

Development of waste statistics to estimate activity data

WG 1: Waste

Introductory presentation

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WGIA9

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Contents

- **Current status of each party's inventory in waste sector**
- **Data collection and waste statistics**
 - Result of the survey at WGIA9
 - Japan's case
- **Development of waste statistics**
 - Agenda



Recommendation from past WG

- **WGIA 7 (Jul. 2009)**, Theme: Issue of data collecting
 - Information sharing among us about new waste management policy schemes, introduced in the individual countries
- **WGIA 8 (Jul. 2010)**, Theme: current status of the inventory preparation
 - Country Specific AD and EF for improving Inventory and for NAMAs options
 - Follow up the Results of survey



Current status of each party's inventory in waste sector

Follow up on previous WG at WGIA8



Current status of each party's inventory in waste sector

The survey by questionnaire at WGIA8

- The secretariat have conducted the survey for current status of **each party's inventory in waste sector.**
 - 10 parties answered to questionnaire
 - India, Laos, Myanmar and Singapore have not answered to it yet. Please contact me...



Current status of each party's inventory in waste sector

Completeness and accuracy of waste sector inventory

		Cambodia	China	Indonesia	Japan	Korea	Malaysia	Mongolia	Philippines	Thailand	Vietnam
CO ₂	6C1 Biogenic	NA-	E(full)T1	NE-	E(full)CS	NA-	NA-	ET1	NE-	NA-	NA-
	6C2 Other (please specify)	NA-	E(full)T1	E(part)T1	E(full)CS	E(full)T2	NA-	NA-	NA-	NE-	NA-
	6D Other	NA-	NA-	NA-	E(full)CS	NA-	NA-	NA-	NA-	NA-	NA-
CH ₄	6A1 Managed Waste Disposal on Land	E(part)T1	E(full)T2	NA-	E(full)T3	E(full)T1	ET1	ET1	E(full)T2	E(full)T2	E(part)T1
	6A2 Unmanaged Waste Disposal Site	E(part)T1	E(full)T2	E(part)T1	NA-	E(full)T1	NE-	ET1	E(part)T2	E(full)T2	E(part)T1
	a Deep (>5m)	E(part)T1	E(full)T2	E(part)T1	NA-	E(full)T1	NE-	IE-	E(part)T2	E(full)T2	E(part)T1
	b Shallow (<5m)	E(part)T1	E(full)T2	NA-	NA-	E(full)T1	NE-	IE-	E(part)T2	E(full)T2	E(part)T1
	6A3 Other (please specify)	NA-	NA-	E(part)T1	E(full)T3	NA-	NE-	NA-	NA-	NA-	NA-
	6B1 Industrial Waste Water	E(part)T1	E(full)T1	E(part)T1	E(full)CS	E(part)T2	E(part)T1	ET1	E(part)T2	E(full)T2	E(part)T1
	a Waste Water	E(part)T1	E(full)T1	E(part)T1	E(full)CS	E(full)T2	E(part)T1	ET1	E(part)T2	E(full)T2	IE-
	b Sludge	E(part)T1	E(full)T1	NE-	IE-	NE-	E(part)T1	ET1	NE-	E(full)T2	IE-
	6B2 Domestic and Commercial Wastewater	E(part)T1	E(full)T1	E(part)T1	E(full)CS	E(full)T2	E(full)T1	ET1	E(part)T2	E(full)T2	E(part)T1
	a Waste Water	E(part)T1	E(full)T1	E(part)T1	E(full)CS	E(full)T2	E(full)T1	ET1	E(full)T2	E(full)T2	IE-
b Sludge	E(part)T1	E(full)T1	NE-	IE-	IE-	E(full)T1	NE-	E(part)T2	E(full)T2	IE-	
6B3 Other (please specify)	NA-	NO-	NE-	NO-	NE-	NO-	NA-	NA-	NA-	NA-	
N ₂ O	6C1 Biogenic	NA-	NO-	NO-	E(full)CS	NA-	NA-	ET1	NA-	NE-	NA-
	6C2 Other (please specify)	NA-	NO-	NO-	E(full)CS	NE-	NA-	NA-	NA-	E(full)T1	NA-
	6D Other (please specify)	NA-	NA-	NA-	E(full)T1	E(full)T1	NA-	NA-	NA-	NE-	NA-
	6B1 Industrial Waste Water	NA-	E(full)T1	E(part)T1	E(full)CS	NE-	NA-	NA-	NA-	NE-	NA-
	a Waste Water	NA-	E(full)T1	E(part)T1	E(full)CS	NE-	NA-	NA-	NA-	NE-	NA-
	b Sludge	NA-	E(full)T1	NE-	IE-	NE-	NA-	NA-	NA-	NE-	NA-
	6B2 Domestic and Commercial Wastewater	NA-	E(full)T1	E(part)T1	E(full)CS	NE-	NA-	NA-	NA-	NE-	NA-
	a Waste Water	NA-	E(full)T1	E(part)T1	E(full)CS	NE-	NA-	NA-	NA-	NE-	NA-
	b Sludge	NA-	E(full)T1	NE-	IE-	NE-	NA-	NA-	NA-	NE-	NA-
	N2O from human sewage	E(part)T1	NE-	NE-	E(full)CS	E(full)T1	NA-	NE-	E(full)T2	E(full)T1	E(part)T1
6B3 Other (please specify)	NA-	NE-	NA-	NO-	NA-	NA-	NA-	NA-	NE-	NA-	
6C1 Biogenic	NA-	NE-	NO-	E(full)CS	NA-	NA-	NA-	NA-	NA-	NA-	
6C2 Other (please specify)	NA-	NE-	NO-	E(full)CS	E(full)T2	NA-	NA-	NA-	NE-	NA-	
6D Other (please specify)	NA-	NE-	NA-	E(full)T1	E(full)T1	NA-	NA-	NA-	NA-	NA-	

Completeness of estimation: E (full): Fully Estimated IE: Included Elsewhere NO: Not Occurred
 E(part): Partly Estimated NE: Not Estimated NA: Not Applicable

Accuracy of Methodology: D (IPCC default) T1 (IPCC Tier 1) T1a, T1b, T1c (IPCC Tier 1a, Tier 1b and Tier 1c, respectively)
 T2 (IPCC Tier 2) T3 (IPCC Tier 3) CS (Country Specific) OTH (Other)

- Most countries partially obtained activity data.
- China, Korea, Philippines and Thailand employed advanced methodology.

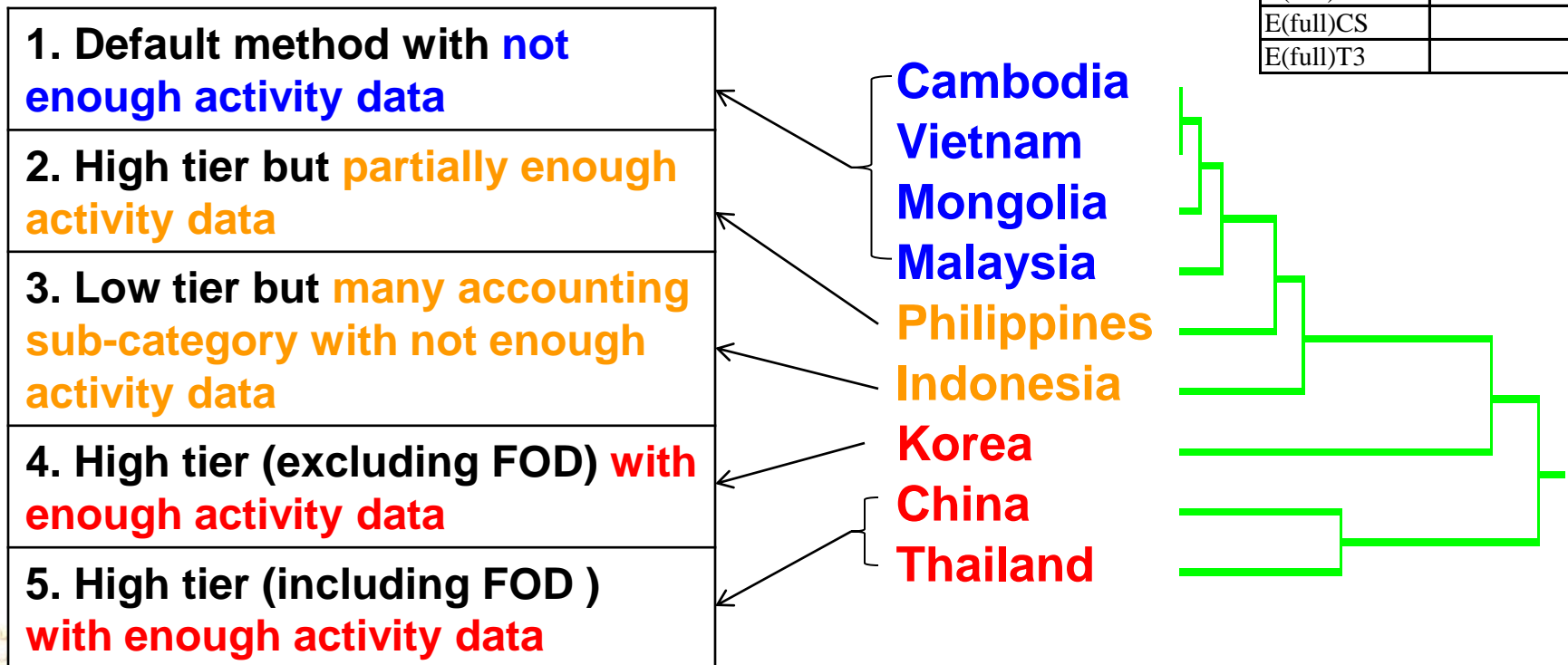
Current status of each party's inventory in waste sector

Categorization of Asian waste sector inventory

Allocated scores

NE-	-1
NA-	0
NO-	0
IE-	0
ET1	1
E(part)T1	1
E(full)T1	2
E(part)T2	2
E(full)T2	3
E(full)CS	4
E(full)T3	4

- Cluster analysis
 - To categorize waste sector inventory status of Asian countries by estimation methodology, we conducted cluster analysis by the completeness and methodology matrix allocated scores.
- Result of the cluster analysis



Development of waste statistics to estimate activity data

- Most countries are facing difficulties in data collection.
- How have we obtained country specific AD from waste management policy?
 - Secretariat conducted survey by questionnaire at WGIA9.



Data collection and waste statistics

Result of the survey at WGIA9



Data collection and waste statistics

To fill out data matrix...we have to collect data.

Category	Waste types estimated		Treatment type		
6.A.1.	Municipal solid waste	Kitchen garbage	Anaerobic landfill		
			Semi-aerobic landfill		
		Waste paper	Anaerobic landfill		
			Semi-aerobic landfill		
		Waste wood	Anaerobic landfill		
			Semi-aerobic landfill		
		Waste textiles (natural fiber)	Anaerobic landfill		
	Semi-aerobic landfill				
	Human waste treatment, Septic tank sludge	Anaerobic landfill			
		Semi-aerobic landfill			
	Industrial waste	Kitchen garbage	Anaerobic landfill ^{b)}		
				Waste paper	
					Waste wood
Sewage sludge		Digested sewage sludge			
		Other sewage sludge			
Waterworks sludge					
Organic sludge from manufacturing industries					
Livestock waste					
6.A.3.	Inappropriate disposal		Anaerobic landfill		



Japan's emission source of final disposal on land (Example)

Data collection and waste statistics Survey at WGIA9

- To understand current status of data collection of each party, WGIA secretariat have conducted the survey by questionnaire.
 - Six countries have answered.



Data collection and waste statistics

The law regulating statistics

		Cambodia	China	Japan	Mongolia	Philippines	Thailand
Law for inventory compilation		○	-	○	○	None	None
Low for waste management	MSW data	None	○	○	-	○	○
	Sewage sludge	None	△	○	-	○	○
	ISW data	-	△	○	-	○	○
	Clinical waste data	-	△	○	-	○	○
	Hazardous waste data	-	△	○	-	○	○
	Agricultural waste data	Preparing	△	○	-	○	None

○: Exist

△: waste management policy

None: Not exist

- : No answering

Efficiency of the law help us collect activity data.



Data collection and waste statistics

Waste statistics in each country

	Cambodia	China	Japan	Mongolia	Philippines	Thailand
MSW	-	○	○	-	○	○
Sewage sludge	-	△	○	-	-	-
ISW	-	△	○	-	-	△
Clinical waste	-	△	△	-	-	-
Hazardous waste	-	△	△	-	△	△
Agricultural waste	-	△	○	-	-	-

○: Exist

△: Exist, but not applied in inventory compilation.

In case we can not obtain the data from existing statistics.....
How can we obtain the data?



Data collection and waste statistics

Waste management responsibility

	Cambodia	China	Japan	Mongolia	Philippines	Thailand
MSW	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sewage sludge	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ISW	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Clinical waste	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hazardous waste	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Agricultural waste	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

- Waste management responsibilities of each countries have been clarified by the questionnaire.
- We have to ask the responsible agencies to provide the data.

Data collection and waste statistics

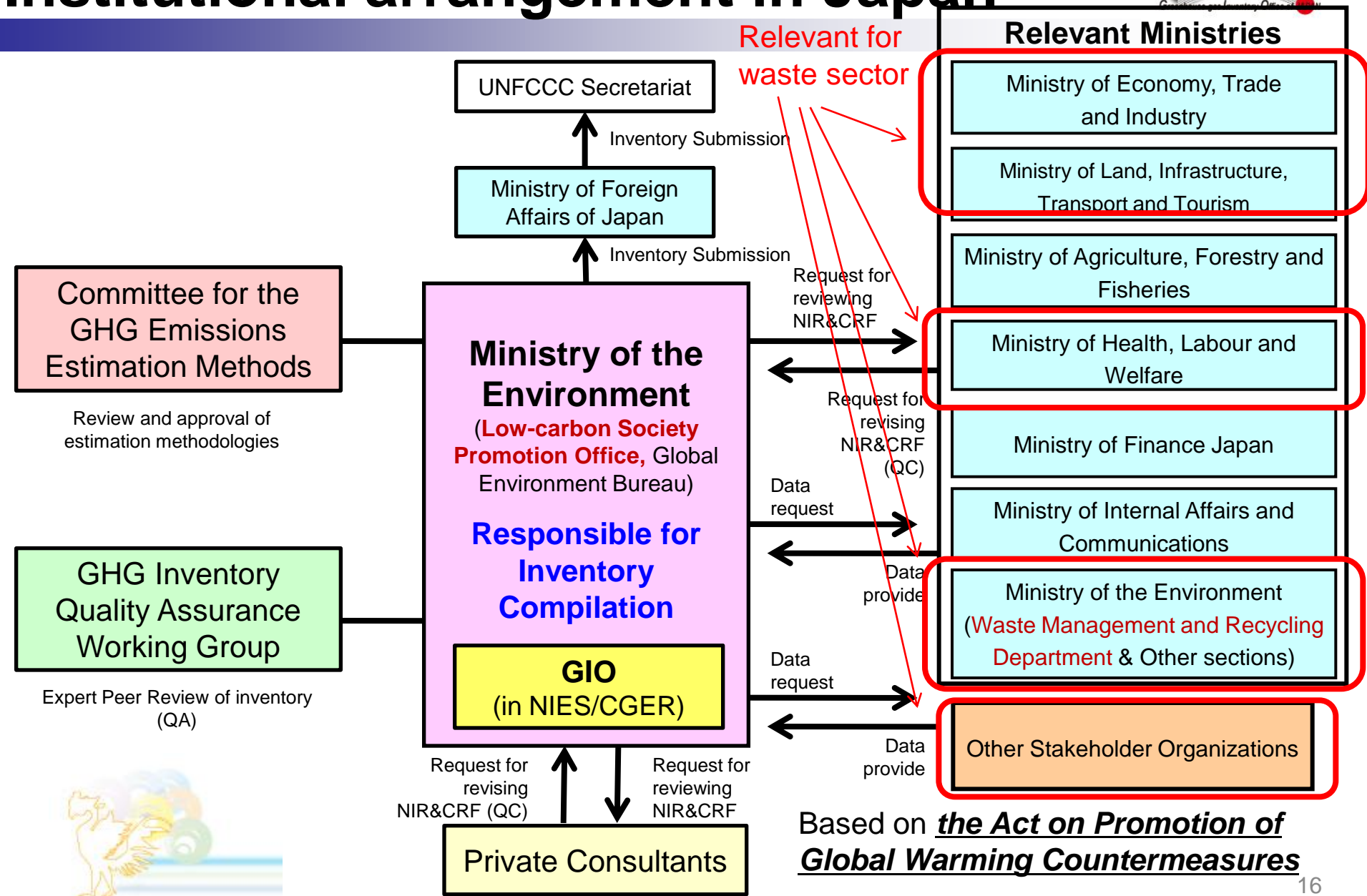
Status of data providing from responsible agencies

	Cambodia	China	Japan	Mongolia	Philippines	Thailand
MSW data	under agreement in writing	under agreement in writing	under oral agreement	under oral agreement	not provided	under oral agreement
Sewage sludge data	under agreement in writing	not provided	under oral agreement	under oral agreement	under oral agreement	under oral agreement
ISW data	under agreement in writing	not provided	under oral agreement	-	-	-
Clinical waste data	under agreement in writing	-	not provided	under oral agreement	not provided	under oral agreement
Hazardous waste data	under agreement in writing	not provided	not provided	under oral agreement	not provided	under agreement in writing
Agricultural waste data	under agreement in writing	not provided	under oral agreement	under oral agreement	not provided	not provided

However, sometime we can not obtain from responsible agency...

Data collection and waste statistics

Institutional arrangement in Japan



Data collection and waste statistics

Waste statistics for activity data in Japan

	Data	Relevant agency
Municipal solid waste (MSW)	MSW statistics	MOE
	Provided data of waste plastics for fuel	MOE, JPCRA
	Provided data of methane recovery from landfill	Tokyo
Industrial solid waste (ISW)	ISW statistics	MOE
	Waterworks sludge statistics	MHLW
	Sewage sludge statistics	MLIT
	Provided data of industrial sludge	METI
	Provided data of ISW for fuel	JCA, JPA, etc.
Wastewater	Industrial wastewater statistics	METI
	Sewage statistics	MLIT
	Johkaso, Human waste, and etc. statistics	MOE

JCA: Japan Cement Association

JPA: Japan Paper Association

JPCRA: Japan Containers and Packaging Recycling Association

METI: Ministry of Economy, Trade and Industry

MHLW: Ministry of Health, Labour and Welfare

MLIT: Ministry of Land, Infrastructure, Transport and Tourism

MOE: Ministry of the Environment

Tokyo: Tokyo Metropolis



Development of waste statistics to estimate activity data

The theme of WG1



Development of waste statistics

Agenda

Day 2, Thursday 14th July

WG 1: Waste

Phnom Penh Room

Theme: Development of waste statistics to estimate activity data

Chair: Tomonori Ishigaki

Rapporteur: Rias Parinderati

& Wukir Amintari Rukmi

Takefumi Oda

Introductory Presentation (GIO)

Kamal Uy

GHG Emission Estimation in Waste Sector

Elizabeth Philip

GHG Emissions from Waste Sector in
Malaysia

Teresita Ramos Perez

GHG INVENTORY FROM THE WASTE
SECTOR IN THE PHILIPPINES

Break

Chart Chiemchaisri

Development of Waste Statistics to
Estimate Activity Data: Waste Sector in
Thailand

Discussion



Development of waste statistics

Discussion

For continuous inventory compilation, it is necessary to have steady surveys or statistics under the law.

- **What legal framework should we established?**
- **Who should we ask to provide necessary data?**
- **What items should we need in the statistics?**
- **Actually, how did we obtain activity data in most recent inventory compilation? etc.**



Thank you for your attention!
Let's start the session!

