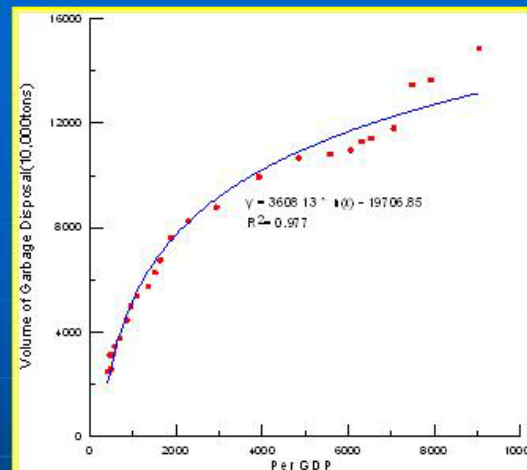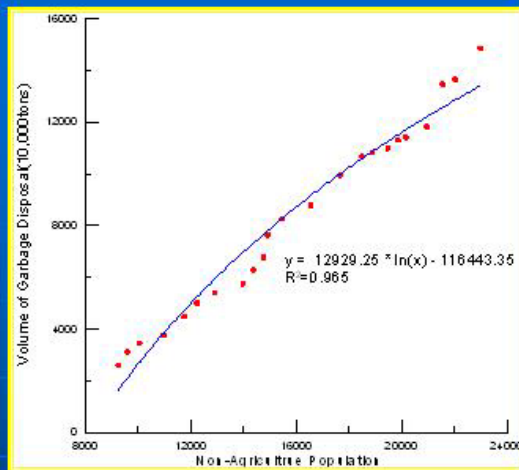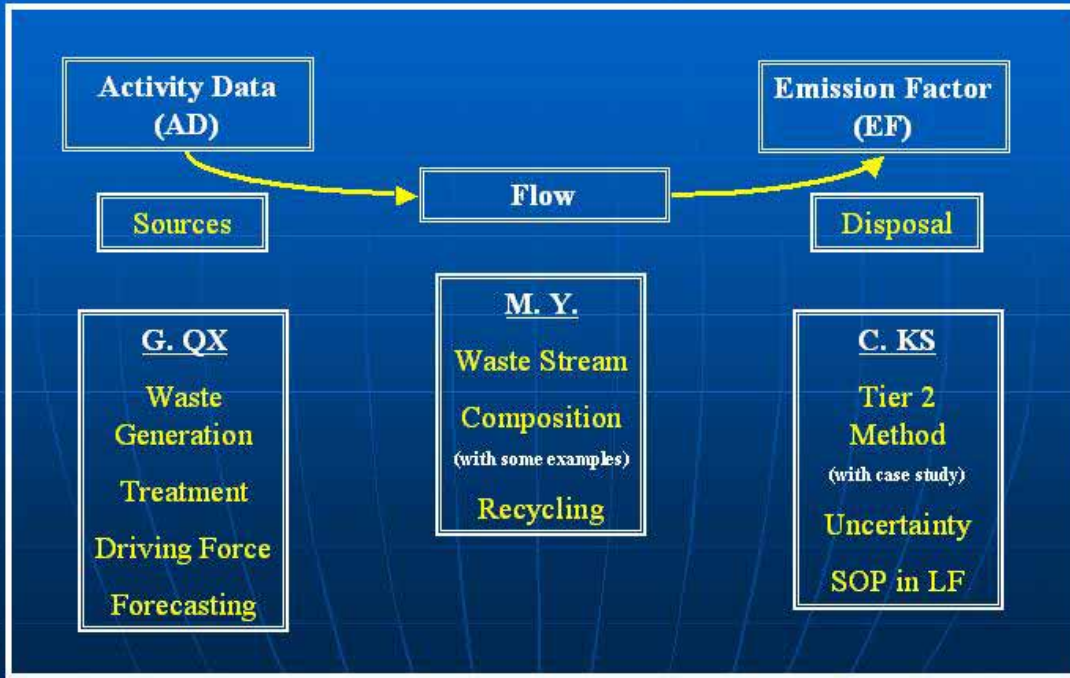# Report of Waste Working Group

3rd WGIA

23 February, 2006

Manila, Philippines

Group members

- Dr. Sirintornthep Towprayoon
- Dr. Gao Qingxian
- Mr. Yasuhiro Baba
- Dr. Masato yamada
- Dr. Kyoung sik Chio
- Ms. Eunhwa Chio
- Ms. Raquel Ferraz Villanueva
- Ma. Gerarda Asuncion D. Merilo
- Ms. Bujidmaa Borkhuu

Main results

Activity Data (AD)		Emission Factor (EF)
Sources	Flow	Disposal

G. QX

Waste Generation

Treatment

Driving Force

Forecasting

M. Y.

Waste Stream

Composition
(with some examples)

Recycling

C. KS

Tier 2 Method
(with case study)

Uncertainty

SOP in LF

$y = 12929.25 * \ln(x) - 116443.35$
$R^2 = 0.965$

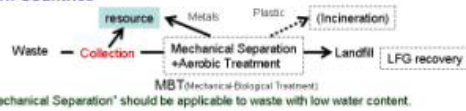$y = 3608.13 * \ln(x) - 19706.85$
$R^2 = 0.977$

G. QX

Waste Generation

Treatment

Driving Force

Forecasting

1. Population (Urban population / Urban Non-Agriculture Population)
2. Migration population (long time, seasonal, temporary)
3. Life style of different region
4. Data base of Activity Data (include historical data)
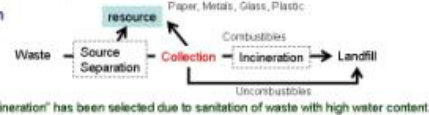5. GDP per capita
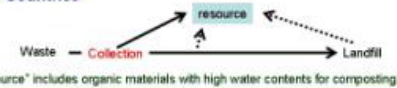
Structure of Waste Stream

Western Countries

resource ← Metals   Plastic → (Incineration)

Waste — Collection → Mechanical Separation +Aerobic Treatment → Landfill   LFG recovery

MBT(Mechanical-Biological Treatment)

"Mechanical Separation" should be applicable to waste with low water content.

Japan

resource ← Paper, Metals, Glass, Plastic

Combustibles

Waste — Source Separation — Collection — Incineration → Landfill

Uncombustibles

"Incineration" has been selected due to sanitation of waste with high water content.

Asian Countries

resource

Waste — Collection → Landfil

"resource" includes organic materials with high water contents for composting.

Carbon should be changed along waste stream.

An Example of Organic and Fossil Carbon Flow Analysis of Waste Streams in Hanoi, Viet Nam
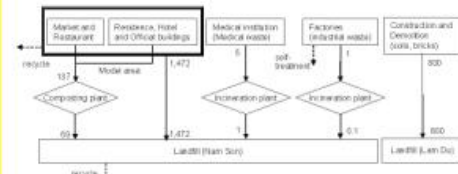
Do not site or quote

Figure 1 Waste treatment stream managed by URENCO in Hanoi urban area (2002)

M. Y.	1. Waste Streams analysis / Composition analysis
Waste Stream	2. Recycling ----decision maker
Composition	3. National regulation or law
(with some examples)	4. 2006 guidelines default data
Recycling	5. Direct measurement --- k value

C. KS	1. Tier 2 method and its Uncertainty analysis
Tier 2 Method	2. Case Study --- Huge range form surface
(with case study)	3. k value estimation and several problems
Uncertainty	4. Uncertainty analysis with the Monte Carlo simulation
SOP in LF	5. Standard Operating Procedure (SOP) and QA/QC

Land Fill......

Composing......

Incineration......

Others......

   Waste to Energy.......

   Recycling and reuse......

Suggestion and conclusions

- **Set up a net work for ……**
  - AD, EF, site measurements, treatment technology etc.
- **Waste streams analysis……**
  - For each country / region
- **Measurement in site……**
  - For each country or region
- **Standard Operation Procedure……**
  - Set up a work group with same guidance
- **Clarify the co-benefit (as the strategy)……**
  - Cooperate with others (environmental scientist etc.)

Thanks