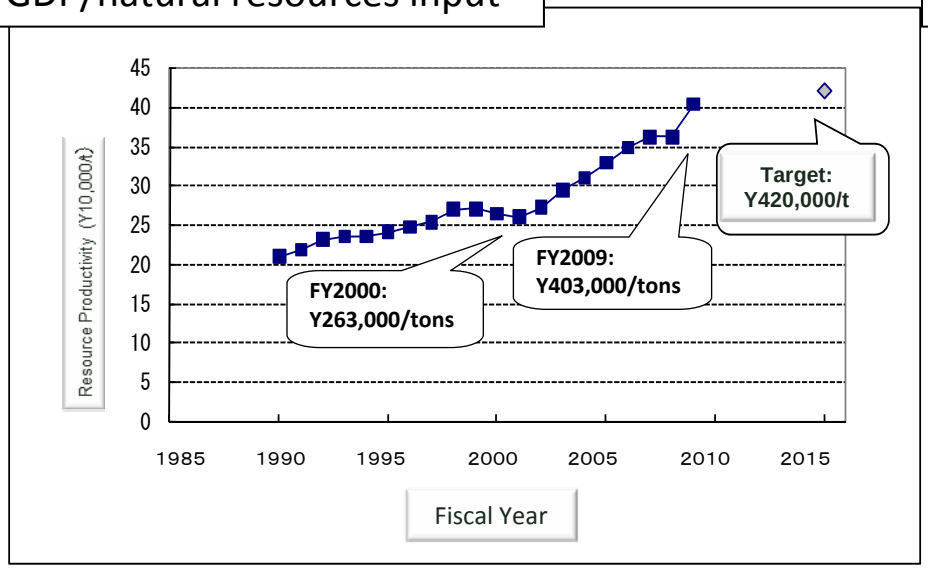


(Note) Including water: Input of water included in waste and the like (sludge, animal manure, human waste, waste acid and waste alkali) and sediment and the like associated with economic activities (sludge from mining, building and water-works and tailing from mining)

Progress Measured by Material Flow Indicators

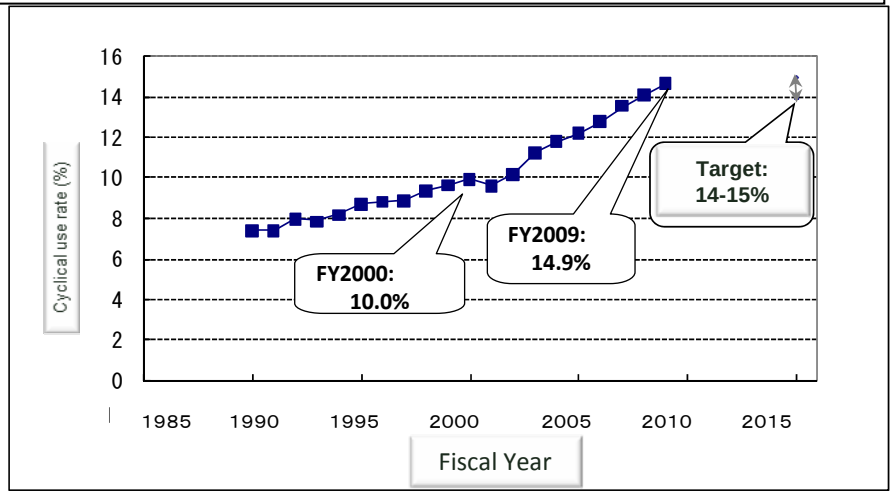
Inlet: resource productivity

GDP/natural resources input



Cycle: cyclical use rate

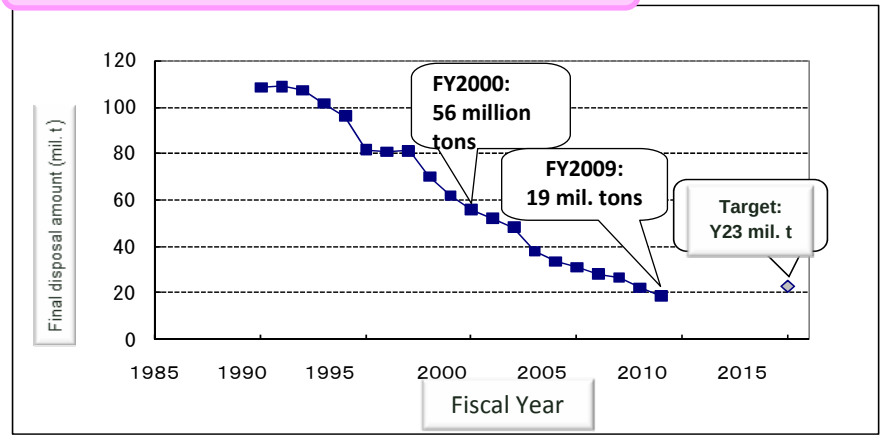
Cyclical use/(natural resources input + cyclical use)



All indicators in steady progress toward targets

	FY2000 (base yr)	FY2009 (% change over FY2000)	FY2015 (target yr)
Resource productivity (Y10,000/t)	26. 3	40. 3 （+53%）	42
Cyclical use rate (%)	10. 0	14. 9 （+4. 9 points）	14～15
Final disposal amount (mil. t)	56	19 （- 67%）	23

Outlet: final disposal amount



Future trend of Asian cities

- Global population
  8 billion by 2025
  - 5 billion in cities
- 33 mega cities in 2015
  - 27 in developing countries
    - 2/3 are in Asia
- MSW in Asia is 1 million t/day (currently)
  - 1.8 million t/day in 2025

- Examples of actions in 2 cities in Asia
  Cases of Nagoya, Japan and Surabaya, Indonesia

Case of Nagoya: Case of citizen participation

- 1994 new plan of landfill site development
- 1996-98 emerging concern on protection of wetland for migratory birds
- Jan 98 give up the plan
  Feb 98 emergency declaration on W/M
- -2000 further promotion 3R, utilizing economic, legislative and social measures
  Jun-Aug citizen discussion meetings (2,300 times)
- 2000-02 further strict waste management
  Nov 02 registration as Ramsar Convention site
- - 2011 80% reduction of landfill (compared to 1998)
  20% reduction of W/M expense

Case of Surabaya city: leadership and cooperation

Main cities where Surabaya's composting practices were replicated

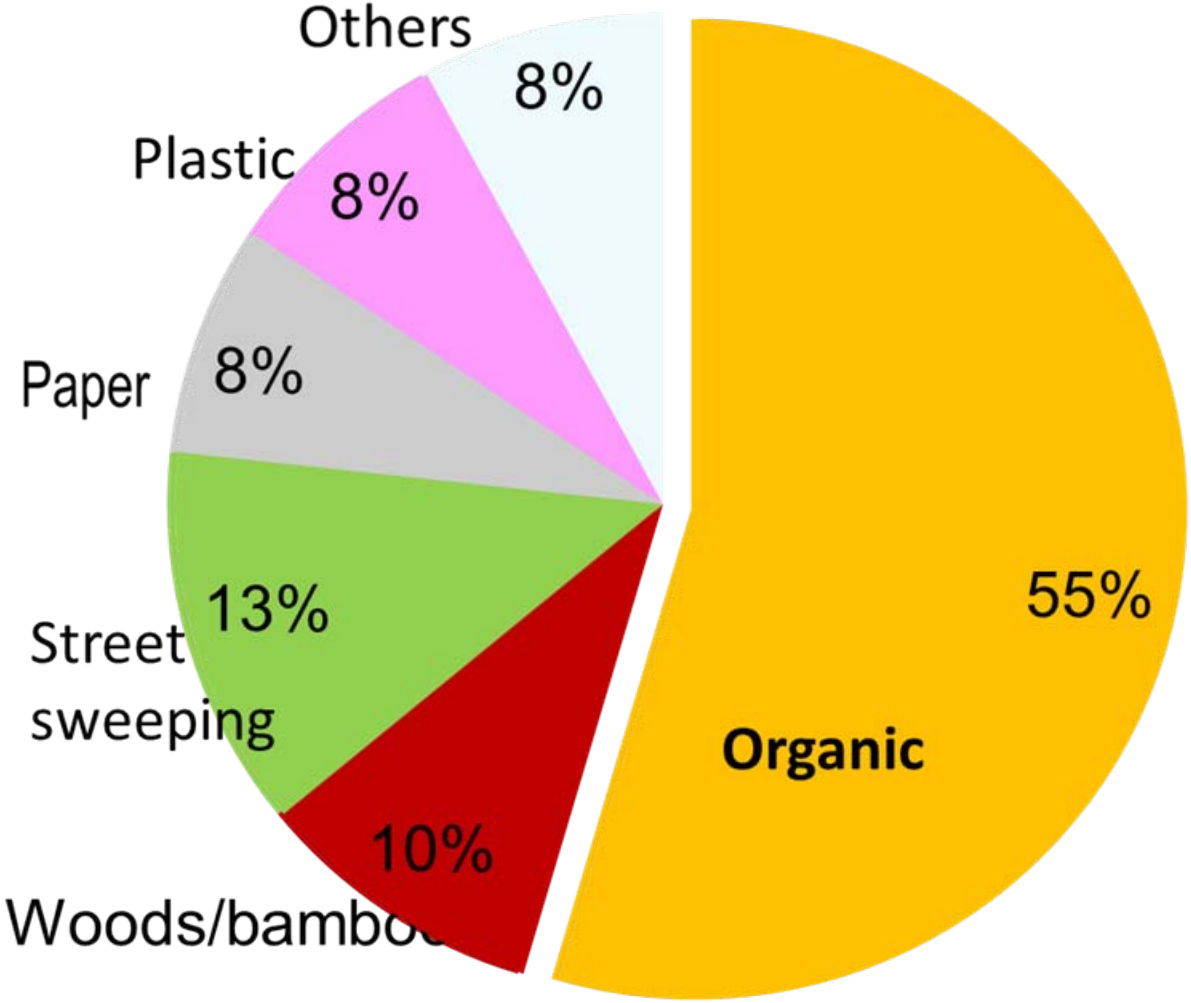
Surabaya City

Population: **3 million**

2nd largest in Indonesia

Environmental cooperation with Kitakyushu City since 2001

Composition of wastes in Surabaya, Indonesia



Organic waste shares more than half (as much as 70-80%) of total amount of waste generation

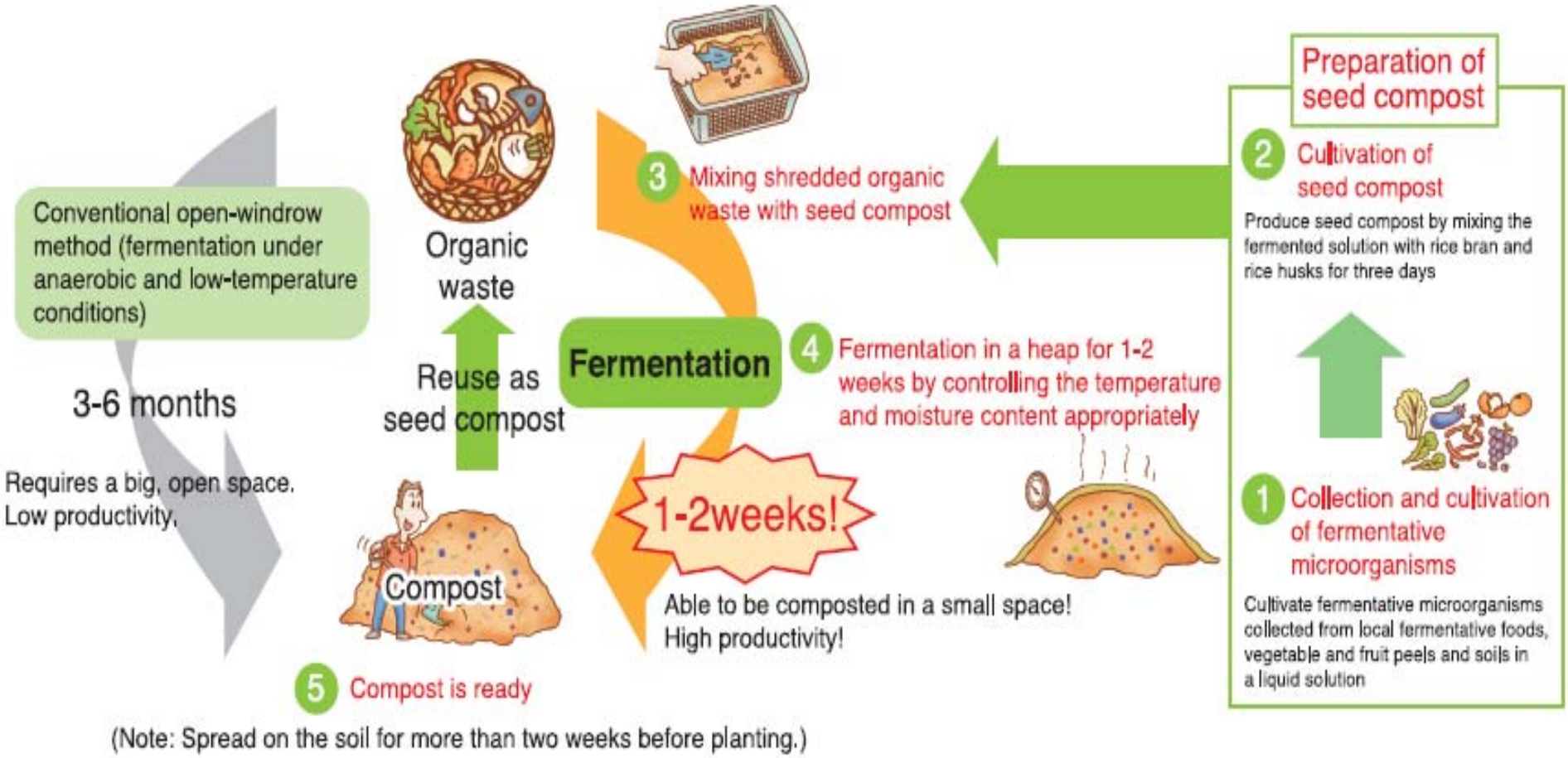
Prioritize reduction of **organic waste**

Promote **composting**
A) at each household
B) at composting centers

DE-CENTRALIZED COMPOSTING

Figure 8 Operational flow of Takakura Composting Method

(Prepared by Maeda (2009) with technical supervision by Kouji Takakura, JPec Co., Ltd.)



Features:

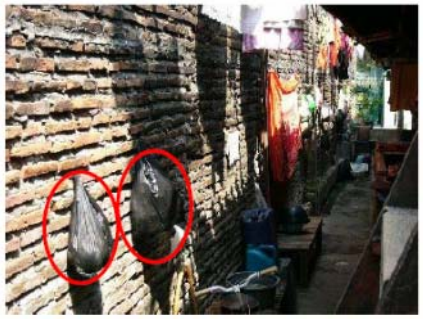
1. **Fast** and less space requirement
2. No foul smell (not rotting)
3. **Low-cost**, low-tech and easy operation
4. Using **only local materials**
5. Active microorganism in compost enriches the soil

Two types of Composting

- Centralized Composting
  - Large scale impact
  - CDM and economic incentives
  - New job opportunities for management
  - Large financial investment
  - Difficulties of finding users of produced compost

- De-centralized Composting
  - Small scale (Household based) with small budget
  - Bottom up approach with strong leadership
  - Citizen participation = Promotion of Env. awareness
  - Easy diffusion of produced compost

Case of Surabaya, Social and environmental benefits



Better household environment

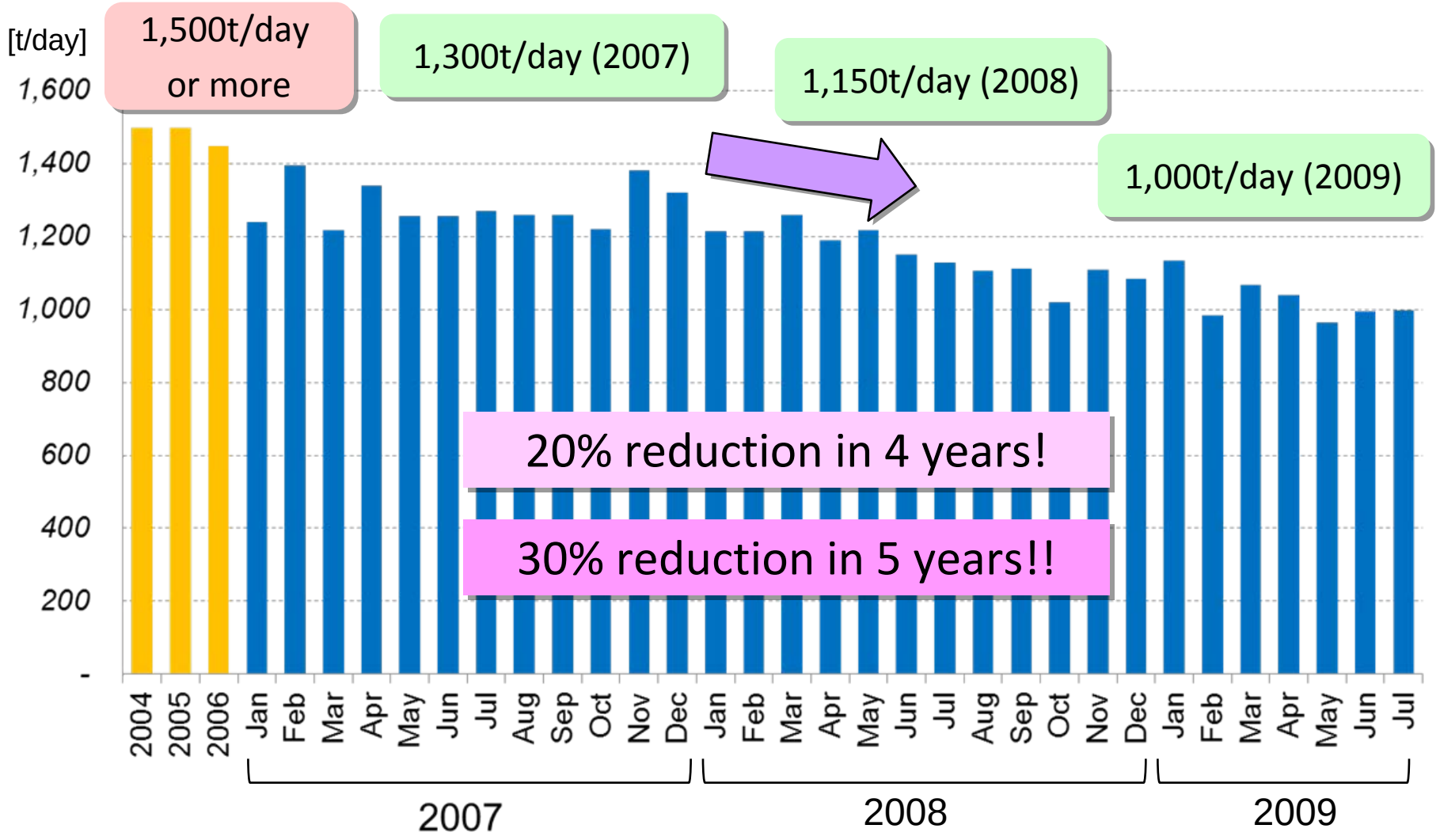
Greener and cleaner streets

Environmental education tools

OUTPUT: WASTE REDUCTION

* Note: Benowo is the only final disposal site in Surabaya City.
(Data source: Cleansing and Landscaping Department, Surabaya)

Average daily amount of waste disposed at Benowo Landfill* in Surabaya, 2004-2009



Surabaya's Model

The whole system is managed by the city government

<Inputs> <Processing> <Outputs>

Landfill

Decentralized model

Capital investment by the city (15 sites)

Vegetable markets

Green waste (leaves, tree branches)

Composting Centre

Running cost

City parks

Greenery

Replacing the use of chemical fertiliser

(Cost saving for the city!)

Collection & transportation

Free distribution by the city (17,000 units)

households

Compost Basket

Gardens

Waste Bank

Income

Recyclables

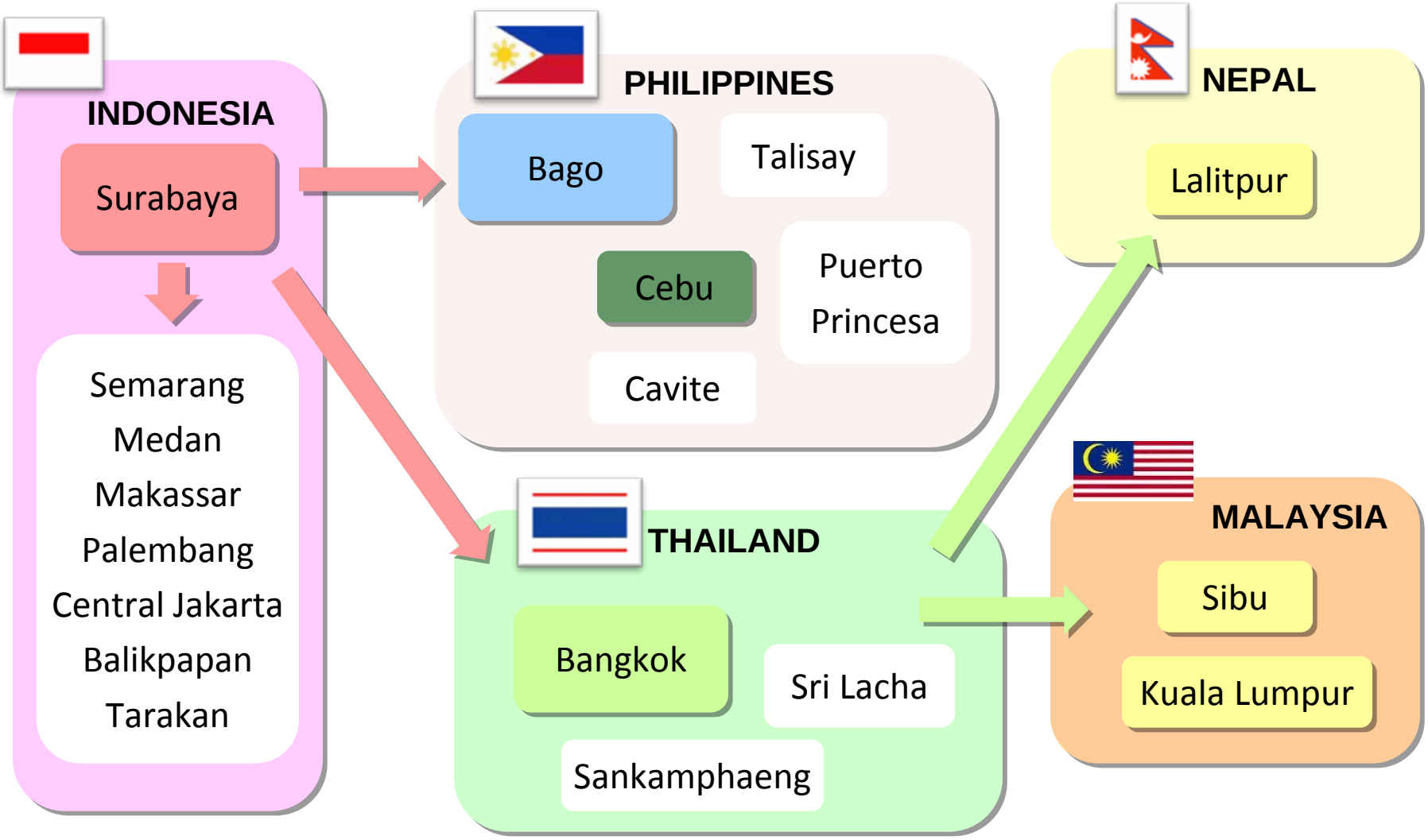
Monitoring by community leaders

Income

Selling plants and vegetables

Paper,s metals, glass, cloth,
PET bottles, plastics, e-waste

Spreading Surabaya's model in other cities and countries



Expansion of City – City network and CCAC

- Case of Kitakyushu & Surabaya cooperation, and further extension to other cities and countries

  - Good example of City – City cooperation (N-S-S)

- Currently Japan (MOEJ) is interested in such City-City cooperation

- Interest in CCAC

CCAC and Waste Management

- 3R & CCAC frame work
  - Japan joined CCAC since 2013 with strong interest, among others, in waste management initiative
- Targets: CH4 and Black Carbon (Short Lived Climate Pollutants = SLCP)
- Support for Assessments, Action Plan Development, Capacity Development, and

CCAC is not a funding mechanism for implementation, construction of big facilities,
But……..

CCAC: Supporting mechanism for ownership based actions

- Better waste management for their own interests such as;
  - less waste, less cost for waste management
  - interest in green city

- Through;
  - getting advice to materialize green city
  - getting support for action plan development,
  - utilizing own capacity and activities
  - networking among cities under similar conditions
    South-South Cooperation

Potential Cities in Asia for further consideration

Potential (semi)mentor Cities		Recipient Cities			
Country	**City**	**Country**	**City**	**Country**	**City**
Japan	Kitakyushu	Indonesia	Balikpapan	Cambodia	Kampot
Japan	Tokyo	Indonesia	Banjarmassin	Cambodia	Phnom Penh
Cambodia	Battambang	Indonesia	Makassar	Cambodia	Preah
Indonesia	Jogjakarta	Indonesia	Palembang	Cambodia	Pursat
Indonesia	Palembang	Indonesia	Tarakan	Cambodia	Siem Reap
Indonesia	Surabaya[1]	Indonesia	Semarang	Cambodia	Sihanoukville
Malaysia	Hang Tuah Jaya	Malaysia	Kampar	Lao PDR	Vangvieng
Malaysia	Iskandar	Malaysia	Kuching North	Lao PDR	Xamneua
Philippines	Cebu	Malaysia	Melaka	Lao PDR	Luang Prabang
Philippines	Puerto Princesa	Malaysia	Putrajaya	Lao PDR	Savannakhet
Thailand	Muangklang	Malaysia	Sibu	Lao PDR	Vientiane Capital
Thailand	Nonthaburi	Philippines	Naga	Myanmar	Mandalay
Thailand	Phitsanulok	Philippines	Palo	Myanmar	Taunggyi
Thailand	Bangkok	Philippines	San Fernando	Myanmar	Yangon
Thailand	Nakorn Rachasima	Philippines	Santiago	Viet Nam	Can Tho
		Thailand	Maehongson	Viet Nam	Cao Lanh
		Thailand	Pattaya	Viet Nam	Da Nang
		Thailand	Pichit		
		Thailand	Rayong		

This table does not suggest collaboration pairs, it is in alphabetical order by country then city

W/M and cooperation with related activities

- IPLA
- 3R Regional Forum in Asia and Pacific (islands)
  - 4th meeting in Indonesia, Feb 2014
- ESC Model Cities Programme (by ASEAN)
  - Demand based support (initiation of local governments)
- ECO2 cities by WB (Ecology and Economy)
- Future of Cities Forum (since 2011, Bali, New Delhi, Hamburg)
- CCAC initiative (short lived climate pollutants , SLCP)

Thank you