Challenges for Data Collection: A Case Study of Vietnam and others

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13 December 2012

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Reliability of data on MSWM

Reliable data on MSWM are necessary;
1) to evaluate the current status of MSWM, and
2) to estimate and design the future status of MSWM.

“Lack of reliable data on MSWM”

• Non-existence of MSW data collection systems at national level

-However, local governments or other organizations in charge of managing MSW most likely do possess the data necessary to manage their business activities.
-Lower reliability should be expected partly as a result of a lack of standard on data collection methodologies.
Research project related to MSWM in Southeast Asia

Boundary of research activities

<MSW management plan>
Starting for making plan
Environmental planning
Reporting environmental impacts
Reflecting for plan

<Describing future vision>
Forecasting socioeconomic scenarios
Developing evaluation indicators
Selecting strategic scenarios

<MSW data accumulation>
Developing methodologies of data collection and analyses
MSW quantity
MSW quality
Units

<Developing supportive tool for decision making>
Recycling network
Model for sustainability of informal sector
Recyclable flow
Model for source separation
Model for waste generation
Recycling network
Model for source separation

Informal sector
Formal sector
MSW flow
Model for cost evaluation
Model for environmental impacts

Citizens
Discussion

National Institute for Environmental Studies
Research project related to MSWM in Southeast Asia

Developing methodologies of data collection and analyses
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Formal sector
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Model for environmental impacts
Waste flows (a case study of Hanoi city, Vietnam)

Formal sector
- Offices
- Restaurants
- Hotels
- Markets
- Schools
- Shops
- Households

Informal sector
- Swine farmers
- Junk buyers
- Dealers
- Workshops
- China

Municipal solid waste stream
- Containers/handcarts
- Streets
- Temporary dump sites
- Landfill site
- Composting site

Recyclable waste stream
- Collection workers
- Street waste pickers
- Junkshops
- Dump site waste pickers
- Collection as RW
- Disposal sites

Recycled products stream
- Farmers
- Junk buyers
- Dealers
- Workshops

Waste Generation Model

Businesses
- Source (Hanoi)
- Generation MSW
- Generation as RW
- Handcarts
- Collection as RW
- Transshipment t as MSW
- Disposal sites
- Collection as RW

Households
- Number of household members
- Income
- Number of WP
- RW collection rate

Waste Generation Model
- Number of business A
- Distribution of business A
- Standard generation rate (kg/business A)
- Generation rate (kg/business A)
- Generation as MSW
- Generation as RW
- Handcarts
- Collection as RW
- Transshipment t as MSW
- Disposal sites
- Collection as RW

Effects of economic conditions to generation
- Effects of lifestyle to generation
- Standard generation rate (kg/person)
- RW collection rate
- Number of MSW collectors
- Number of WP
- RW collection rate
- Number of household members
- Income
- Number of WP
- RW collection rate

Transaction price of RW
- price of commodity
- Seasonal change
- Population
- Climate
- Generation rate (kg/person)
- Disposal rate
- Standard generation rate (kg/person)
- RW collection rate
- Number of MSW collectors
- Number of WP
- RW collection rate
Data verification on MSW collection amount

Human errors may occur in the recording process and in the reporting process.

The total amount of MSW by collected (ton/year)

\[ y = \frac{M}{P \times 365} \times 10^3 \]  (1)

The amount of MSW collected per person per day (kg/person/day)

The population with MSW collection service (person)

A coefficient of variation (CV) was calculated for the amounts of MSW collected per day per person for each of the URENCOs and compared with those in Japan.
Data collection on MSWM in Southeast Asia

To contact 7 national governments and 107 local governments to collect data on MSWM.

Reliability of data on MSW collection amount in Vietnam

- With weighbridge (n = 27)
- Without weighbridge (n = 55)
**Challenges for data collection**

At local level

**1st step**
To motivate local authorities to collect reliable data on MSWM continuously

At national level

**2nd step**
To motivate national governments to collect the data on MSWM at local level continuously

**Driving forces for waste data collection**

**Figure** Formulation of driving forces for waste data collection from a viewpoint of behavior psychology on environment
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