








<p>In Tokyo: <b>Using plastic bags</b></p> 	<p>In Tokyo: <b>Plastic bag must be semitransparent to protect collection workers from accidents.</b></p> 	<p><b>Garbage Discharge Rule in Tokyo</b></p> <p>The notice board showing the waste discharge rule is placed at every collection station.</p> 																																							
<p><b>Garbage Discharge Rule in Katsushika-ward, Tokyo</b></p> <ul style="list-style-type: none"> <li>Paper, glass, tins on Mon. before 8am</li> <li>Combustible waste on Wed.&amp; Sat before 9:30am</li> <li>Incombustible waste on Fri before 8am</li> <li>Bulky waste apply to the office by phone (disposal fee depending on items)</li> <li>Pet bottles carry to recycle bins at shops (producers are responsible for collection)</li> <li>Nonresidential waste pay as you throw</li> </ul>	<p><b>Recyclable Waste</b></p> 	<p><b>Primary collection by Tricycles in Viet Nam</b></p> 																																							
<p><b>Container is loaded on a dump truck with a crane.</b></p> 	<p><b>Garbage Hopper at a Local Market</b></p> 	<p><b>Findings (1)</b></p> <ol style="list-style-type: none"> <li>Very long working hours, from 9am until 7-9pm.</li> <li>No authorized collection route.</li> <li>No authorized collection schedule.</li> <li>Residents don't know the collection days.</li> <li>In Bayanzurukh, only one collection worker per truck. Rental contract system minimize workers and petrol but lengthen the working hours.</li> <li>Most of collection trucks use gasoline.</li> <li>Russian trucks consume lots of gasoline. 4 to 5 times of Japanese trucks.</li> <li>Driver repair trucks. → Difficult for drivers to repair modern trucks.</li> </ol>																																							
<p><b>Findings (2)</b></p> <ol style="list-style-type: none"> <li>TUK strictly control petrol.</li> <li>Recoding of trucks at the Ulaan Chulute landfill is not so accurate.</li> <li>Most collection crew take no lunch due to no money.</li> <li>In Apartment area, the Bell collection functions very well. This should be the standard collection system for Apartment.</li> <li>In Ger area, the fee collection is the main constrain for the collection work.</li> <li>Present condition of fee collection function well. But it creates many problems as well.</li> <li>TUK and rental contract is the big constrain for the improvement of collection system.</li> </ol>	<p><b>c. Problems related to the current fee collection and measures to be taken</b></p> <ul style="list-style-type: none"> <li>Mr. Mori will explain the advantages and disadvantages of waste fee and tax systems in accordance with the Appendix 1.</li> <li>Then he would like to receive your opinion.</li> </ul>	<p><b>Information and Materials needed</b></p> <ul style="list-style-type: none"> <li>Lists of public area cleansing services conducted by TUKs, i.e. street cleansing service roads, parks, drains, etc.</li> </ul>																																							
<p><b>Technical Working Group Meeting (14)</b> for THE STUDY ON SOLID WASTE MANAGEMENT PLAN FOR ULAANBAATAR CITY</p> <p>April 1, 2005 JICA Study Team</p>	<p><b>1. Work Progress</b></p> <ul style="list-style-type: none"> <li>Analysis of waste flow</li> <li>Analysis of factory survey results</li> <li>Study on 6 candidate sites for future landfill</li> <li>Alternative study for formulation of master plan</li> <li>Plan of pilot project (PP) of UCDS improvement</li> <li>Plan of other PPs other than UCDS improvement</li> <li>Social environment survey around present disposal sites</li> <li>Study on collection service enterprises other than TUKs</li> <li>Study of financial system on SWM</li> </ul>	<p><b>2. Works for the Following Week</b></p> <ul style="list-style-type: none"> <li>Study on 6 candidate sites for future landfill</li> <li>Alternative study for formulation of master plan</li> <li>Preparation of workshop (2)</li> <li>Plan of pilot project (PP) of UCDS improvement</li> <li>Plan of other PPs other than UCDS improvement</li> <li>Social environment survey around present disposal sites</li> <li>Study on collection service enterprises other than TUKs</li> <li>Study of financial system on SWM</li> </ul>																																							
<p><b>3. Subjects to be discussed</b></p> <ol style="list-style-type: none"> <li>Plan of workshop (2)</li> <li>Results of POS</li> <li>Collection and haulage system (1)</li> <li>Financial status of TUKs and proposal for money flow of waste fund</li> </ol>	<p><b>a. Plan of the second workshop (1)</b></p> <ul style="list-style-type: none"> <li>Date: April 11 (Mon)</li> <li>Venue: Ulaanbaatar Hotel</li> <li>The objectives of the workshop (2) are:</li> <li>To understand the needs of siting of future final disposal site(s) for the formulation of the M/P;</li> <li>To examine and discuss advantages and disadvantages of SWM technical system alternatives corresponding to the six candidates for future final disposal site(s); and</li> <li>To make recommendation regarding future final disposal site(s) for SWM in the City of Ulaanbaatar.</li> </ul>	<p><b>a. Plan of the second workshop (2)</b></p> <table border="1"> <thead> <tr> <th>Topic</th> <th>Speaker</th> <th>Time</th> </tr> </thead> <tbody> <tr> <td>1. Opening Address by Mongolian Side</td> <td>MED and JICA</td> <td>9:00 - 9:30</td> </tr> <tr> <td>2. Opening Address by the Japanese Side</td> <td>JICA</td> <td>9:30 - 10:00</td> </tr> <tr> <td>3. Explanation of objectives and main presentation of the second meeting</td> <td>Study Team</td> <td>10:00 - 10:30</td> </tr> <tr> <td>4. Explanation of advantages and disadvantages of six (6) candidates as a final disposal site</td> <td>OPP and Study Team</td> <td>10:30 - 11:30</td> </tr> <tr> <td>5. Coffee break</td> <td></td> <td>11:30 - 11:45</td> </tr> <tr> <td>6. Question and answer for the advantages and disadvantages of the (6) candidates</td> <td>Participants, OPP and Study Team</td> <td>11:45 - 12:15</td> </tr> <tr> <td>7. Question and answer for the advantages and disadvantages of the (6) candidates</td> <td>Participants and JICA (closed requested)</td> <td>12:15 - 12:30</td> </tr> <tr> <td>8. Lunch</td> <td></td> <td>12:30 - 13:00</td> </tr> <tr> <td>9. Question and answer for the advantages and disadvantages of the (6) candidates</td> <td>Participants and JICA (closed requested)</td> <td>13:00 - 13:15</td> </tr> <tr> <td>10. Coffee break</td> <td></td> <td>13:15 - 13:30</td> </tr> <tr> <td>11. Formulation of the agenda</td> <td>Representative from each group</td> <td>13:30 - 14:00</td> </tr> <tr> <td>12. Closing of the meeting</td> <td>OPP and Study Team</td> <td>14:00 - 14:30</td> </tr> </tbody> </table>	Topic	Speaker	Time	1. Opening Address by Mongolian Side	MED and JICA	9:00 - 9:30	2. Opening Address by the Japanese Side	JICA	9:30 - 10:00	3. Explanation of objectives and main presentation of the second meeting	Study Team	10:00 - 10:30	4. Explanation of advantages and disadvantages of six (6) candidates as a final disposal site	OPP and Study Team	10:30 - 11:30	5. Coffee break		11:30 - 11:45	6. Question and answer for the advantages and disadvantages of the (6) candidates	Participants, OPP and Study Team	11:45 - 12:15	7. Question and answer for the advantages and disadvantages of the (6) candidates	Participants and JICA (closed requested)	12:15 - 12:30	8. Lunch		12:30 - 13:00	9. Question and answer for the advantages and disadvantages of the (6) candidates	Participants and JICA (closed requested)	13:00 - 13:15	10. Coffee break		13:15 - 13:30	11. Formulation of the agenda	Representative from each group	13:30 - 14:00	12. Closing of the meeting	OPP and Study Team	14:00 - 14:30
Topic	Speaker	Time																																							
1. Opening Address by Mongolian Side	MED and JICA	9:00 - 9:30																																							
2. Opening Address by the Japanese Side	JICA	9:30 - 10:00																																							
3. Explanation of objectives and main presentation of the second meeting	Study Team	10:00 - 10:30																																							
4. Explanation of advantages and disadvantages of six (6) candidates as a final disposal site	OPP and Study Team	10:30 - 11:30																																							
5. Coffee break		11:30 - 11:45																																							
6. Question and answer for the advantages and disadvantages of the (6) candidates	Participants, OPP and Study Team	11:45 - 12:15																																							
7. Question and answer for the advantages and disadvantages of the (6) candidates	Participants and JICA (closed requested)	12:15 - 12:30																																							
8. Lunch		12:30 - 13:00																																							
9. Question and answer for the advantages and disadvantages of the (6) candidates	Participants and JICA (closed requested)	13:00 - 13:15																																							
10. Coffee break		13:15 - 13:30																																							
11. Formulation of the agenda	Representative from each group	13:30 - 14:00																																							
12. Closing of the meeting	OPP and Study Team	14:00 - 14:30																																							

## b. Results of POS

### Main Findings

#### Awareness 1 (most serious problem in Ulaanbaatar)

	Apartment with garbage chute	Apartment without garbage chute	Get area with collection service	Get area without collection service	Total
Inadequate supply of safe water	4.3%	3.3%	37.3%	3.6%	
High crime rate	9.3%	7.4%	4.4%	12.3%	6.7%
Poverty problems	18.1%	13.6%	13.0%	37.3%	13.0%
Economic issues such as inflation	13.3%	13.3%	23.3%		17.4%
Social unrest	7.4%	4.3%	1.3%		3.0%
Political instability	5.3%	2.2%	3.4%		3.3%
Bribe and corruption	1.1%	5.4%			1.5%
Environmental problems (air, water, noise and waste)	22.0%	30.4%	19.0%		23.0%
Land ownership issues			1.0%		0.5%
Drug problems	5.3%	5.4%	6.3%		6.0%
Unemployment	17.0%	6.7%	16.5%		14.5%
Natural Disasters (Flood, Fire, Earthquake and so on)	1.1%	1.1%			0.5%
I do not know			1.5%		0.6%
Others					
Total	100%	100%	100%	100%	100%

Base: all households

#### Priority by Business Establishments

	Water supply	Power supply	Septic tank collection	Drainage	Access road	Electricity supply	Drainage facilities	Telephone
Very important	39.0%	34.0%	36.0%	47.0%	33.0%	43.0%	29.0%	23.0%
Important	47.0%	50.0%	46.0%	46.0%	46.0%	35.0%	44.0%	46.0%
Little important	10.0%	10.0%	10.0%	3.0%	14.0%	16.0%	21.0%	10.0%
Not important at all	4.0%	6.0%	5.0%	2.0%	4.0%	5.0%	3.0%	11.0%
No response	3.0%	3.0%	2.0%	1.0%	1.0%	3.0%	3.0%	2.0%
Total	100%	100%	100%	100%	100%	100%	100%	100%
Score	1.63	1.64	1.64	1.59	1.69	1.63	1.56	2.12

#### Priority of Households

Type of residence	Priority	Score
Apartment with garbage chute	Electricity supply	1.74
Apartment without garbage chute	Water supply	1.64
Get area with collection service	Access road	1.63
Get area without collection service	Septic tank collection	1.35

#### Solid Waste Management 2

##### How much do you pay for utility services?

	Type of residence		
	Apartment with garbage chute	Apartment without garbage chute	Get area with collection service
Mean (Tg)			
waste collection service (monthly)	1,177.8	1,035.9	1,143.2
electricity (monthly)	13,268.8	11,328.8	6,960.7
drinking water (monthly)	5,803.0	4,434.4	1,264.5
telephone (monthly)	13,778.5	13,381.8	18,087.5
coal/wood (annually)		12,533.3	55,971.4

	Type of business				
	Shop	Restaurant	Office	Hotel	Market
Mean (Tg)					
waste collection service (monthly)	6,700	16,734	38,429	39,781	90,295
electricity (monthly)	80,475	144,222	652,111	346,294	760,730
drinking water (monthly)	20,883	71,200	347,703	202,430	134,882
telephone (monthly)	75,000	31,438	212,380	240,387	129,063
coal/wood (annually)	299,775	690,090	8,741,687	400,000	2,400,320

#### Solid Waste Management 5

##### Question to those who do not receive the collection service at present.

##### Do you need the collection service?

	Count	Col
Yes, very much.	7	88%
Yes to some extent.	0	0%
I do not need very much.	1	12%
I do not need at all.	0	0%
Total	8	100%

##### Are you willing to pay for the collection service?

	Count	Col
Very willing	6	75%
Willing to some extent	1	12%
Not willing very much	0	0%
Not at all	1	12.5%
Total	8	100%

Average of the fee which respondents are willing to pay: Tg 1,075

## Samples

### Residential source (Household s )

DISTRICT						Total
Khan Uul	Bayan-Zurkh	Sukhbaatar	Chingeltei	Bayangol	Songino-Khushun	
40	81	51	61	79	88	400

Type of Residence					Total
Apartment with garbage chute	Apartment without garbage chute	Summer house	Get area with a collection service	Get area without a collection service	
94	92	0	206	8	400

## Samples

### Non-residential source (Business establishment)

DISTRICT						Total
Khan Uul	Bayan-Zurkh	Sukhbaatar	Chingeltei	Bayangol	Songino-Khushun	
13	18	17	17	20	15	100

Type of Business					Total
Shop	Restaurant	Office	Hotel	Market	
21	20	20	19	20	100

#### Awareness 2 (Are you interested in Environmental issues?)

	Academic background	Academic background	Academic background	Academic background	Total	Household in 2000
	no formal education	secondary school	high school	university		
Yes	40.8%	52.4%	52.3%	52.3%	50.8%	48%
No	59.2%	47.6%	47.7%	47.7%	49.2%	52%
Total	100%	100%	100%	100%	100%	100%

Base: all households

#### In Ulaanbaatar, are there any problems caused by improper waste management?

	Apartment with garbage chute	Apartment without garbage chute	Get area with collection service	Get area without collection service	Total
Yes, very much.	9.6%	12.0%	3.9%		
Yes to some extent.	42.6%	23.0%			
Not much.	27.7%	41.2%			
Not at all.	6.4%	15.2%			
I do not know.	13.7%	6.3%			
Total	100%	100%			

Base: all households

#### Solid Waste Management 1

##### Do you know the frequency of collection service?

	Type of residence			Total
	Apartment with garbage chute	Apartment without garbage chute	Get area with collection service	
Yes	40.4%	28.3%	21.4%	
No	59.6%	71.7%	77.2%	
Not regular collection service				31.5%
Total	100%	100%	100%	100%

##### Do you know which organization is in charge of collection service in your area?

	Type of residence			Total
	Apartment with garbage chute	Apartment without garbage chute	Get area with collection service	
Yes	55.3%	43.5%	39.8%	44.4%
No	44.7%	56.5%	60.2%	55.6%
Total	100%	100%	100%	100%

#### Solid Waste Management 1

##### Do you pay the collection fee?

	Type of residence				
	Apartment with garbage chute	Apartment without garbage chute	Get area with collection service		
I pay to a fee collector directly.				0.0%	94.7%
I pay through apartment management fee	100%			0.0%	99.9%
No, I do not pay collection fee.				0.0%	2.9%
I do not know				1.1%	2.4%
Total	100%	100%	100%	100%	100%

	Type of business				
	Shop	Restaurant	Office	Hotel	Market
Yes, I pay collection fee to a fee collector directly.	95.2%	90.0%	40.0%	84.2%	95.0%
Yes, I pay through apartment management fee	4.8%	0.0%	50.0%	15.8%	5.0%
No, I do not pay collection fee.			5.0%	10.0%	0.0%
I do not know			5.0%	0.0%	0.0%
Total	100%	100%	100%	100%	100%

#### Solid Waste Management 3

##### How do you think about the collection fee?

	Type of residence			Total
	Apartment with garbage chute	Apartment without garbage chute	Get area with collection service	
Too expensive	3.3%	3.3%	37.4%	21.3%
Expensive	63.8%	71.7%	54.4%	59.5%
Appropriate	7.4%	2.2%	0.0%	2.3%
Cheap	1.1%	1.1%	0.0%	0.5%
Too cheap	22.3%	21.7%	8.2%	14.5%
Total	100%	100%	100%	100%

	Type of business				
	Shop	Restaurant	Office	Hotel	Market
Too expensive	14.3%	10.0%	10.0%	10.5%	12.0%
Expensive	14.3%	10.0%	10.0%	10.5%	12.0%
Appropriate	52.4%	33.0%	45.0%	72.7%	48.0%
Cheap					
Too cheap	5.0%	5.0%	0.0%	0.0%	2.0%
I do not know	15.0%	15.0%	5.0%	5.0%	8.0%
Total	100%	100%	100%	100%	100%

#### Solid Waste Management 4

##### Are you satisfied with the current collection service?

	Type of residence		
	Apartment with garbage chute	Apartment without garbage chute	Get area with collection service
Yes very much.	9.6%	12.0%	3.9%
Yes to some extent.	42.6%	23.0%	
Not much.	27.7%	41.2%	
Not at all.	6.4%	15.2%	
I do not know.	13.7%	6.3%	
Total	100%	100%	100%

	Type of business				
	Shop	Restaurant	Office	Hotel	Market
Yes very much.	28.0%	10.0%	15.0%	5.3%	5.0%
Yes to some extent.	38.1%	30.0%	30.0%	57.0%	25.0%
Not much.	23.8%	50.0%	30.0%	21.1%	40.0%
Not at all.	9.5%	5.0%	15.0%	5.3%	13.0%
I do not know.	0.0%	5.0%	10.0%	10.3%	13.0%
Total	100%	100%	100%	100%	100%

## C. Collection and Haulage System (1)

2005/04/01

Akira Doi

## Old SWM was Easy and Simple.

### SWM was just

- collection waste
- carrying waste
- disposing of waste.

### This was enough

- when the waste amount was little.
- when most waste were biodegradable
- when the objective was only sanitation.

## The Situation has Changed!

- Population has increased.
- People have got richer. They buy more and dispose more.
- The waste amount has been rapidly increasing.
- Packaging wastes (paper, plastic, metal, glass) have increased due to supermarkets.
- Improvement of roads has highlighted the ugly view of waste scattering.
- SWM has to target not only "Sanitation" but also "Good and Beautiful Environment".
- People have got more selfish. Less cooperation.

## They have caused:

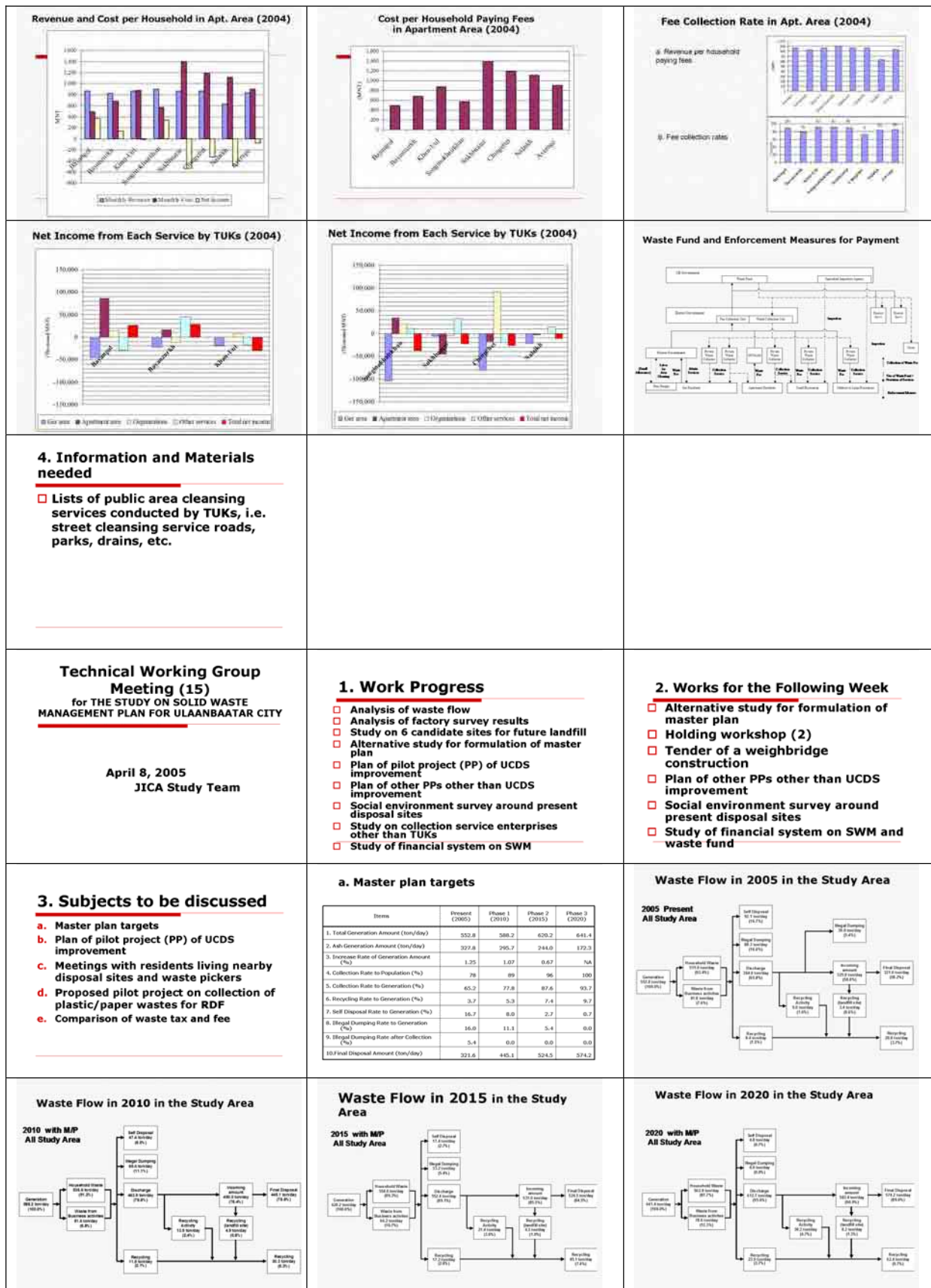
- Many waste scattering and heaps.
- Many illegal dumping of waste.
- Huge SWM expenditure.
- Serious environmental impacts by landfill.
- Many complains by people.
- Negative impacts to the tourist industry.


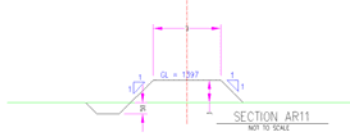




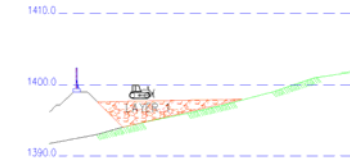



## Privatization solve these problems?


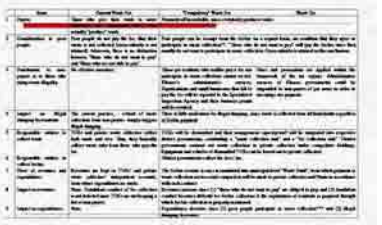
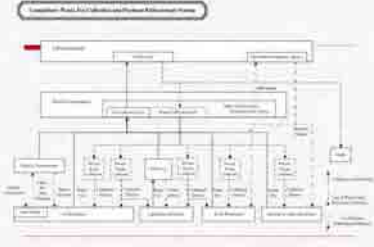
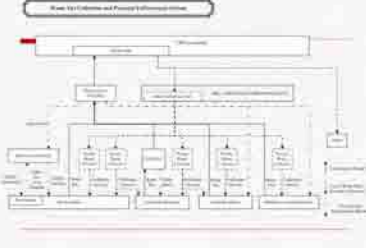
- Private sector's objective is only maximization of profit.
- SWM's objective is sanitation, environmental protection, beautiful town, etc.
- Both parties' objectives never match.
- Unless UBC strictly control and supervise private companies, the situation become much worse.

<p><b>Old Fashion Solid Waste Management</b></p> <p>Waste collection</p> <p>Very Simple</p>	<p>Very complicated, especially collection and transportation</p> <p><b>Proposed SWM for Bangkok</b></p>	<p><b>Why Complicated? Because All Technologies Require Separate Collection.</b></p> <p>Incineration Plant accept only combustible waste Recycling center accept only recyclables Compost plant accept only bio-degradable waste</p> <ul style="list-style-type: none"> <li>You have to educate people to discharge waste separately.</li> <li>Separated wastes have to be transported to the different plants and disposal sites.</li> <li>Can you force TUK to do so?</li> </ul>																																			
<p><b>SWM in One City in Japan</b></p>	<p><b>Illegal Dumping. Why people illegally dump waste?</b></p> <p><u>In case of Business waste:</u></p> <ul style="list-style-type: none"> <li>To save the transportation cost.</li> <li>To save the disposal fee. 1500 Tg/truck(6m3).</li> </ul> <p><u>If the disposal site moves remote location:</u></p> <ul style="list-style-type: none"> <li>Illegal dumping will increase.</li> </ul> <p><u>If the disposal fee increases:</u></p> <ul style="list-style-type: none"> <li>Illegal dumping will increase.</li> </ul>	<p><b>Who dump waste illegally?</b></p> <ol style="list-style-type: none"> <li><b>TUKs: Less Suspected.</b> <ul style="list-style-type: none"> <li>They check their tracks' record to enter the disposal site by themselves. <b>UBC should check it.</b></li> <li>They don't have to pay disposal fee. <b>Good!</b></li> </ul> </li> <li><b>Horoo which collect waste by themselves</b> <ul style="list-style-type: none"> <li>Nobody check where the driver dispose waste. <b>Suspected. UBC should monitor them.</b></li> </ul> </li> <li><b>Many private entities hires private trucks</b> <ul style="list-style-type: none"> <li>Private trucks don't want pay disposal fee.</li> <li>Nobody check where they dump waste.</li> <li>Very much suspected. <b>UBC should monitor them.</b></li> </ul> </li> </ol>																																			
<p><b>How to Stop the Illegal Dumping</b></p> <ul style="list-style-type: none"> <li>All waste has to be under UBC's control.</li> <li>If UBC allow private companies to do the work, UBC has to trace all waste from the collection points to the disposal site to ensure all waste reach to the disposal site.</li> <li>Difficult to monitor wastes are business waste and industrial waste.</li> </ul>	<p><b>To be modern SWM, UBC has to strengthen</b></p> <ol style="list-style-type: none"> <li>Monitoring capability (understand the present condition)</li> <li>Timely policy and plan making capability (waste quality and quantity change rapidly. Plastic bags. Plastic bottles)</li> <li>Financial capability</li> <li>Supervision capability</li> <li>Management capability</li> <li>Public education capability</li> </ol>	<p><b>Expense vs Finance at Present</b></p> <table border="1"> <thead> <tr> <th>Category</th> <th>Expense</th> <th>Financial source</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Apartment waste</td> <td>Collection cost</td> <td>200 Tg/p/m</td> </tr> <tr> <td>Disposal cost</td> <td>None</td> </tr> <tr> <td rowspan="2">Gel waste</td> <td>Collection cost</td> <td>1500-2500 Tg/hh/m</td> </tr> <tr> <td>Disposal cost</td> <td>None</td> </tr> <tr> <td rowspan="2">Business waste</td> <td>Collection cost</td> <td>3960 Tg/m3</td> </tr> <tr> <td>Disposal cost</td> <td>250 Tg/m3</td> </tr> <tr> <td rowspan="2">Public waste (road, parks)</td> <td>Collection cost</td> <td>None</td> </tr> <tr> <td>Disposal cost</td> <td>None</td> </tr> <tr> <td rowspan="2">Illegal dumped waste</td> <td>Collection cost</td> <td>None</td> </tr> <tr> <td>Disposal cost</td> <td>None</td> </tr> <tr> <td rowspan="3">Management for SW</td> <td>Monitoring, planning</td> <td>None</td> </tr> <tr> <td>Enforcement, supervision</td> <td>None</td> </tr> <tr> <td>Education</td> <td>None</td> </tr> </tbody> </table>	Category	Expense	Financial source	Apartment waste	Collection cost	200 Tg/p/m	Disposal cost	None	Gel waste	Collection cost	1500-2500 Tg/hh/m	Disposal cost	None	Business waste	Collection cost	3960 Tg/m3	Disposal cost	250 Tg/m3	Public waste (road, parks)	Collection cost	None	Disposal cost	None	Illegal dumped waste	Collection cost	None	Disposal cost	None	Management for SW	Monitoring, planning	None	Enforcement, supervision	None	Education	None
Category	Expense	Financial source																																			
Apartment waste	Collection cost	200 Tg/p/m																																			
	Disposal cost	None																																			
Gel waste	Collection cost	1500-2500 Tg/hh/m																																			
	Disposal cost	None																																			
Business waste	Collection cost	3960 Tg/m3																																			
	Disposal cost	250 Tg/m3																																			
Public waste (road, parks)	Collection cost	None																																			
	Disposal cost	None																																			
Illegal dumped waste	Collection cost	None																																			
	Disposal cost	None																																			
Management for SW	Monitoring, planning	None																																			
	Enforcement, supervision	None																																			
	Education	None																																			
<p><b>Increase of Collection Trucks</b></p> <ul style="list-style-type: none"> <li>Without strengthening UBC's management capability and institutional system, the increase of collection trucks will be ineffective.</li> <li>Such improvement will be the essential condition for Japan's AID.</li> <li>The Study Team will help UBC to improve the institutional system and develop the capacity.</li> </ul>	<p><b>d. Financial status of TUKs and proposal for money flow of waste fund</b></p> <p>By Mr. Mori</p>	<p><b>Shares of Services in Total Revenues of TUKs (2004)</b></p>																																			
<p><b>Revenue, Cost and Net Income of TUKs (2004)</b></p>	<p><b>Revenue and Cost of Ger Area Collection of TUKs (2004)</b></p>	<p><b>Revenue and Cost per Household Paying Fees in Ger Area (2004)</b></p>																																			
<p><b>Cost per Household Paying Fees in Ger Area (2004)</b></p>	<p><b>Revenue per Household Paying Fees in Ger Area and the Fee Collection Rate (2004)</b></p>	<p><b>Revenue and Cost of Apartment Area Collection of TUKs (2004)</b></p>																																			



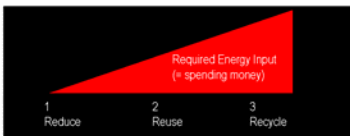



<p><b>b. Plan of pilot project of UCDS improvement</b></p>	<p><b>Improvement of UCDS</b></p> <p>1. Installation of Weighbridge and Control Building ➡ JICA Approved</p> <ul style="list-style-type: none"><li>• Phase 1: Preparatory Work</li><li>• Phase 2: Completion of Weighbridge</li></ul> <p>2. Improvement of Disposal Site ➡ Not Approved Yet</p>	<p><b>Installation of Weighbridge and Control Building (Schedule)</b></p> <p>1. Phase 1</p> <ul style="list-style-type: none"><li>• Selection of Contractor : Next Week</li><li>• Commencement : Mid April</li><li>• Completion : May</li></ul> <p>2. Phase 2</p> <ul style="list-style-type: none"><li>• Commencement : July</li><li>• Completion : August</li><li>• Training and Registration : September</li></ul>																																																																																																																																																
<p><b>Scope of Work for Weighbridge</b></p> <p>1. Phase 1</p> <ul style="list-style-type: none"><li>• Detailed Design</li><li>• Purchase Load Cell</li><li>• Electricity Supply</li></ul> <p>2. Phase 2</p> <ul style="list-style-type: none"><li>• Construction of Foundation</li><li>• Construction of Control Building</li><li>• Installation of Weighbridge</li><li>• Verification</li><li>• Training of Weighbridge Operator</li></ul>	<p><b>Scope of Work for Improvement of UCDS</b></p> <p>1. UB City</p> <ul style="list-style-type: none"><li>• Cleaning Wastes scattering along access road and surround UCDS</li><li>• Cut and Fill, Slope Trimming and Soil Cover</li></ul> <p>2. JICA</p> <ul style="list-style-type: none"><li>• Enclosing Bank, Enclosing Dam</li><li>• Leachate Regulation Pond</li><li>• On site road</li><li>• Fence and Gate</li><li>• Gas Extraction Pipe</li></ul>	<p><b>Improvement Plan</b></p> 																																																																																																																																																
<p><b>Cross Section of Enclosing Bank</b></p> 	<p><b>Sanitary Landfilling Layer 1</b></p> 	<p><b>Sanitary Landfilling Layer 2</b></p> 																																																																																																																																																
<p><b>Sanitary Landfilling Layer 3</b></p> 	<p><b>Sanitary Landfilling Layer 4</b></p> 	<p><b>Layer 1 Sanitary Landfilling</b></p> 																																																																																																																																																
<p><b>Layer 2 Sanitary Landfilling</b></p> 	<p><b>Layer 3 Sanitary Landfilling</b></p> 	<p><b>Schedule of Improvement of UCDS</b></p> <table><tr><th>Item</th><th>1</th><th>2</th><th>3</th><th>4</th><th>5</th><th>6</th><th>7</th><th>8</th><th>9</th><th>10</th><th>11</th></tr><tr><td>1. Job Contract</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>2. Work Item</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>3. Planning and Preliminary</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>4. Work Estimation</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>5. Work Assignment</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>6. Approval of JICA for PP</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>7. Preparation/Approval of Spec.</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>8. Tender</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>9. Approval of Contract from JICA</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>10. Contract</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Construction from 1998</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>	Item	1	2	3	4	5	6	7	8	9	10	11	1. Job Contract												2. Work Item												3. Planning and Preliminary												4. Work Estimation												5. Work Assignment												6. Approval of JICA for PP												7. Preparation/Approval of Spec.												8. Tender												9. Approval of Contract from JICA												10. Contract												Construction from 1998											
Item	1	2	3	4	5	6	7	8	9	10	11																																																																																																																																							
1. Job Contract																																																																																																																																																		
2. Work Item																																																																																																																																																		
3. Planning and Preliminary																																																																																																																																																		
4. Work Estimation																																																																																																																																																		
5. Work Assignment																																																																																																																																																		
6. Approval of JICA for PP																																																																																																																																																		
7. Preparation/Approval of Spec.																																																																																																																																																		
8. Tender																																																																																																																																																		
9. Approval of Contract from JICA																																																																																																																																																		
10. Contract																																																																																																																																																		
Construction from 1998																																																																																																																																																		
<p><b>Request to the C/P</b></p> <ul style="list-style-type: none"><li>□ Inform the TUKs about PP, especially entrance from other routes than main one will be prohibited from August, 2005.</li><li>□ Especially to the Chingeltei and Songinikhaikhan TUKs, some of which vehicles do not use main entrance</li></ul>	<p><b>c. Meetings with residents living nearby disposal sites and waste pickers</b></p> <ul style="list-style-type: none"><li>□ Meeting with residents nearby: on April 19 (Tue) from 6:00 PM (to be confirmed next week)</li><li>□ Meeting with waste pickers: on April 20 (Wed) from 9:00 AM (to be confirmed next week)</li><li>□ The C/P who can explain future plan of disposal site (especially location of future site(s)) needs to be attended.</li></ul>	<p><b>d. Pilot Project: Collection of Plastic and Paper Wastes for RDF</b></p> <p>8 April 2005</p> <p>JICA Study Team</p> 																																																																																																																																																

<p><b>“Chirigami Kohkan” Swapping Waste for Toilet Paper</b></p> <ul style="list-style-type: none"> <li>Before 1980s in Japan, it was popular that private recyclers visited houses to swap recyclable waste for toilet paper.</li> <li>The pilot project will apply this system for the apartment areas to collect plastic and paper wastes which will be used for producing RDF.</li> </ul>	<p><b>Objectives</b></p> <ol style="list-style-type: none"> <li>To collect plastic and paper wastes which are not collected by anybody. They will be used as raw materials for RDF (Refuse Derived Fuel).</li> <li>To examine the system to collect recyclables directly from households which will be necessary in future. <ul style="list-style-type: none"> <li>Recyclable waste amount will increase.</li> <li>Waste pickers in town will decrease.</li> </ul> </li> </ol>	<p><b>Proposed Method</b></p> <ul style="list-style-type: none"> <li>Collection days will be informed to residents with leaflets, etc.</li> <li>Plastic materials and papers are collected with a truck on every Saturday or Sunday.</li> <li>Toilet papers are given to people in return for sorted materials.</li> </ul>
<p><b>Duty of Residents</b></p> <ul style="list-style-type: none"> <li>People sort plastic and paper wastes respectively.</li> <li>People fold them and tie or putting them in any bags.</li> </ul> 	<p><b>Proposed Implementation Plan</b></p> <ul style="list-style-type: none"> <li><b>Proposed Target Area</b> Songinohkairkhan, Horoo 12 – 17</li> <li><b>Executing body</b> Who? (Private company, TUK, NGO, UBC)</li> <li>JICA Study Team</li> <li>Technical and Financial Assistance</li> <li><b>Stakeholders involved</b> Owners' union, guards and cleaners of apartments, TUK, district office</li> </ul>	<p><b>Request to the C/P</b></p>
<p><b>e. Comparison of waste tax and fee</b></p>	<p><b>Comparison of waste fee and tax</b></p> 	
		
<p><b>Technical Working Group Meeting (16)</b> for THE STUDY ON SOLID WASTE MANAGEMENT PLAN FOR ULAANBAATAR CITY</p> <p>April 16, 2005 JICA Study Team</p>	<p><b>1. Work Progress</b></p> <ul style="list-style-type: none"> <li>Alternative study for formulation of master plan</li> <li>Holding workshop (2)</li> <li>Tender of a weighbridge construction</li> <li>Plan of other PPs other than UCDS improvement</li> <li>Social environment survey around present disposal sites</li> <li>Study of financial system on SWM and waste fund</li> </ul>	<p><b>2. Works for the Following Week</b></p> <ul style="list-style-type: none"> <li>Alternative study for formulation of master plan</li> <li>Completion of workshop (2) report</li> <li>Preparation of 1st seminar</li> <li>Plan of other PPs other than UCDS improvement</li> <li>Social environment survey around present disposal sites</li> <li>Study of financial system on SWM and waste fund</li> <li>Preparation of Interim Report</li> </ul>
<p><b>3. Subjects to be discussed</b></p> <ol style="list-style-type: none"> <li>Schedule of 3rd St/C and 1st Seminar</li> <li>Assumptions for M/P Targets and Contents of IT/R</li> <li>Agenda for the meetings with residents living nearby disposal sites and waste pickers</li> <li>Thermal recycling “RDF”</li> <li>Current situation of pollution by dioxins</li> </ol>	<p><b>A. Proposed Schedule of 3rd St/C and 1st Seminar</b></p> <ol style="list-style-type: none"> <li><b>St/C</b> <ul style="list-style-type: none"> <li>Date: April 19 at 9:00AM</li> <li>Place: NONE</li> </ul> </li> <li><b>First Seminar</b> <ul style="list-style-type: none"> <li>Date: April 26 at 9:00AM</li> <li>Place: Ulaanbaatar Hotel</li> </ul> </li> </ol>	<p><b>B. Assumptions for M/P Targets and Contents of IT/R (1)</b></p> <ol style="list-style-type: none"> <li><b>Population of Planned (Apartment) area and Unplanned (Ger) area in 2004:</b> <ul style="list-style-type: none"> <li>Planned area: 424,679 and 0.504</li> <li>Unplanned area: 418,337 and 0.496</li> </ul> </li> </ol> <p><b>Breakdown method:</b></p> <ul style="list-style-type: none"> <li>Based on “Permanent Settled Population of UBC” published by the Department of Statistics, Information Research of MUB, the Study Team estimates populations of Planned area and Unplanned area by supposing both Apartment area and Ger area indicated in the book as 100 % of each area, and the Mixed area described in it as 50 % of each area.</li> </ul>






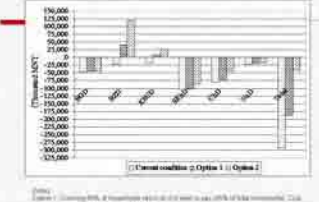



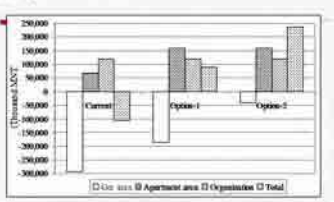


<div><div>B. Assumptions for M/P Targets and Contents of IT/R (2)</div><div><div>2. Forecast of future proportion of Planned area and Unplanned area in 2020:</div><div><div>Planned area vs. Unplanned area: 82:18</div><div>Based on City Development Master Plan in 2020</div></div><div>3. Forecast of future population:</div><div><div>Based on "Population Projections of Mongolia, National Statistic Office of Mongolia"</div><div>3.2 % of growth rate in 2001 will decrease 1.5 % in 2025.</div></div></div></div>	<div><div>B. Assumptions for M/P Targets and Contents of IT/R (3)</div><div><div>4. Reason why we do not use the figure applied in the UBC development M/P</div><div>The population in 2004 of Statistical Handbook of Ulaanbaatar is 869,900, more than the largest one in 2005.</div></div><table><thead><tr><th>Category</th><th>2005</th><th>2010</th><th>2020</th></tr></thead><tbody><tr><td>UBC Development M/P</td><td></td><td></td><td></td></tr><tr><td>Case 1: No control on migration from country side</td><td>780,000</td><td>919,000</td><td>1,200,000</td></tr><tr><td>Case 2: Control on increase by migration</td><td>770,000</td><td>883,000</td><td>1,000,000</td></tr><tr><td>Case 3: Suitable coordination with water resources</td><td>775,000</td><td>900,000</td><td>1,140,000</td></tr><tr><td>Case 4: Population applied to the M/P</td><td>775,000</td><td>900,000</td><td>1,150,000</td></tr><tr><td>Population Projections of Mongolia</td><td>894,315</td><td>1,019,278</td><td>1,233,455</td></tr></tbody></table></div>	Category	2005	2010	2020	UBC Development M/P				Case 1: No control on migration from country side	780,000	919,000	1,200,000	Case 2: Control on increase by migration	770,000	883,000	1,000,000	Case 3: Suitable coordination with water resources	775,000	900,000	1,140,000	Case 4: Population applied to the M/P	775,000	900,000	1,150,000	Population Projections of Mongolia	894,315	1,019,278	1,233,455	<div><div>B. Assumptions for M/P Targets and Contents of IT/R (4)</div><div><div>5. Forecast of future recycling rates in 2020:</div><div>Set up the target recycling rate of MSW without ash as 13.2% in 2020 of which is almost same figure of Japan in 1999, 13.0%.</div><div>Recycling rates:</div><div><div>1. With ash: 3.7% in 2005, 9.7% in 2020</div><div>2. Without ash: 9.3% in 2005, 13.1% in 2020</div></div><div>Recycling at generation and it between collection to final disposal will increase to realize the target.</div><div>Shall the M/P allow the waste pickers activities at new disposal site or not?</div></div></div>
Category	2005	2010	2020																											
UBC Development M/P																														
Case 1: No control on migration from country side	780,000	919,000	1,200,000																											
Case 2: Control on increase by migration	770,000	883,000	1,000,000																											
Case 3: Suitable coordination with water resources	775,000	900,000	1,140,000																											
Case 4: Population applied to the M/P	775,000	900,000	1,150,000																											
Population Projections of Mongolia	894,315	1,019,278	1,233,455																											
<div><div>Waste Flow in 2005 in the Study Area with Ash</div></div>	<div><div>Waste Flow in 2020 in the Study Area without Ash</div></div>	<div><div>Waste Flow in 2020 in the Study Area: with ash and with waste picker at landfill</div></div>																												
<div><div>Waste Flow in 2020 in the Study Area: with ash and without waste picker at landfill</div></div>	<div><div>C. Agenda for the meetings with residents living nearby disposal sites and waste pickers</div></div>	<div><div>Local residents Meeting (1)</div><div><div>Date: April 19</div><div>Time: 6:00 pm to 9:00 pm</div><div>Place: Cultural center (in Ulaan Chuluut)</div></div><div><div>1. Opening remark and explanation of the purpose of the meeting</div><div>Basic policy of MUB about SWM, in particular final disposal site issues</div><div>Explanation of the basic plan on the procedure and schedule for construction of a new disposal site</div><div>How to reflect people's opinion in the basic plan (workshop and community meeting)</div><div>How to utilize the result of today's meeting in the basic plan</div></div></div>																												
<div><div>Local residents Meeting (2)</div><div><div>2. Introduction of the JICA study, in particular Pilot Project on the Improvement of UCDS</div><div>3. Brief result of the interview survey (including key problems obtained from the result)</div><div>4. Discussion: to select the topic from key problems and analyze the current conditions together</div><div>5. Evaluation and Summary</div></div></div>	<div><div>Waste Picker Meeting (1)</div><div><div>Date: April 20</div><div>Time: 9:00 am to 11:00 am</div><div>Place: Disposal site</div></div><div><div>1. Opening remark and explanation of the purpose of the meeting</div><div>Basic policy of MUB about SWM, in particular final disposal site issues</div><div>Explanation of the basic plan on the procedure and schedule for construction of a new disposal site</div><div>How to reflect people's opinion in the basic plan (workshop and community meeting)</div><div>How to utilize the result of today's meeting in the basic plan</div></div></div>	<div><div>Waste Picker Meeting (2)</div><div><div>2. Introduction of the JICA study and the Pilot Project on the Improvement of UCDS, especially separation of landfill operation and activities of waste picking activities</div><div>3. Brief result of the interview survey (including key problems obtained from the result)</div><div>4. Discussion: to select the topic from key problems and analyze the current conditions together</div><div>5. Evaluation and Summary</div></div></div>																												
<div><div>Participants from the C/P and the Team</div><div><div>1. MUB: who?</div><div>2. JICA: one or two officers</div><div>3. JICA Study Team</div><div>Shimura, Kono, Kani, Temjin</div><div>Facilitator: Enkhee and two assistants</div></div></div>	<div><div>D. Thermal Recycling "RDF"</div><div><div>15 April</div><div>JICA Study Team</div></div></div>	<div><div>Waste Treatment Technologies</div><div><div>Most required factor</div><div>Stable and continuous operation, Reliability</div><div>Most difficult factor</div><div>Waste is heterogeneous</div><div>Only two technologies satisfy both factors.</div><div>Composting</div><div>Incineration</div></div></div>																												
<div><div>Applicability of Technologies</div><div><div>Composting → Infeasible</div><div>Unsuitable waste composition</div><div>Lack of demand for compost</div><div>Waste Incineration → Infeasible</div><div>Too expensive in investment and operation costs</div><div>Large area of land for landfill is available. No reason to spend much money for waste reduction by incineration.</div></div></div>	<div><div>Incineration at Existing Plants</div><div><div>To burn waste in the existing plants, power stations, heating plants</div><div>No investment cost</div><div>No extra operation cost</div><div>→ may be Feasible</div><div>How to burn waste at existing plants</div><div>To sort waste suitable for burning at plants. Paper and plastic waste</div><div>To produce RDF made from these wastes for burning</div></div></div>	<div><div>RDF</div></div>																												

<p><b>Advantages</b></p> <ol style="list-style-type: none"> <li>1. Production of RDF requires simple technology.</li> <li>2. Both production (to be examined) and incineration technologies available in Ulaanbaatar.</li> <li>3. Cheap investment and operation cost.</li> <li>4. Paper waste and low quality plastic waste which are currently not recycled can be utilized.</li> <li>5. The calorific value of RDF is 2 to 3 times higher than that of coal. RDF can reduce the consumption amount of coal.</li> <li>6. Combustion of RDF at these plants materialize <ul style="list-style-type: none"> <li>■ Reduction of final disposal volume of waste</li> </ul> </li> </ol>	<p><b>Comparison RDF to Coal</b></p> <ol style="list-style-type: none"> <li>1. NOx and SOx in emission gas: RDF = Coal</li> <li>2. Dioxins in emission gas: RDF &gt; Coal</li> <li>3. RDF more often imperfectly combust because its combustion speed is higher than that of coal. Secondary combustion system to stabilize combustion and gas treatment system are preferable for RDF.</li> <li>4. HCl generated through combustion of RDF may make water pipes corrode.</li> <li>5. RDF increase the combustion temperature. It may affect the furnace which was designed for low temperature.</li> </ol>	<p><b>Concept of RDF in Master Plan</b></p> <ol style="list-style-type: none"> <li>1. Target Plant: 3<sup>rd</sup> Power Station <ul style="list-style-type: none"> <li>■ 2 furnaces may be OK for RDF</li> <li>■ Combustion temperature is enough high, 1200 deg C. Dioxin guideline in Japan impose more than 850 C.</li> </ul> </li> <li>2. Target Waste <ul style="list-style-type: none"> <li>■ Used paper excluding cardboard</li> <li>■ Low quality plastic excluding plastic pet bottle which is currently recycled.</li> </ul> </li> <li>3. Target waste amount <ul style="list-style-type: none"> <li>■ 6.5% of the total waste generation in 2005, about 30 ton per day in 2005.</li> <li>■ It will increase because the packaging waste increase.</li> </ul> </li> </ol>
<p><b>RDF Pilot Project</b></p> <p><b>Objectives</b></p> <ol style="list-style-type: none"> <li>1. Examination of the possibility of production of RDF and the production cost by using locally available technologies</li> <li>2. Analysis of RDF produced such as energy value, emission gas and form.</li> <li>3. Demonstration of the production and combustion of RDF</li> <li>4. Measurement of the reduction amount of coal consumption by using RDF</li> <li>5. To find out the optimum mix proportion of RDF and coal.</li> <li>6. Collection of the cost estimation data for F/S</li> </ol>	<p><b>Selection of the Test Plant</b></p> <ul style="list-style-type: none"> <li>□ The 3<sup>rd</sup> power station requires too large amount of RDF for the pilot project because the furnace capacity is too large to execute the test. Therefore the pilot project has to select a heat supply plant.</li> <li>□ However, all heating plants' conditions are not very suitable.</li> <li>□ Therefore, the following measure will be taken in the pilot project.</li> </ul>	<p><b>Countermeasures</b></p> <ul style="list-style-type: none"> <li>□ Participation of Japanese Professor Kamo Yoshiaki of Mongolian University of Science and Technology, who researches the current situation of pollution by dioxins in Ulaanbaatar.</li> <li>□ To minimize the amount of RDF to be combusted for the test.</li> <li>□ To select the plant which give the less environmental impact. The requirements of the facilities are described below.</li> </ul>
<p><b>Preferable Conditions as Test Plant for Incineration of RDF</b></p> <ol style="list-style-type: none"> <li>1. Skilled staff for the operation of furnaces.</li> <li>2. Wide area for stock yard.</li> <li>3. The plant has a few furnaces.</li> <li>4. Few neighborhoods.</li> <li>5. If possible, the plant has the mechanical or semi-mechanical system of feeding coal and removing ash.</li> <li>6. The furnace has a monitor showing the temperatures of combustion and hot water.</li> <li>7. Furnaces have blower to supply air.</li> <li>8. Enough stack height. Exhaust gas treatment system.</li> <li>9. 24 hours continuous operation.</li> </ol>	<p><b>E. Current situation of pollution by dioxins</b></p>	
<p><b>Technical Working Group Meeting (17)</b> for THE STUDY ON SOLID WASTE MANAGEMENT PLAN FOR ULAANBAATAR CITY</p> <p>April 22, 2005 JICA Study Team</p>	<p><b>1. Work Progress</b></p> <ul style="list-style-type: none"> <li>□ Alternative study for formulation of master plan</li> <li>□ Completion of workshop (2) report</li> <li>□ Holding the third St/C meeting</li> <li>□ Preparation of 1st seminar</li> <li>□ Plan of other PPs other than UCDS improvement</li> <li>□ Holding meetings with residents around UCDS and waste pickers</li> <li>□ Study of financial system on SWM and waste fund</li> <li>□ Preparation of Interim Report</li> </ul>	<p><b>2. Works for the Following Week</b></p> <ul style="list-style-type: none"> <li>□ Alternative study for formulation of master plan</li> <li>□ Holding 1st seminar</li> <li>□ Plan of other PPs other than UCDS improvement</li> <li>□ Study of financial system on SWM and waste fund</li> <li>□ Preparation of Interim Report</li> </ul>
<p><b>3. Subjects to be discussed</b></p> <p>A) Master plan concept (1) B) Collection system master plan C) Additional information on RDF D) Simulation results of collection fees E) Schedule of the study</p>	<p><b>A. Master plan concept (1)</b></p>	<p><b>Objectives of SWM</b></p> <p>The objectives of solid waste management change as social development progresses.</p> <p>1st stage: Sanitation → Collection improvement 2nd stage: + Environmental Protection (Sanitary Landfill) → Sanitary landfill 3rd stage: + Conservation of Natural Resource = Minimization of consumption of natural resources → 3 Rs</p> <p>You should target the 3<sup>rd</sup> stage objective. You can!</p>
<p><b>Required Energy Input</b></p> <p>Reduce is the best because it requires the least energy input.</p> 	<p><b>MSWM Policy</b> <b>Priority Ranking of Measures</b></p> <ol style="list-style-type: none"> <li>1. <b>Reduce:</b> At first, we should try to minimize the waste generation amount.</li> <li>2. <b>Reuse:</b> If waste is generated, we should try to reuse it.</li> <li>3. <b>Material Recycle:</b> If waste is generated and if it can not be reused, we should produce goods by using waste as raw material</li> <li>4. <b>Thermal Recycle:</b> If material recycle is too expensive, you should do Thermal Recycle.</li> <li>5. <b>Sanitary disposal</b> of waste</li> </ol>	<p><b>Master Plan Waste Stream</b></p> 

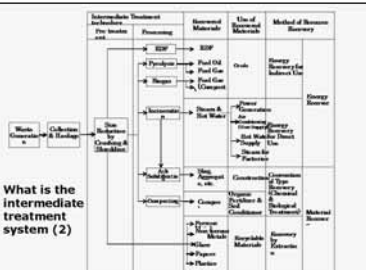




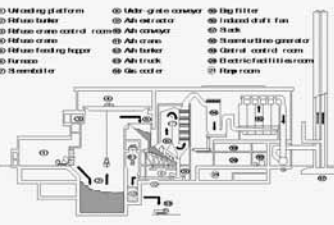








<p><b>Present Waste Stream</b></p>	<p><b>Master Plan Waste Stream</b></p>	<p><b>Cascade Utilization</b></p>
<p><b>Recycle Marks Used in Japan</b></p> <p>To minimize the lowering of the quality through recycling, we have to sort materials very precisely. It requires recycle marks on every goods.</p>	<p><b>Importance of Thermal Recycle</b></p> <ul style="list-style-type: none"> <li>In Mongolia, it is difficult to use recycle marks because most of goods are imported. Possibility of material recycle is limited.</li> <li>Thermal recycle doesn't require precise sorting.</li> <li>Big demand for heat in Mongolia.</li> </ul>	<p><b>B. Collection system master plan</b></p>
<p><b>Design Condition 1:</b> <b>Required organizational system will be planned later.</b></p> <ol style="list-style-type: none"> <li>The optimum collection system is planned first.</li> <li>The required organizational system to ensure the optimum collection system is planned.</li> </ol>	<p><b>Design Condition 2:</b> <b>Compulsory Collection System of Waste Collection Fee</b></p> <p>In Ger area, there are following waste collection problems under the present waste collection fee system.</p> <ol style="list-style-type: none"> <li>Waste collection work take long time due to waiting for collecting money at site.</li> <li>Waste collection frequency has to be once a month, same as frequency of fee collection.</li> </ol>	<p><b>Design Condition 3:</b> <b>Elimination of Waste Pickers in the Disposal Site</b></p> <p>Three measures are required.</p> <ol style="list-style-type: none"> <li>Prohibition of the entry.</li> <li>To divert recyclable waste from the disposal site to other places.</li> <li>Poverty eradication =&gt; External cause =&gt; Uncontrollable</li> </ol> <p>Collection and haulage system has to consider item 2.</p>
<p><b>Design Condition 4:</b> <b>Processing and Treatment System</b></p> <ul style="list-style-type: none"> <li>Proposed system <ul style="list-style-type: none"> <li>Material recycle: sorting yard</li> <li>Thermal recycle: RDF</li> </ul> </li> <li>Separate collection: two kinds of waste <ul style="list-style-type: none"> <li>Recyclable waste → Sorting yard + RDF production plant</li> <li>Non-recyclable waste → Disposal site</li> </ul> </li> </ul>	<p><b>What are Recyclables?</b></p> <ul style="list-style-type: none"> <li>Paper <ul style="list-style-type: none"> <li>High quality =&gt; Material recycle ("Toilet paper")</li> <li>Low quality =&gt; Thermal recycle "RDF"</li> </ul> </li> <li>Plastic <ul style="list-style-type: none"> <li>High quality =&gt; Material recycle (Plastic bottle go to China. HDPE go to plastic bag factory in Ulaanbaatar.)</li> <li>Low quality =&gt; Thermal recycle "RDF"</li> </ul> </li> <li>Can =&gt; Material recycle</li> <li>Metal =&gt; Material recycle</li> <li>Bottles =&gt; Material recycle (Under the deposit system)</li> </ul>	<p><b>Material Recycle Targets These.</b></p>
<p><b>Thermal Recycle "RDF" Targets These.</b></p>	<p><b>Master Plan of Waste Stream for Planned Area</b></p>	<p><b>Master Plan of Waste Stream for Unplanned Area</b></p>
<p><b>Discharge &amp; Collection System Planned Area</b></p> <ol style="list-style-type: none"> <li>Separate collection <ul style="list-style-type: none"> <li>General waste: 2 days/week, fixed days</li> <li>Recyclable waste: 1 day/week, fixed days</li> </ul> </li> <li>Compactor truck</li> <li>Entrance collection with bell system <ul style="list-style-type: none"> <li>Residents discharge their waste inside of the entrance of the apartment.</li> <li>When a compactor truck comes, it informs of its arrival by playing music.</li> <li>Then guards and cleaners of apartments carry waste to the compactor truck for loading.</li> </ul> </li> </ol>	<p><b>Discharge &amp; Collection System Unplanned Area</b></p> <ol style="list-style-type: none"> <li>Mixed collection 1 day/2 weeks, fixed days</li> <li>Dump truck</li> <li>Door to door collection with bell system <ul style="list-style-type: none"> <li>Residents store their waste inside of the Hasha.</li> <li>When a truck come, it informs of its arrival by playing music.</li> <li>Then residents carry waste to the truck for loading.</li> </ul> </li> </ol> <p>Or, Curb-side collection with bell system.</p>	<p><b>Discharge &amp; Collection System Special Order</b></p> <ul style="list-style-type: none"> <li>Waste which are not suitable for regular collection</li> <li>Large amount of waste <ul style="list-style-type: none"> <li>Factories, Supermarkets, Hotels, Restaurants, large amount of waste from residence, etc.</li> </ul> </li> <li>Bulky waste <ul style="list-style-type: none"> <li>Furniture, TV, Refrigerator, Washing machine, Computer, etc.</li> </ul> </li> <li>Request collection by telephone</li> <li>Special fee</li> </ul>

<p><b>Special Collection</b></p> 	<p><b>Discharge &amp; Collection System</b> <b>Collection of Recyclable Waste By Private People</b></p> <ol style="list-style-type: none"> <li>1. Wide area: Buy back station</li> <li>2. Large apartment area: Buy back kiosk</li> <li>3. Small apartment area: Chirigami kokan (Movable collection system by swapping waste for paper)</li> </ol> <p>MUB promotes these private recycling activities.</p>	<p><b>Proposed Pilot Projects for Collection &amp; Haulage System</b></p> <ol style="list-style-type: none"> <li>1. Demonstration of "Chirigami-Kokhan" system as collection system of recyclables</li> <li>2. Examination of loading system for ash</li> </ol>
<p><b>Lifting Systems to be Examined in A Pilot Project for Ger area</b></p> 	<p><b>C. Additional information on RDF</b></p>	<p><b>How to Produce RDF</b></p> <ol style="list-style-type: none"> <li>1. Shredding paper and plastic.</li> <li>2. Melting plastic and paper and form RDF.</li> </ol> 
<p><b>Present Situation of RDF in Japan</b> As of July 2003.</p> <ul style="list-style-type: none"> <li>63 RDF plants working.</li> <li>Total capacity of all plants: 4,090 ton/day</li> <li>Capacity range from 5 to 390 ton/day</li> </ul>	<p><b>Stockholm Convention</b></p> <ul style="list-style-type: none"> <li>Dioxins generated from waste are classified in Annex C as "Unintentional Production"</li> <li>Member countries are obliged to develop appropriate strategies</li> <li>Annex C provides only the reference information.</li> </ul>	<p><b>Nalaikh Heating Plant</b></p> <p>It is very suitable for the test plant.</p> <ul style="list-style-type: none"> <li>Suitable feeding system for RDF.</li> <li>High combustion temperature.</li> <li>High chimney.</li> <li>Structure of the furnace is very similar with the special furnace for RDF.</li> </ul>
<p><b>Furnace</b></p> 	<p><b>Very high chimney</b></p> 	<p><b>D. Simulation results of collection fees</b></p>
<p><b>Net Income or Loss in Ger Areas (Fee: 1,000 MNT)</b></p> 	<p><b>Net Income or Loss in Ger and Apt. Areas</b></p> <p>1. (Current Condition)</p>  <p>2. (Option-1; Fee 1,000 MNT)</p>  <p>3. (Option-2; Fee 1,000 MNT)</p> 	<p><b>Total of Net Income or Loss of Waste Collection Services (Fee: 1000 MNT)</b></p> 
<p><b>E. Schedule of the study</b></p> <ul style="list-style-type: none"> <li>Important issues to be agreed by the C/P and the study team before May 14, 2005:</li> </ul> <ol style="list-style-type: none"> <li>1. Concept of the M/P</li> <li>2. Projects for the Feasibility Study (F/S) for financial assistance</li> <li>3. Contents of the pilot projects to be conducted in Phase 2 (July 2005 to Feb 2006)</li> <li>4. Additional studies</li> <li>5. Date of the Forth St/C meeting</li> <li>6. Schedule of the grant aid request</li> </ol>	<p><b>Projects for the F/S (1)</b></p> <ol style="list-style-type: none"> <li>1. Improvement of collection system with the procurement of collection vehicles and maintenance equipment, renovation of a garage as a central maintenance shop =&gt; Need to identify the candidate garage?</li> <li>2. Development of the new NEDS and procurement of landfill equipment for sanitary landfill operation =&gt; Common use of landfill equipment for small landfills of remote areas such as Khoroo 13 &amp; 14 in KhUD, etc may be considered.</li> <li>3. Construction of a sorting yard and a RDF plant =&gt; Need to identify the construction site =&gt; inside of New NEDS</li> </ol>	<p><b>Projects for the F/S (2)</b></p> <ol style="list-style-type: none"> <li>4. MUB shall find out contents of IEE for the development project of proposed NEDS and construction project of a sorting yard and a RDF plant by the beginning of May.</li> <li>5. MUB shall conduct EIA for the above projects.</li> <li>6. JICA study team will ask JICA to provide a budget for the provision of topographical map and geological investigation of the sites.</li> <li>7. If MUB like to receive Japan's grant aid for the above projects, it shall conduct public hearing meeting for residents around the site(s) three times.</li> </ol>



<p><b>Contents of the pilot projects</b></p> <ol style="list-style-type: none"> <li>1. Improvement of UCDS</li> <li>2. Demonstration of thermal recycling "RDF"</li> <li>3. Demonstration of "Chirigami-Kohkan" system as collection system of recyclables</li> <li>4. Examination of loading system for ash</li> <li>5. Others if any</li> </ol>	<p><b>Additional Studies for Phase 2</b></p> <ol style="list-style-type: none"> <li>1. Human waste collection and disposal system study for Ger area</li> <li>2. Others if any</li> </ol>	<p><b>Date of the Forth St/C meeting</b></p> <ul style="list-style-type: none"> <li>It is preferable to hold the fourth St/C meeting between May 10 to 12.</li> <li>Object of the meeting to finalize the following issues: <ol style="list-style-type: none"> <li>1. Projects for the Feasibility Study (F/S) for financial assistance</li> <li>2. Contents of the pilot projects to be conducted in Phase 2 (July 2005 to Feb 2006)</li> <li>3. Additional studies in Phase 2</li> </ol> </li> </ul>
<p><b>Schedule of the grant aid request</b></p> <ul style="list-style-type: none"> <li>Discussion of the contents of the grant aid =&gt; by May 13, 2005</li> <li>Preparation of draft request by the study team =&gt; By beginning of June</li> <li>Finalization and submission of the request by MUB =&gt; By mid-June =&gt; to be confirmed</li> </ul> <p>!!! The request shall be revised after EIA approval of the proposed projects. EIA and 3 public hearing meetings shall be done. !!!</p>		
<p><b>Technical Working Group Meeting (18)</b> for THE STUDY ON SOLID WASTE MANAGEMENT PLAN FOR ULAANBAATAR CITY</p> <p>April 29, 2005 JICA Study Team</p>	<p><b>1. Work Progress</b></p> <ul style="list-style-type: none"> <li>Alternative study for formulation of master plan</li> <li>Holding 1st seminar</li> <li>Plan of other PPs other than UCDS improvement</li> <li>Study of financial system on SWM and waste fund</li> <li>Preparation of Interim Report</li> </ul>	<p><b>2. Works for the Following Week</b></p> <ul style="list-style-type: none"> <li>Alternative study for formulation of master plan</li> <li>Plan of other PPs other than UCDS improvement</li> <li>Study of financial system on SWM and waste fund</li> <li>Preparation of Interim Report</li> </ul>
<p><b>3. Subjects to be discussed</b></p> <ol style="list-style-type: none"> <li>A) Hazardous waste management study</li> <li>B) Intermediate treatment and final disposal system plan</li> <li>C) PP in Khoroov No. 4 of SKhD related to UCDS improvement PP</li> <li>D) Financial conditions for M/P</li> </ol>	<p><b>A. Hazardous waste management study (1)</b></p> <ul style="list-style-type: none"> <li>TOR of the Study states that: The target waste in the study is Solid Waste handled by the MUB. As for hazardous, medical and industrial waste, the Study will include an estimation of the generation rate and propose general recommendations on how to properly handle the waste based on existing information.</li> <li>Team conducted surveys to 15 medical institutions and 18 Factories to identify the amount of HW generated and its management.</li> </ul>	<p><b>A. Hazardous waste management study (2)</b></p> <ul style="list-style-type: none"> <li>The results of survey on medical institutions provided very useful information because of close cooperation of MOH.</li> <li>The results of survey on factories is not satisfactory to make general recommendations due to insufficient cooperation of the factories. <ol style="list-style-type: none"> <li>1. No HWM information obtained.</li> <li>2. Some of possible HW generators refused to be surveyed.</li> </ol> </li> </ul>
<p><b>A. Hazardous waste management study (3)</b></p> <ul style="list-style-type: none"> <li>If HWM study shall be conducted again in Phase 2, the following arrangements are needed: <ol style="list-style-type: none"> <li>1. Close cooperation of the control agency of factories</li> <li>2. Enforce factories to cooperate the survey</li> <li>3. Provide reliable list of factories with basic information like number of employees, etc.</li> </ol> </li> </ul>	<p><b>B. Intermediate treatment and final disposal system plan</b></p>	<p><b>Policy of M/P (1)</b></p> <ul style="list-style-type: none"> <li>Collection service will cover all the residents by 2010. The wastes collected will be disposed of at final disposal sites by sanitary landfill method to minimize negative effects on environment.</li> <li>The fundamental goal of the M/P for SWM in MUB is to establish an environmentally sound SWM system in MUB by the target year 2020. To achieve this goal, 3Rs (Reduce, Reuse, Recycle) will be actively promoted to reduce waste generation at first, then to reuse and recycle generated wastes as a resource as much as possible in order to reduce the amount of the solid waste to be disposed of at the landfills.</li> </ul>
<p><b>Policy of M/P (2)</b></p> <ul style="list-style-type: none"> <li>Recycling activities shall be conducted by the private sector in principle.</li> <li>The role of public sector (MUB) shall be limited to: <ol style="list-style-type: none"> <li>1. Promote, support and control the recycling activities of private sector.</li> <li>2. Develop technologies to recycle the wastes that the private sector can not deal with, i.e. Thermal recycling by RDF</li> </ol> </li> </ul>	<p><b>Intermediate treatment system (1)</b></p> <ul style="list-style-type: none"> <li>The objectives of intermediate treatment system are: <ol style="list-style-type: none"> <li>1. to perform volume reduction of wastes, especially those to be disposed of at landfill;</li> <li>2. to make wastes stable in order to avoid adverse effects by them (for instance, to avoid odor by decomposition of putrescible waste like kitchen waste, make it inert by incineration, etc.); and</li> <li>3. to recycle wastes to conserve natural resources.</li> </ol> </li> </ul>	<p><b>Intermediate treatment system (2)</b></p> <ul style="list-style-type: none"> <li>Needs of volume reduction is not high; sanitary landfill cost will be less than 3US\$/ton, while it in Japan is more than 300 US\$/ton.</li> <li>Therefore, main objectives of treatment system are recycling and stability of landfilled wastes.</li> <li>The primary benefits of recycling are conservation of natural resources and landfill space; however, the collection and transport of materials requires substantial amounts of energy and labour, and historically, most recycling programs are subsidised economically.</li> <li>The requirements for a successful program are that a strong demand exists for recovered materials and that the market value of the materials plus benefit from landfill space saving be sufficient to pay for system investment/O&amp;M costs including collection/transportation costs.</li> </ul>



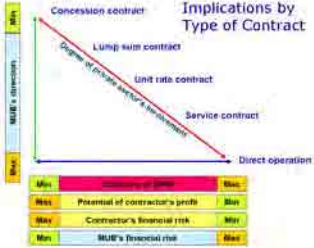
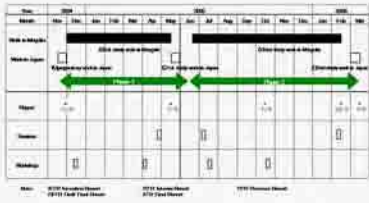
<p><b>What is the intermediate treatment system? (1)</b></p> <p>❑ MSW (municipal solid waste) could be managed by only collection and final disposal (landfill) systems.</p> <p>❑ An intermediate treatment (processing including recycling) is the system between the collection and final disposal (landfill) systems and it is not always necessary for MSWM.</p>	<p>What is the intermediate treatment system (2)</p> 	<p><b>Purpose of the intermediate treatment system (1)</b></p> <table><thead><tr><th>System</th><th>Purpose</th></tr></thead><tbody><tr><td>Crushing &amp; shredding</td><td>1. Pre-treatment 2. Volume reduction</td></tr><tr><td>RDF (Refuse Derived Fuel)</td><td>1. Thermal recycling by conversion of waste to fuel 2. Volume reduction 3. Stabilization</td></tr><tr><td>Biogas production</td><td>1. Thermal recycling by conversion of waste to fuel (methane gas) 2. Production of compost 3. Volume reduction 4. Stabilization</td></tr></tbody></table>	System	Purpose	Crushing & shredding	1. Pre-treatment 2. Volume reduction	RDF (Refuse Derived Fuel)	1. Thermal recycling by conversion of waste to fuel 2. Volume reduction 3. Stabilization	Biogas production	1. Thermal recycling by conversion of waste to fuel (methane gas) 2. Production of compost 3. Volume reduction 4. Stabilization
System	Purpose									
Crushing & shredding	1. Pre-treatment 2. Volume reduction									
RDF (Refuse Derived Fuel)	1. Thermal recycling by conversion of waste to fuel 2. Volume reduction 3. Stabilization									
Biogas production	1. Thermal recycling by conversion of waste to fuel (methane gas) 2. Production of compost 3. Volume reduction 4. Stabilization									
<p><b>Purpose of the intermediate treatment system (2)</b></p> <table><thead><tr><th>System</th><th>Purpose</th></tr></thead><tbody><tr><td>Incineration</td><td>1. Volume reduction 2. Stabilization 3. Thermal recycling by energy recovery</td></tr><tr><td>Sorting</td><td>1. Material recovery 2. Pre-treatment 3. Volume reduction</td></tr><tr><td>Composting</td><td>1. Production of compost (soil conditioner &amp; fertilizer) 2. Volume reduction 3. Stabilization</td></tr></tbody></table>	System	Purpose	Incineration	1. Volume reduction 2. Stabilization 3. Thermal recycling by energy recovery	Sorting	1. Material recovery 2. Pre-treatment 3. Volume reduction	Composting	1. Production of compost (soil conditioner & fertilizer) 2. Volume reduction 3. Stabilization	<p><b>Crushing and Shredding (1)</b> The system is used for pre-treatment and mainly for bulky waste</p> <p><b>Advantages:</b></p> <ul style="list-style-type: none"><li>❑ Effective volume reduction for bulky items</li><li>❑ Simple operation</li><li>❑ Not expensive</li></ul> <p><b>Disadvantages:</b></p> <ul style="list-style-type: none"><li>❑ Less volume reduction in case of non-bulky items</li><li>❑ Frequent change of blade parts</li></ul>	<p><b>Crushing and Shredding (2)</b></p> 
System	Purpose									
Incineration	1. Volume reduction 2. Stabilization 3. Thermal recycling by energy recovery									
Sorting	1. Material recovery 2. Pre-treatment 3. Volume reduction									
Composting	1. Production of compost (soil conditioner & fertilizer) 2. Volume reduction 3. Stabilization									
<p><b>Japan</b></p> 	<p><b>RDF (Refuse Derived Fuel) (1)</b> Combustible fraction of the waste is processed to produce the RDF.</p> <p><b>Advantage:</b></p> <ul style="list-style-type: none"><li>❑ RDF can be burned with coal or as a primary fuel in a boiler</li><li>❑ RDF can be stored and is easy to handle</li></ul> <p><b>Disadvantages:</b></p> <ul style="list-style-type: none"><li>❑ Wastes can be converted to RDF is limited to high calorific ones</li><li>❑ Market for RDF is limited</li><li>❑ Incinerator for RDF needs special attention to air pollution, feeding system, etc.</li></ul>	<p><b>RDF (2)</b></p> 								
<p><b>Biogas Production (1)</b> Biogas is the combustible gas developed when organic matter is degraded under anaerobic conditions. The system converts the organic wastes mainly into methane and residues (compost)</p> <p><b>Advantages:</b></p> <ul style="list-style-type: none"><li>❑ Resource recovery of wastes into potentially useful products, i.e. methane and compost</li><li>❑ High contribution to the conservation of global environment</li></ul> <p><b>Disadvantages:</b></p> <ul style="list-style-type: none"><li>❑ Less operational experience of municipal SW (It for excreta is common and proven technologies.)</li><li>❑ Large amount of waste water treatment needs</li><li>❑ Requirement of strict pre-sorting of organic wastes</li></ul>	<p><b>Biogas Production (2)</b></p>  <p>Colombo in Sri Lanka</p>	<p><b>Incineration (1)</b> Waste is converted into oxidized gases (CO<sub>2</sub>) and inert (ashes) by high temperature combustion</p> <p><b>Advantages:</b></p> <ul style="list-style-type: none"><li>❑ High volume reduction efficiency; 90 to 95 %</li><li>❑ Elimination of offensive odor of putrescible wastes</li><li>❑ High stabilization efficiency</li><li>❑ Energy recovery</li></ul> <p><b>Disadvantages:</b></p> <ul style="list-style-type: none"><li>❑ Expensive both in construction and O&amp;M</li><li>❑ Emission gases, dioxins, etc.</li></ul>								
<p><b>Incineration (2)</b></p> 	<p><b>Sorting (1)</b> Mainly for materials recovery. There are manual and mechanical systems.</p> <p><b>Advantages:</b></p> <ul style="list-style-type: none"><li>❑ Simple operation</li><li>❑ Desirable for pre-treatment of other system operation</li><li>❑ Not expensive</li><li>❑ If labor cost is cheap, the manual one is recommendable</li></ul> <p><b>Disadvantages:</b></p> <ul style="list-style-type: none"><li>❑ Less volume reduction</li><li>❑ In case of manual system, working condition is not convenient.</li><li>❑ Mechanical system is less efficient than manual one</li></ul>	<p><b>Sorting (2)</b></p>  <p>System in Japan System in Mexico</p>								
<p><b>Composting (1)</b> Organic matters in waste is decomposed by the microbiological processes to compost for use in agriculture, gardens, parks, etc. as a soil conditioner.</p> <p><b>Advantages:</b></p> <ul style="list-style-type: none"><li>❑ Relatively small capital investment if labor intensive one</li><li>❑ Simple technology</li></ul> <p><b>Disadvantages:</b></p> <ul style="list-style-type: none"><li>❑ Strict waste separation is required</li><li>❑ A large area is required</li><li>❑ Requires transportation of products (compost)</li><li>❑ Market for compost is very limited</li><li>❑ Possibility of secondary pollution by heavy metals</li></ul>	<p><b>Composting (2)</b></p>  <p>Mechanical System in Colombo in Sri Lanka Labor Intensive System in Chilaw in Sri Lanka</p>	<p><b>Important issues for the examination of possible intermediate treatment system (1)</b></p> <ol style="list-style-type: none"><li><b>Current and future waste composition</b><ul style="list-style-type: none"><li>❑ Large portion of Ash =&gt; 60.2%</li><li>❑ Few portion of kitchen waste =&gt; with ash 12.5%, without ash 31.4%</li><li>❑ Few portion of compostable wastes (kitchen+ grass/wood) =&gt; with 13.0, without 32.6%</li><li>❑ Large portion of high calorific wastes (paper + plastic) =&gt; with ash 32.6%, without ash 32.6% =&gt; <b>These waste are problem ones for landfill operation !!!</b></li><li>❑ Rather large portion of Metal, Bottle and Glass =&gt; with 7.0, without 17.8%</li></ul></li></ol>								

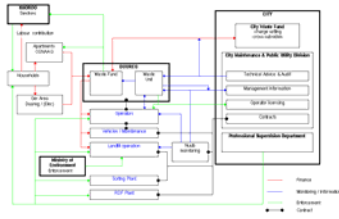
<p><b>Current and future waste composition – With Ash</b></p> <table><tr><th>Category of MSW</th><th>2005</th><th>2010</th><th>2015</th><th>2020</th></tr><tr><td>Kitchen Waste (%)</td><td>12.5</td><td>15.5</td><td>19.3</td><td>23.7</td></tr><tr><td>Paper (%)</td><td>5.2</td><td>6.5</td><td>8.1</td><td>10.0</td></tr><tr><td>Textile (%)</td><td>2.0</td><td>2.5</td><td>3.1</td><td>3.8</td></tr><tr><td>Grass and Wood (%)</td><td>0.5</td><td>0.5</td><td>0.5</td><td>0.6</td></tr><tr><td>Plastic (%)</td><td>7.8</td><td>9.8</td><td>12.1</td><td>14.9</td></tr><tr><td>Leather and Rubber (%)</td><td>0.2</td><td>0.3</td><td>0.4</td><td>0.4</td></tr><tr><td>Combustibles (%)</td><td>28.2</td><td>35.1</td><td>43.5</td><td>53.4</td></tr><tr><td>Metal (%)</td><td>1.5</td><td>1.9</td><td>2.4</td><td>2.9</td></tr><tr><td>Bottle and Glass (%)</td><td>5.5</td><td>7.1</td><td>8.8</td><td>10.7</td></tr><tr><td>Ceramic and Stone (%)</td><td>1.9</td><td>2.0</td><td>2.1</td><td>2.3</td></tr><tr><td>Miscellaneous (%)</td><td>2.7</td><td>2.8</td><td>3.0</td><td>3.2</td></tr><tr><td>Non-combustibles (%)</td><td>11.6</td><td>13.8</td><td>16.3</td><td>19.1</td></tr><tr><td>Other Waste than Ash (%)</td><td>38.9</td><td>48.9</td><td>59.8</td><td>72.5</td></tr><tr><td>Ash (%)</td><td>60.2</td><td>51.1</td><td>40.2</td><td>27.5</td></tr><tr><td>Total</td><td>100.0</td><td>100.0</td><td>100.0</td><td>100.0</td></tr></table>	Category of MSW	2005	2010	2015	2020	Kitchen Waste (%)	12.5	15.5	19.3	23.7	Paper (%)	5.2	6.5	8.1	10.0	Textile (%)	2.0	2.5	3.1	3.8	Grass and Wood (%)	0.5	0.5	0.5	0.6	Plastic (%)	7.8	9.8	12.1	14.9	Leather and Rubber (%)	0.2	0.3	0.4	0.4	Combustibles (%)	28.2	35.1	43.5	53.4	Metal (%)	1.5	1.9	2.4	2.9	Bottle and Glass (%)	5.5	7.1	8.8	10.7	Ceramic and Stone (%)	1.9	2.0	2.1	2.3	Miscellaneous (%)	2.7	2.8	3.0	3.2	Non-combustibles (%)	11.6	13.8	16.3	19.1	Other Waste than Ash (%)	38.9	48.9	59.8	72.5	Ash (%)	60.2	51.1	40.2	27.5	Total	100.0	100.0	100.0	100.0	<p><b>Current and future waste composition – Without Ash</b></p> <table><tr><th>Category of MSW</th><th>2005</th><th>2010</th><th>2015</th><th>2020</th></tr><tr><td>Kitchen Waste</td><td>31.4</td><td>31.8</td><td>32.3</td><td>32.7</td></tr><tr><td>Paper</td><td>13.1</td><td>13.4</td><td>13.6</td><td>13.8</td></tr><tr><td>Textile</td><td>5.0</td><td>5.2</td><td>5.2</td><td>5.3</td></tr><tr><td>Grass and Wood</td><td>1.2</td><td>1.1</td><td>0.9</td><td>0.8</td></tr><tr><td>Plastic</td><td>19.5</td><td>19.8</td><td>20.2</td><td>20.5</td></tr><tr><td>Leather and Rubber</td><td>0.6</td><td>0.6</td><td>0.6</td><td>0.6</td></tr><tr><td>Combustibles Sub-Total</td><td>70.8</td><td>71.9</td><td>72.8</td><td>73.7</td></tr><tr><td>Metal</td><td>3.8</td><td>3.9</td><td>3.9</td><td>4.0</td></tr><tr><td>Bottle and Glass</td><td>14.0</td><td>14.3</td><td>14.6</td><td>14.7</td></tr><tr><td>Ceramic and Stone</td><td>4.7</td><td>4.1</td><td>3.6</td><td>3.1</td></tr><tr><td>Miscellaneous</td><td>6.7</td><td>5.8</td><td>5.1</td><td>4.5</td></tr><tr><td>Non-combustibles Sub-Total</td><td>29.2</td><td>28.1</td><td>27.2</td><td>26.3</td></tr><tr><td>Total</td><td>100.0</td><td>100.0</td><td>100.0</td><td>100.0</td></tr></table>	Category of MSW	2005	2010	2015	2020	Kitchen Waste	31.4	31.8	32.3	32.7	Paper	13.1	13.4	13.6	13.8	Textile	5.0	5.2	5.2	5.3	Grass and Wood	1.2	1.1	0.9	0.8	Plastic	19.5	19.8	20.2	20.5	Leather and Rubber	0.6	0.6	0.6	0.6	Combustibles Sub-Total	70.8	71.9	72.8	73.7	Metal	3.8	3.9	3.9	4.0	Bottle and Glass	14.0	14.3	14.6	14.7	Ceramic and Stone	4.7	4.1	3.6	3.1	Miscellaneous	6.7	5.8	5.1	4.5	Non-combustibles Sub-Total	29.2	28.1	27.2	26.3	Total	100.0	100.0	100.0	100.0	<p><b>Comparison of waste composition</b></p> <table><tr><th>Country/City</th><th>Year</th><th>GDP per Capita (US\$)</th><th>Kitchen Waste (%)</th><th>Papers + Plastics (%)</th><th>Metal, Bottle and Glass (%)</th></tr><tr><td>Tokyo in Japan</td><td>1994</td><td>31,961</td><td>25.1</td><td>50.9</td><td>11.9</td></tr><tr><td>Vientiane Lao</td><td>1991</td><td>290</td><td>35.1</td><td>16.3</td><td>8.9</td></tr><tr><td>Phnom Penh</td><td>2003</td><td>268</td><td>63.5</td><td>21.9</td><td>1.9</td></tr><tr><td>Dar es Salaam Tanzania</td><td>1996</td><td>280</td><td>45.0</td><td>6.1</td><td>4.6</td></tr><tr><td>Asuncion Paraguay</td><td>1994</td><td>1,450</td><td>37.4</td><td>14.4</td><td>4.8</td></tr><tr><td>Metro Manila Philippines</td><td>1997</td><td>1,040</td><td>45.4</td><td>32.4</td><td>8.6</td></tr><tr><td>Adana Turkey</td><td>1999</td><td>3,090</td><td>64.4</td><td>20.3</td><td>4.5</td></tr><tr><td>Mexico Mexico</td><td>1998</td><td>5,080</td><td>38.7</td><td>34.6</td><td>NA</td></tr><tr><td>Ulaanbaatar with Ash</td><td>2003</td><td>552</td><td>12.5</td><td>13.0</td><td>7.0</td></tr><tr><td>Ulaanbaatar without Ash</td><td>2003</td><td>552</td><td>31.4</td><td>32.6</td><td>17.8</td></tr></table>	Country/City	Year	GDP per Capita (US\$)	Kitchen Waste (%)	Papers + Plastics (%)	Metal, Bottle and Glass (%)	Tokyo in Japan	1994	31,961	25.1	50.9	11.9	Vientiane Lao	1991	290	35.1	16.3	8.9	Phnom Penh	2003	268	63.5	21.9	1.9	Dar es Salaam Tanzania	1996	280	45.0	6.1	4.6	Asuncion Paraguay	1994	1,450	37.4	14.4	4.8	Metro Manila Philippines	1997	1,040	45.4	32.4	8.6	Adana Turkey	1999	3,090	64.4	20.3	4.5	Mexico Mexico	1998	5,080	38.7	34.6	NA	Ulaanbaatar with Ash	2003	552	12.5	13.0	7.0	Ulaanbaatar without Ash	2003	552	31.4	32.6	17.8
Category of MSW	2005	2010	2015	2020																																																																																																																																																																																																																						
Kitchen Waste (%)	12.5	15.5	19.3	23.7																																																																																																																																																																																																																						
Paper (%)	5.2	6.5	8.1	10.0																																																																																																																																																																																																																						
Textile (%)	2.0	2.5	3.1	3.8																																																																																																																																																																																																																						
Grass and Wood (%)	0.5	0.5	0.5	0.6																																																																																																																																																																																																																						
Plastic (%)	7.8	9.8	12.1	14.9																																																																																																																																																																																																																						
Leather and Rubber (%)	0.2	0.3	0.4	0.4																																																																																																																																																																																																																						
Combustibles (%)	28.2	35.1	43.5	53.4																																																																																																																																																																																																																						
Metal (%)	1.5	1.9	2.4	2.9																																																																																																																																																																																																																						
Bottle and Glass (%)	5.5	7.1	8.8	10.7																																																																																																																																																																																																																						
Ceramic and Stone (%)	1.9	2.0	2.1	2.3																																																																																																																																																																																																																						
Miscellaneous (%)	2.7	2.8	3.0	3.2																																																																																																																																																																																																																						
Non-combustibles (%)	11.6	13.8	16.3	19.1																																																																																																																																																																																																																						
Other Waste than Ash (%)	38.9	48.9	59.8	72.5																																																																																																																																																																																																																						
Ash (%)	60.2	51.1	40.2	27.5																																																																																																																																																																																																																						
Total	100.0	100.0	100.0	100.0																																																																																																																																																																																																																						
Category of MSW	2005	2010	2015	2020																																																																																																																																																																																																																						
Kitchen Waste	31.4	31.8	32.3	32.7																																																																																																																																																																																																																						
Paper	13.1	13.4	13.6	13.8																																																																																																																																																																																																																						
Textile	5.0	5.2	5.2	5.3																																																																																																																																																																																																																						
Grass and Wood	1.2	1.1	0.9	0.8																																																																																																																																																																																																																						
Plastic	19.5	19.8	20.2	20.5																																																																																																																																																																																																																						
Leather and Rubber	0.6	0.6	0.6	0.6																																																																																																																																																																																																																						
Combustibles Sub-Total	70.8	71.9	72.8	73.7																																																																																																																																																																																																																						
Metal	3.8	3.9	3.9	4.0																																																																																																																																																																																																																						
Bottle and Glass	14.0	14.3	14.6	14.7																																																																																																																																																																																																																						
Ceramic and Stone	4.7	4.1	3.6	3.1																																																																																																																																																																																																																						
Miscellaneous	6.7	5.8	5.1	4.5																																																																																																																																																																																																																						
Non-combustibles Sub-Total	29.2	28.1	27.2	26.3																																																																																																																																																																																																																						
Total	100.0	100.0	100.0	100.0																																																																																																																																																																																																																						
Country/City	Year	GDP per Capita (US\$)	Kitchen Waste (%)	Papers + Plastics (%)	Metal, Bottle and Glass (%)																																																																																																																																																																																																																					
Tokyo in Japan	1994	31,961	25.1	50.9	11.9																																																																																																																																																																																																																					
Vientiane Lao	1991	290	35.1	16.3	8.9																																																																																																																																																																																																																					
Phnom Penh	2003	268	63.5	21.9	1.9																																																																																																																																																																																																																					
Dar es Salaam Tanzania	1996	280	45.0	6.1	4.6																																																																																																																																																																																																																					
Asuncion Paraguay	1994	1,450	37.4	14.4	4.8																																																																																																																																																																																																																					
Metro Manila Philippines	1997	1,040	45.4	32.4	8.6																																																																																																																																																																																																																					
Adana Turkey	1999	3,090	64.4	20.3	4.5																																																																																																																																																																																																																					
Mexico Mexico	1998	5,080	38.7	34.6	NA																																																																																																																																																																																																																					
Ulaanbaatar with Ash	2003	552	12.5	13.0	7.0																																																																																																																																																																																																																					
Ulaanbaatar without Ash	2003	552	31.4	32.6	17.8																																																																																																																																																																																																																					
<p><b>Important issues for the examination of possible intermediate treatment system (2)</b></p> <p>2. Needs of product &amp; by-product (recycled and recovered items by treatment)</p> <ul style="list-style-type: none"><li>For recycling, demands of product/by-product and supply of wastes as raw materials are critical.</li><li>Small demand of compost =&gt; cow dung is disposed of at Khan-Uul District dump site with tipping fee</li><li>Large demand of fuel for heating plants and power generation plants =&gt; Thermal recycling of waste is prospective</li><li>Regarding scale of the country final users of reuse &amp; recyclable materials from SW (paper, plastics, metals, bottles/glass) for a sorting facility will be limited.</li></ul>	<p><b>Important issues for the examination of possible intermediate treatment system (3)</b></p> <p>3. Important issues from current recycling</p> <ul style="list-style-type: none"><li>Limited final users in terms of capacity and categories</li><li>Most of recyclables are transported to China =&gt; huge transportation cost</li><li>Current final users in UBC limit generation sources of recyclable wastes. Because wastes as raw materials for them should be pure and clean as much as possible.</li><li>If a recycling facility will not limit its sources of wastes, it will not be profitable due to cleaning and purification processes and costs. =&gt; At present final users in UBC face to the difficulty in supply of suitable waste.</li></ul>	<p><b>Conclusions</b></p> <ul style="list-style-type: none"><li>Application of yard sorting and RDF production to the recycling and intermediate treatment system is examined for M/P</li><li>Applicability of RDF will be examined by pilot project including introduction of separate collection system</li><li>Proposed location of both facilities is Narangiin Enger proposed new disposal site.</li><li>For the planning of the site, private investment of the other recycling facilities will be examined.</li></ul>																																																																																																																																																																																																																								
<p><b>Final disposal system planning</b></p> <ul style="list-style-type: none"><li>Future final disposal site options after 2008 when the new NEDS will open:</li><li>1. NEDS for Central 6 districts, MDDS for part of KhUD, Nalaikh DS and a few other small DS for remote Khoroo</li><li>2. NEDS for Central 6 districts, Nalaikh DS and SKhD Khoroo 21 DS</li><li>3. Other</li><li>!!! Although operation method will differ each other, sanitary landfill shall be applied to their operation. !!!</li></ul>	<p>Location of Future Final Disposal Sites</p> 	<p><b>C. Proposal of PP in Khoroo No. 4 of SKhD related to UCDS improvement PP</b></p>																																																																																																																																																																																																																								
<p><b>Public Education</b></p> <p>Basic Approach</p>	<p><b>Findings of Local Resident Survey in Ulaan Chuluut</b></p> <ul style="list-style-type: none"><li>Local residents are aware of problems caused by improper solid waste management</li><li>Some of them already consider possible solutions</li><li>Majority of them really want to improve the current environmental conditions</li></ul>	<p><b>Other findings</b></p> <ul style="list-style-type: none"><li>Many of local residents actually do not have enough basic knowledge on solid waste management</li><li>They tend to rely on a solution such as penal regulation</li></ul>																																																																																																																																																																																																																								
<p><b>Necessary Measures</b></p> <ul style="list-style-type: none"><li>to provide necessary information</li><li>to provide education</li><li>to establish rules and show their benefit clearly</li><li>to promote public participation and show its benefit</li></ul>	<p><b>How JICA Study Team Support MUB</b></p> <ul style="list-style-type: none"><li>to prepare educational materials together<ul style="list-style-type: none"><li>Poster</li><li>Leaflet</li><li>presentation materials including video and animation</li></ul></li><li>to support MUB organize community meetings</li></ul>	<p>Examples</p>																																																																																																																																																																																																																								
<p>Poster for each household (a case in Japan)</p> <p><b>Discharge Rules</b></p> 	<p>Signboard at a collection point (a case in Japan)</p> <p><b>Schedule of Waste Collection</b></p> <p>Please discharge by 8:00 a.m.</p>  <p>Discharge Point and Signboard</p>	<p>Poster prepared for a project in Cambodia</p> 																																																																																																																																																																																																																								



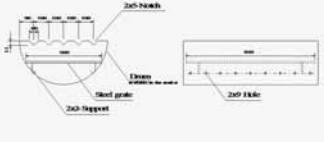
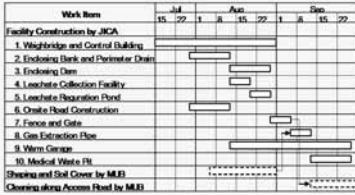


<p>Leaflet prepared for a project in Cambodia</p> 	<p><b>Presentation materials for community meetings</b></p> <ul style="list-style-type: none"> <li>to introduce solid waste management systems (20-30 minutes) <ul style="list-style-type: none"> <li>a desirable storage method</li> <li>a desirable discharge manner</li> <li>a desirable final disposal operation, and so on</li> </ul> </li> <li>to utilize video and animation we well as graphics</li> <li>to make it possible for Khoroo/Kheseg officers to make a presentation</li> </ul> <p>Equipments such as a computer and projector are necessary</p>	<p><b>D. Financial pre-conditions for M/P (1)</b></p> <ol style="list-style-type: none"> <li>Waste revenues are centralized into a municipal-level waste fund so that cross-subsidies are enabled among Duuregs while MUB, which has authority to levy penalties against non-payers, is responsible for fee collection through Duureg governments.</li> <li>In Ger area, fee payment is made compulsory while waste is collected from all households, in order to increase the fee revenue and at the same time reduce illegal dumping.</li> </ol>
<p><b>D. Financial pre-conditions for M/P (2)</b></p> <ol style="list-style-type: none"> <li>Strict enforcement measures for payment are introduced to all categories of waste generating sources. As a result, revenues from Ger area will increase significantly.</li> </ol> <p>(Since fee collection rates from large businesses are relatively high while statistics on small businesses is not sufficiently available, fee revenues from businesses are assumed to remain at the same level.)</p>	<p><b>D. Financial pre-conditions for M/P (3)</b></p> <ol style="list-style-type: none"> <li>A uniform household-based fee is introduced in all residential areas of all Duuregs, including Ger and apartment areas, which enables the introduction of cross-subsidies between Ger and apartment areas and between Duuregs. Poor residents in Ger areas are exempt from waste fee payment in exchange of labor contribution to street cleaning.</li> </ol> <p>(Although a floor size-based fee would be more equitable, a household-based fee is applied in the master plan to make comparison between Ger and apartment areas clearer.)</p>	<p><b>D. Financial pre-conditions for M/P (4)</b></p> <ol style="list-style-type: none"> <li>TUKs are dismantled and their management is integrated into a "waste collection unit" and a "fee collection unit" of their respective Duureg governments. Waste collection is contracted out to private waste collectors.</li> <li>Part of revenues from waste collection is used to finance landfilling at the final disposal site.</li> </ol>
<p><b>D. Financial pre-conditions for M/P (5)</b></p> <ul style="list-style-type: none"> <li>MUB suggested that a waste tax be levied on most imported goods because these constitute major sources of waste. However, this would supposedly require an increase of custom duties and thus must be discussed at the national level, beyond MUB's control. Since the level of revenue increase in this option is difficult to estimate, this option is not taken into consideration in the proposed financing system.</li> </ul>		
<p><b>Technical Working Group Meeting (19)</b> for THE STUDY ON SOLID WASTE MANAGEMENT PLAN FOR ULAANBAATAR CITY</p> <p>May 6, 2005 JICA Study Team</p>	<p><b>1. Work Progress</b></p> <ul style="list-style-type: none"> <li>Alternative study for formulation of master plan</li> <li>Plan of other PPs other than UCDS improvement</li> <li>Study of financial system on SWM and waste fund</li> <li>Preparation of Interim Report</li> </ul>	<p><b>2. Works for the Following Week</b></p> <ul style="list-style-type: none"> <li>Holding the Fourth St/C meeting</li> <li>Plan of other PPs other than UCDS improvement</li> </ul>
<p><b>3. Subjects to be discussed</b></p> <ol style="list-style-type: none"> <li>Confirmation of Items to be discussed in the Fourth St/C meeting</li> <li>Private sector participation</li> </ol>	<p><b>A. Confirmation of Items to be discussed in the Fourth St/C meeting (1)</b></p> <ul style="list-style-type: none"> <li>Projects for feasibility study <ol style="list-style-type: none"> <li>Improvement of collection system including development of a central workshop</li> <li>Development of the new NEDC</li> <li>Development of a recycling complex next to the NEDS</li> </ol> </li> <li>Confirmation of IEE and contents of EIA</li> <li>Additional surveys in Phase 2 <ol style="list-style-type: none"> <li>Construction waste management</li> <li>Hazardous waste management by the factories</li> <li>Further survey on recycling activities</li> </ol> </li> </ul>	<p><b>A. Confirmation of Items to be discussed in the Fourth St/C meeting (2)</b></p> <ul style="list-style-type: none"> <li>Pilot projects <ol style="list-style-type: none"> <li>Urgent improvement of UCDS</li> <li>Thermal recycling "RDF"</li> <li>Movable recyclable collection system "Chirigami Kokan", swapping recyclable for toilet paper</li> <li>Examination of the loading device for heavy waste</li> <li>Raising public consciousness on waste issues</li> </ol> </li> </ul>
	<p><b>Private Sector's Participation to SWM</b></p> <p>5 May 2005 JICA Study Team</p>	<p><b>Present Condition</b></p> <p><b>Waste Collection</b></p> <ul style="list-style-type: none"> <li>Contracting out "Management of TUK"</li> <li>Operation contractors of TUKs</li> </ul> <p><b>Waste Disposal</b></p> <ul style="list-style-type: none"> <li>Semi-Direct operation by MUB</li> <li>Operation by Nuuts</li> <li>However, Nuuts holds a certain freedom in management.</li> </ul>

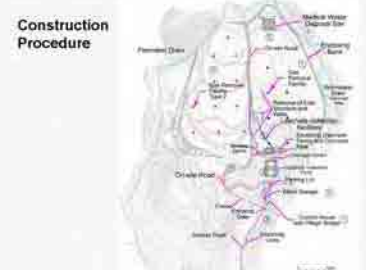
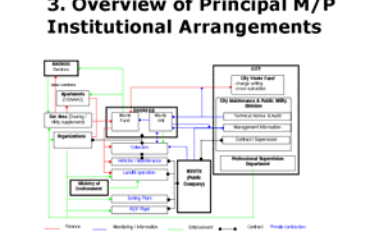


<p><b>Assessment of Present Waste Collection Contract System</b></p> <p><u>Good points</u></p> <ol style="list-style-type: none"> <li>1. No idling problems caused by labors. They work hard.</li> <li>2. Little political intervention.</li> <li>3. Flexibility in management.</li> <li>4. Fair work efficiency.</li> </ol> <p><u>Problems</u></p> <ol style="list-style-type: none"> <li>1. No market competition, no transparency.</li> <li>2. MUB can't understand the actual present condition. Financial, waste collection amounts, equipment condition, etc.</li> <li>3. It causes stakeholders to suspect each other and ignore cooperation.</li> <li>4. Very unfair contract among TUK operators.</li> <li>5. Deterioration of waste collection service level due to the profit oriented operation.</li> </ol>	<p><b>General Characters of Direct Operation by the Municipality</b></p> <p><u>Advantages</u></p> <ul style="list-style-type: none"> <li>□ Right direction toward Sanitation, Environment</li> <li>□ Potential resources: Donors' assistance</li> </ul> <p><u>Problems</u></p> <ul style="list-style-type: none"> <li>□ Lower work efficient due to the absence of competition</li> <li>□ Accountability weighs more than the work efficiency.</li> <li>□ Political intervention</li> </ul>	<p><b>General Objectives of Private Sector's Participation</b></p> <ol style="list-style-type: none"> <li>1. Market competition <ul style="list-style-type: none"> <li>■ Minimization of expenditure</li> <li>■ Transparency, accountability</li> </ul> </li> <li>2. Reducing municipal outflow by using private capital</li> <li>3. Increasing flexibility</li> </ol> <p>Objective 1 is important.</p>															
 <p><b>Implications by Type of Contract</b></p> <table border="1"> <thead> <tr> <th></th> <th>Min</th> <th>Max</th> </tr> </thead> <tbody> <tr> <td>Responsibility of MUB</td> <td>High</td> <td>Low</td> </tr> <tr> <td>Potential of contractor's profit</td> <td>Low</td> <td>High</td> </tr> <tr> <td>Contractor's financial risk</td> <td>High</td> <td>Low</td> </tr> <tr> <td>MUB's financial risk</td> <td>Low</td> <td>High</td> </tr> </tbody> </table>		Min	Max	Responsibility of MUB	High	Low	Potential of contractor's profit	Low	High	Contractor's financial risk	High	Low	MUB's financial risk	Low	High	<p><b>Policy for Private Sector's Participation</b></p> <p><u>Necessary supporting measures</u></p> <ul style="list-style-type: none"> <li>Cost estimation, contract plan capacity</li> <li>Supervision capacity</li> <li>Personnel training</li> <li>Public education</li> </ul> <p><u>Methods</u></p> <ul style="list-style-type: none"> <li>Direct operation system</li> <li>Optimal work plan</li> <li>Contracting out system</li> </ul>	<p><b>Proposed Plan</b></p> <p><u>Waste collection</u></p> <ul style="list-style-type: none"> <li>□ Lump sum contract by collection area.</li> <li>■ MUB lend contractors equipment. Many contractors can participate.</li> <li>■ Division of collection areas will be planned in phase 2.</li> </ul> <p><u>Intermediate facilities</u></p> <ul style="list-style-type: none"> <li>□ MUB owns main facilities. Sorting yard, RDF</li> <li>□ Operation: Leasing contract</li> </ul> <p><u>Final Disposal</u></p> <ul style="list-style-type: none"> <li>□ MUB owns the disposal site.</li> <li>□ Operation: Direct operation or Contracting out. It will be planned in phase 2.</li> </ul> <p><u>Workshop</u></p> <ul style="list-style-type: none"> <li>□ MUB owns it.</li> <li>□ Operation: Direct operation</li> </ul>
	Min	Max															
Responsibility of MUB	High	Low															
Potential of contractor's profit	Low	High															
Contractor's financial risk	High	Low															
MUB's financial risk	Low	High															
<p><b>Technical Working Group Meeting (20)</b> for THE STUDY ON SOLID WASTE MANAGEMENT PLAN FOR ULAANBAATAR CITY</p> <p>July 1, 2005 JICA Study Team</p>	<p><b>1. Work Progress</b></p> <ul style="list-style-type: none"> <li>□ Preparation of 2nd seminar</li> <li>□ Preparation of pilot projects</li> <li>□ Preparation of WACS</li> <li>□ Preparation of F/S</li> </ul>	<p><b>2. Works for the Following Week</b></p> <ul style="list-style-type: none"> <li>□ Holding the 2nd seminar</li> <li>□ Conduct of WACS</li> <li>□ Preparation of pilot projects</li> <li>□ Preparation of F/S</li> </ul>															
<p><b>3. Subjects to be discussed</b></p> <ol style="list-style-type: none"> <li>A) Objectives of the 2nd seminar</li> <li>B) Draft M/P and priority projects</li> <li>C) Pilot projects</li> </ol>	<p><b>Item 3</b></p> <p><b>Background and Objectives of the Second Seminar</b> for THE STUDY ON SOLID WASTE MANAGEMENT PLAN FOR ULAANBAATAR CITY</p> <p>July 6, 2005 Counterparts of the Study and JICA Study Team</p>	<p><b>1. Background</b></p> <p><b>1.1 Study Schedule (1)</b></p> <ul style="list-style-type: none"> <li>□ The Study on Solid Waste Management Plan for Ulaanbaatar City in Mongolia (hereinafter called the Study) is being conducted from November 2004 and will end March 2006. The Study consists of the following two phases and implemented as shown in the Figure below.</li> </ul> <ol style="list-style-type: none"> <li>1. Phase 1: Formulation of the Master Plan (M/P) from November 2004 till May 2005</li> <li>2. Phase 2: Feasibility Study for Priority Projects and Implementation of Pilot Projects from June 2005 till March 2006</li> </ol>															
<p><b>1. Background</b></p> <p><b>1.1 Study Schedule (2)</b></p> 	<p><b>1. Background</b></p> <p><b>1.2 Main Works in the Phase 2</b></p> <ul style="list-style-type: none"> <li>□ Feasibility study of the priority projects based on the draft M/P elaborated in the Phase 1 of the Study</li> <li>□ Implementation of the five pilot projects</li> </ul>	<p><b>2. Objectives</b></p> <p>The objectives of the second seminar are:</p> <ul style="list-style-type: none"> <li>□ To present the proposed M/P and priority projects in order to achieve consensus among the stakeholders; and</li> <li>□ To explain the pilot projects to ask active cooperation from relevant stakeholders.</li> </ul>															
<p>Thank you very much for your attention</p>																	


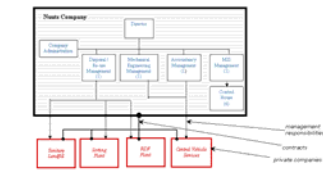


<p><b>Technical Working Group Meeting (21)</b> for THE STUDY ON SOLID WASTE MANAGEMENT PLAN FOR ULAANBAATAR CITY</p> <p>July 15, 2005 JICA Study Team</p>	<p><b>1 . Work Progress</b></p> <ul style="list-style-type: none"> <li>□ Holding the 2nd Seminar on 6 Jul</li> <li>□ Conduct WACS ( summer)</li> <li>□ Preparation of Pilot Project</li> <li>□ Preparation of F/S</li> <li>□ Conduct Topographic Survey for NEDS</li> </ul>	<p><b>2. Works for the Following Week</b></p> <ul style="list-style-type: none"> <li>□ Preparation of 2nd Seminar Report</li> <li>□ Analysis of WACS result</li> <li>□ Preparation of RDF</li> <li>□ Preparation of F/S</li> <li>□ Tender Close for Improvement of UCDS</li> <li>□ Preparation of Forming the Monitoring Committee</li> <li>□ Conduct Topographic Survey for NEDS</li> <li>□ Construction of Weighbridge</li> </ul>
<p><b>3. Subjects to be discussed</b></p> <ul style="list-style-type: none"> <li>□ Institutional Matters</li> <li>□ Trial RDF Production</li> <li>□ Weigh Bridge Database Format</li> </ul>	<p><b>Institutional Matters</b></p>	<p><b>1. Purpose of Item</b></p> <ul style="list-style-type: none"> <li>□ Consolidate Current Understanding of Overall Institutional Requirements of M/P</li> <li>□ Seek Guidance on firming up proposals</li> <li>□ Seek Guidance on Obtaining Government Consensus for Institutional Changes</li> </ul>
<p><b>2. Overview of Principal M/P Institutional Arrangements</b></p> 	<p><b>MOE Regulation</b></p> <p>MUB Institutional Change cannot proceed properly until MOE completes Regulations required by 2003 Law, particularly on:</p> <ul style="list-style-type: none"> <li>■ final disposal site, facilities, activities</li> <li>■ establishment of data bases and data exchange arrangements</li> <li>■ methodology for calculating Waste Fees</li> <li>■ methodology for waste standards</li> <li>■ define special industrial waste producers and special disposal</li> <li>■ hazardous waste certification, ownership registration, collection, transport, disposal and disposal technology</li> </ul>	<p><b>3. Main Areas of Institutional Change</b></p> <ul style="list-style-type: none"> <li>□ Strengthening CMPUD</li> <li>□ Establishing an Operational Waste Management Fund (WMF)</li> <li>□ Strengthening Nuuts Company</li> <li>□ Strengthening Duureg Governments</li> <li>□ Strengthening Khoroo Governments</li> <li>□ Other Issues</li> </ul>
<p><b>4. Reasons for Strengthening CMPUD</b></p> <p>Modern institutional capacity in UB is limited; therefore:</p> <ul style="list-style-type: none"> <li>■ Best to concentrate development investment in a single entity</li> <li>■ Achieves standardisation, efficiencies, economies of scale</li> <li>■ Top levels of MUB will have measured assurance that SWM is improving</li> </ul>	<p><b>5. Main Areas for Strengthening CMPUD</b></p> <ul style="list-style-type: none"> <li>□ Monitoring and Information Management System <ul style="list-style-type: none"> <li>■ 4- Monitoring Committee</li> </ul> </li> <li>□ Licensing Collection / Transport Operators <ul style="list-style-type: none"> <li>■ Existing or new agency?</li> <li>■ Code of practise / penalties?</li> </ul> </li> <li>□ Contracting Collection / Transport Operators <ul style="list-style-type: none"> <li>■ Contract geographic areas</li> <li>■ Standard contracts and tendering procedures</li> <li>■ Non-residential arrangements are unclear: ranging from fully private / commercial to fully Waste Fund?</li> </ul> </li> </ul>	<p><b>6. Establishing and Operating Waste Management Fund(WMF)</b></p> <ul style="list-style-type: none"> <li>□ City Level Functions <ul style="list-style-type: none"> <li>■ Calculate city wide charges</li> <li>■ Balance costs and revenues through Duureg cross-subsidies for: <ul style="list-style-type: none"> <li>□ Transport costs</li> <li>□ % ger housing</li> <li>□ % too poor to pay?</li> <li>□ % expensive to serve ger housing?</li> </ul> </li> </ul> </li> <li>□ Duureg Functions <ul style="list-style-type: none"> <li>■ Collect (especially ger area) / disburse fees</li> </ul> </li> </ul>
<p><b>7. Strengthening Nuuts Company 1/2</b></p> <ul style="list-style-type: none"> <li>□ Sanitary Landfill <ul style="list-style-type: none"> <li>■ Ownership of site</li> <li>■ Contracting operations? by Nuuts or CMPUD?</li> <li>■ Possible conflict of interest in operating site / control house</li> <li>■ Possible conflict of interest in operating / monitoring landfill operations</li> <li>■ Arrangements for 3 minor disposal sites?</li> </ul> </li> <li>□ Management of data</li> <li>□ Management of MUB assets <ul style="list-style-type: none"> <li>■ Ownership</li> <li>■ Central Workshop operation - direct or contracted out?</li> <li>■ Rented (with drivers) to Collection/Transport Operators? (if so must be parties to contracts)</li> </ul> </li> </ul>	<p><b>8. Strengthening Nuuts Company 2/2</b></p> <ul style="list-style-type: none"> <li>□ Sorting Plant <ul style="list-style-type: none"> <li>■ Private sector interest in construction?</li> <li>■ Operations contracted out</li> </ul> </li> <li>□ RDF Plant <ul style="list-style-type: none"> <li>■ Private sector interest in construction?</li> <li>■ Operations contracted out</li> </ul> </li> </ul>	<p><b>9. Strengthening Duureg Governments 1/2</b></p> <ul style="list-style-type: none"> <li>□ Establishment of Operational Fee Collection Units <ul style="list-style-type: none"> <li>■ Extension of Duureg Finance Divisions? Or new office?</li> <li>■ Contract eg. Ulaanbaatar Electricity Distribution Company (existing customer data base etc)?</li> </ul> </li> </ul>
<p><b>10. Strengthening Duureg Governments 1/2</b></p> <ul style="list-style-type: none"> <li>□ Establishment of Operational Waste Collection Units <ul style="list-style-type: none"> <li>■ Managing / monitoring waste collection services</li> <li>■ Contract Management</li> <li>■ SWM is a minority revenue earner for most TUK's - what happens to TUK non-SWM functions?</li> <li>■ Responsibilities for absorbing surplus TUK staff?</li> <li>■ Arrangements for 3 minor disposal sites?</li> </ul> </li> </ul>	<p><b>11. Strengthening Khoroo Governments</b></p> <ul style="list-style-type: none"> <li>□ Organising SWM work for those too-poor to pay fees, and physically capable of working. <ul style="list-style-type: none"> <li>■ Assisted by Duureg Waste Collection Units?</li> </ul> </li> </ul>	<p><b>12. Other Issues 1/2</b></p> <ul style="list-style-type: none"> <li>□ Strengthening Professional Supervision Department of MUB?</li> <li>□ Training <ul style="list-style-type: none"> <li>■ in Mongolia</li> <li>■ in Japan</li> <li>■ other</li> </ul> </li> <li>□ Arrangements for handling construction waste?</li> </ul>

<p><b>13. Other Issues 2/2</b></p> <ul style="list-style-type: none"> <li>Arrangements for handling hazardous waste?</li> <li>Any additional arrangements for recycling (should be a private sector matter)?</li> <li>New legislation for Producer Responsibility Import Tax on packaging &amp; hard-to-dispose items?</li> <li>New legislation for retail plastic bag tax?</li> </ul>	<p><b>14. Achieving Changes</b></p> <ul style="list-style-type: none"> <li>What authorities are required to make institutional changes?</li> <li>What supporting evidence do authorities require?</li> <li>A single package for changes or piecemeal?</li> <li>Strengthening CMPUD</li> <li>Establishing and Operating Waste Management Fund (WMF)</li> <li>Strengthening Nuuts Company</li> <li>Strengthening Duuregs</li> <li>Strengthening Khorroos</li> <li>Other Issues</li> </ul>	<p><b>Trial RDF production</b></p>
 <p>Target waste for RDF test (Waste plastics and waste paper)</p>	 <p>Drum type Heating Device</p>	 <p>Drum type Heating Device</p>
<p><b>Weigh Bridge Database Format</b></p> <ul style="list-style-type: none"> <li>List of Company ID (Name of Company)</li> <li>List of Waste ID (Waste category)</li> <li>List of Area (District/Khoroo)</li> <li>List of Vehicle (Each TUK)</li> </ul>	<p><b>5. Others</b></p> <ul style="list-style-type: none"> <li>Mr. Shimura left on 7 Jul and will be back on 17 Jul</li> <li>Ms. Kani will arrive on 17 Jul</li> </ul>	
<p><b>Technical Working Group Meeting (22)</b> for THE STUDY ON SOLID WASTE MANAGEMENT PLAN FOR ULAANBAATAR CITY</p> <p>July 22, 2005 JICA Study Team</p>	<p><b>1. Work Progress</b></p> <ul style="list-style-type: none"> <li>Preparation of 2<sup>nd</sup> Seminar Report</li> <li>Analysis of WACS result</li> <li>Preparation of RDF</li> <li>Preparation of F/S</li> <li>Tender Close for Improvement of UCDS</li> <li>Preparation of Forming the Monitoring Committee</li> <li>Conduct Topographic Survey for NEDS</li> <li>Construction of Weighbridge</li> </ul>	<p><b>2. Works for the Following Week</b></p> <ul style="list-style-type: none"> <li>Analysis of WACS result</li> <li>Preparation of RDF</li> <li>First participatory evaluation of PP.1 urgent improvement of UCDS together with press tour</li> <li>Preparation of first public hearing meeting</li> <li>Establishment of a monitoring committee for UCDS operation</li> <li>Preparation of current recycling system survey</li> <li>Database design and programming</li> <li>Study on institutional system improvement</li> <li>Conduct Topographic Survey for NEDS</li> <li>Construction of Weighbridge</li> </ul>
<p><b>3. Subjects to be discussed</b></p> <ul style="list-style-type: none"> <li>I. Methodology of Landfill Site Selection</li> <li>II. Procedure before starting the EIA survey</li> <li>III. Schedule of PP.1 urgent improvement of UCDS</li> <li>IV. Establishment of a monitoring committee for UCDS operation</li> <li>V. Schedule of participatory evaluation of PP.1 urgent improvement of UCDS</li> <li>VI. Institutional Matters</li> </ul>	<p><b>I. Methodology of Landfill Site Selection</b></p> <ul style="list-style-type: none"> <li>A sample of site selection method and its evaluation criteria for a disposal site is provided. =&gt; See Attachment 1.</li> <li>Is it enough for your requests or not?</li> </ul>	<p><b>II. Procedure before starting the EIA survey for development project of NEDS and recycling complex (1)</b></p> <p><b>Step 1: By July 25</b> Preparation of the draft of Scoping (to prepare for the EIA survey plan)</p> <p><b>Step 2: On July 26</b> Open the plan of the project and draft of the EIA survey plan to public through an official bulletin, the internet, and so on and to receive the opinions from the public.</p> <p><b>Step 3: On August 5</b> To organize public hearing to introduce the project plan and draft of the EIA survey plan.</p>
<p><b>II. Procedure before starting the EIA survey for development project of NEDS and recycling complex (2)</b></p> <p>Participants should include;</p> <ul style="list-style-type: none"> <li>Local residents</li> <li>Local NGO</li> <li>Experts on SWM, water pollution, air pollution, soil pollution and nature.</li> </ul> <p><b>Step 4: On August 12</b> 1-2 weeks after the open of the draft, the final scoping (the final survey plan) is formulated based on the opinions and comments from the public and experts</p> <p><b>Step 5: From July 26</b> To start the EIA survey by MUB. Modify the scope according to the above comments on Aug. 12. The JICA's survey such as soil investigation, etc. will start on Aug. 8.</p>	<p><b>III. Schedule of PP.1 urgent improvement of UCDS</b></p> <p>By Ichiro</p>	<p><b>Work Schedule for Urgent Improvement of UCDS</b></p> 









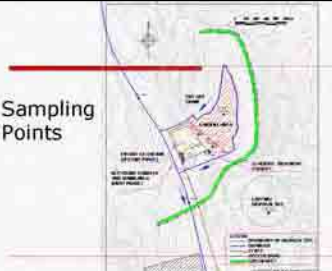


<p><b>Construction Procedure</b></p> 	<p><b>Contractor</b></p> <ul style="list-style-type: none"> <li>□ BUUKH Co., Ltd.</li> <li>□ Person In Charge : Mr. Jamsran (Director)</li> <li>□ Tel : 11-353573, 99183331</li> <li>□ Address : Building of Buukh Co., Ltd. Tsagdaa street, Sukhbaatar District, 11<sup>th</sup> Khoroo, Ulaanbaatar</li> </ul>	<p><b>IV. Establishment of a monitoring committee for UCDS operation</b></p> <p>By Keiko</p>
<p><b>Pilot Project: Raising Public Consciousness on Waste Issues</b></p> <ul style="list-style-type: none"> <li>■ Establishment of Participatory Regular Monitoring System</li> <li>■ Participatory Evaluation of Pilot Project at the UCDS</li> <li>■ Campaign to stop Illegal Dumping</li> </ul>	<p><b>Establishment of Regular Monitoring System</b></p> <p>Objectives</p> <ul style="list-style-type: none"> <li>◆ to make sure that the operator of the UCDS continues its operation properly after PP</li> </ul>	<p>in order to make a sustainable monitoring system...</p> <ul style="list-style-type: none"> <li>■ to promote participation of local authority and residents</li> <li>■ to adapt a simple method (mainly by observation)</li> <li>■ to make the result of the monitoring open to public in order to increase public awareness</li> </ul>
<p><b>Procedure</b></p> <ul style="list-style-type: none"> <li>■ to establish the Monitoring Committee</li> <li>■ to prepare educational materials and PR goods</li> <li>■ to arrange local meetings and provide necessary information on SWM</li> <li>■ to start the regular monitoring (once every three month) after PP</li> <li>■ to establish a system to open the result of the monitoring</li> </ul>	<p><b>Proposed Members of Monitoring Committee</b></p> <ul style="list-style-type: none"> <li>□ Khoroo 4 Governor</li> <li>□ a staffer of MUB in charge of environmental issues</li> <li>□ an environment/pollution inspector</li> <li>□ a staffer of MOE</li> <li>□ a staffer of the health center</li> <li>□ a school teacher</li> <li>□ a representative of local residents</li> <li>□ a staffer of local NGO.</li> </ul>	<p><b>V. Schedule of participatory evaluation of PP.1 urgent improvement of UCDS</b></p> <p>By Keiko</p>
<p><b>Participatory Evaluation of Pilot Project at the UCDS</b> (to ask local residents evaluate our project at UCDS)</p> <p><b>Objectives</b></p> <ul style="list-style-type: none"> <li>◆ to obtain opinions about PP widely from local people</li> <li>◆ to increase public awareness of the final disposal site issues</li> <li>◆ to make the pilot project at UCDS known widely</li> <li>◆ to make the newly established regular monitoring system known widely</li> </ul>	<p><b>Number of times</b></p> <ul style="list-style-type: none"> <li>■ Twice (before and after the pilot project at UCDS)</li> </ul> <p><b>Participants</b></p> <ul style="list-style-type: none"> <li>■ Monitoring Committee members</li> <li>■ Local residents (around 20)</li> <li>■ the Press</li> </ul> <p>The first participatory evaluation provides monitoring committee members with the first meeting place and an opportunity to take a practice of monitoring</p>	<p>Date: July 29 Time: 9:00 – 12:30</p> <p><b>Program</b></p> <ol style="list-style-type: none"> <li>1. Opening Remark</li> <li>2. Outline of PPs at UCDS and Raising Environmental Awareness</li> <li>3. Introduction of Regular Monitoring System and Monitoring Committee</li> <li>4. Lecture 1: Introduction to disposal of waste (explanation about check list)</li> <li>5. Tour</li> <li>6. Lecture 2: Improvement Plan of UCDS</li> </ol>
<p><b>VI. Institutional Matters by Bill</b></p>	<p><b>1. Institutional Matters</b> (continuing from TWG 21)</p> <ul style="list-style-type: none"> <li>□ Main Areas of Institutional Change <ul style="list-style-type: none"> <li>■ MOE Regulation (subject of TWG 21)</li> <li>■ Strengthening CMPUD (subject of TWG 21)</li> <li>■ Establishing Waste Fund (WF)</li> <li>■ Strengthening Nuuts Company</li> <li>■ Strengthening Duuregs</li> <li>■ Strengthening Khoroo</li> <li>■ Other Issues</li> </ul> </li> </ul>	<p><b>2. Methodology On Estimation Of Waste Generation Fee</b></p> <p><b>Main Comments on Draft Regulation:</b></p> <ul style="list-style-type: none"> <li>□ Draft approach does not mention costs of SWM. <ul style="list-style-type: none"> <li>■ It is essential that waste income covers all costs.</li> <li>■ - better if waste authority estimates SWM costs and allocates cost recovery to different generators.</li> </ul> </li> <li>□ 2003 "Waste Law" does not require regulation to set a range of monetary fees <ul style="list-style-type: none"> <li>■ - better to omit MNT references.</li> </ul> </li> <li>□ Draft suggests transport costs excluded from fee for industrial waste. <ul style="list-style-type: none"> <li>■ Disposal site location outside industrialists' control</li> <li>■ - better to equalize transport costs by cross subsidy, as with ger / apartment housing.</li> </ul> </li> </ul>
<p><b>3. Overview of Principal M/P Institutional Arrangements</b></p> 	<p><b>4. Establishing Waste Fund(WF) - City Level Functions</b></p> <ul style="list-style-type: none"> <li>□ Administered by MUB Finance, Economy and Treasury Division?</li> <li>□ Calculate city wide customer charges</li> <li>□ Balance costs and revenues through Duureg cross-subsidy calculations for: <ul style="list-style-type: none"> <li>Households - <ul style="list-style-type: none"> <li>□ Transport costs</li> <li>□ % ger housing</li> <li>□ % too poor to pay?</li> <li>□ % expensive to serve ger housing?</li> </ul> </li> <li>Organizations - <ul style="list-style-type: none"> <li>□ Transport costs</li> </ul> </li> </ul> </li> </ul>	<p><b>5. Establishing Waste Fund(WF) – Duureg Functions</b></p> <ul style="list-style-type: none"> <li>□ Collect Fees (especially ger area)</li> <li>□ Disburse fees: <ul style="list-style-type: none"> <li>■ District balancing items (monthly)</li> <li>■ Collector/Transport Contracts</li> <li>■ Nuuts Company</li> <li>■ Public education</li> <li>■ Overheads</li> </ul> </li> </ul>

<p><b>6. Strengthening Nuuts Company 1/2</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Public Company entirely financed by Waste Fund (not MUB budget)</li> <li><input type="checkbox"/> Sanitary Landfill <ul style="list-style-type: none"> <li>■ City ownership of disposal site</li> <li>■ Nuuts is MUB's main implementing agency for SWM disposal and asset management?</li> <li>■ Main activities contracting out?</li> <li>■ Assess private sector interest in constructing (as well as operating) Sorting Plant and RDF?</li> <li>■ Possible conflict of interest in operating site &amp; control house</li> <li>■ Possible conflict of interest in operating &amp; monitoring landfill operations</li> <li>■ Arrangements for 3 minor disposal sites?</li> </ul> </li> <li><input type="checkbox"/> Develop Systems / Reports for Management of data (under CMPUD direction)</li> </ul>	<p><b>7. Strengthening Nuuts Company 2/2</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Public Education Unit? (or with CMPUD?)</li> <li><input type="checkbox"/> Management of MUB assets <ul style="list-style-type: none"> <li>■ Ownership - Nuuts? MUB Property Dept? CMPUD?</li> <li>■ Central Workshop operation - direct or contracted out?</li> <li>■ Rented (with drivers) to Collector/Transporters? (if so must be parties to contracts)</li> </ul> </li> </ul>	<p><b>8. Strengthening Duureg Governments 1/2</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Establishment of Fee Collection Units <ul style="list-style-type: none"> <li>■ Addition to Duureg Finance Divisions? (Or new office?)</li> <li>■ Contract out eg. <ul style="list-style-type: none"> <li><input type="checkbox"/> Part of proposed Citizen Tax?</li> <li><input type="checkbox"/> Electricity Distribution Company (existing customer data base etc)?</li> <li><input type="checkbox"/> Add to ger area water tariff?</li> <li><input type="checkbox"/> ?</li> </ul> </li> </ul> </li> </ul>
<p><b>9. Strengthening Duureg Governments 1/2</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Establishment of Waste Collection Units <ul style="list-style-type: none"> <li>■ Responsible for waste in Duureg</li> <li>■ Contract Management</li> <li>■ What happens to TUK non-SWM functions (ranges from 19-80%, mean 36%, of revenues)?</li> <li>■ Responsibilities for absorbing surplus TUK staff?</li> <li>■ Arrangements for 3 minor disposal sites?</li> </ul> </li> </ul>	<p><b>10. Strengthening Khoroo Governments</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Identifying &amp; Organising SWM work for those too-poor to pay fees, and physically capable of working. <ul style="list-style-type: none"> <li>■ Assisted by Duureg Waste Collection Units?</li> <li>■ Use Article 22.2 of Law to employ "community inspectors" (paid for by "cash bonus" from Duureg Governor)?</li> <li>■ To do what?</li> </ul> </li> <li><input type="checkbox"/> Other Khoroo functions?</li> </ul>	<p><b>11. Other Issues 1/2</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Strengthening Professional Supervision Department of MUB?</li> <li><input type="checkbox"/> Is Waste Fee a "tax" subject to the Law on Taxation eg. for violations.</li> <li><input type="checkbox"/> SWM Training <ul style="list-style-type: none"> <li>■ in Mongolia</li> <li>■ in Japan</li> <li>■ other</li> </ul> </li> <li><input type="checkbox"/> Arrangements for handling special / construction waste?</li> <li><input type="checkbox"/> Arrangements for handling hazardous waste?</li> </ul>
<p><b>12. Other Issues 2/2</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Any additional arrangements for recycling beyond Pilot / Priority Projects (or should be entirely private sector)?</li> <li><input type="checkbox"/> New legislation for "Producer Responsibility Import Tax" on packaging &amp; hard-to-dispose items?</li> <li><input type="checkbox"/> New legislation for retail plastic bag tax (as in Ireland, Bangladesh, Taiwan, Japan) ?</li> </ul>	<p><b>13. Achieving Changes</b></p> <ol style="list-style-type: none"> <li>1. What authorities are required to make institutional changes? Citizen's Hural? Cabinet? Parliament?</li> <li>2. What supporting evidence do authorities require?</li> <li>3. A single package for changes or piecemeal? <ul style="list-style-type: none"> <li><input type="checkbox"/> Strengthening CMPUD - modest staff increase and training</li> <li><input type="checkbox"/> Establishing and Operating Waste Management Fund (WMF)</li> <li><input type="checkbox"/> Strengthening Nuuts Company -major skilled recruitment / training.</li> <li><input type="checkbox"/> Strengthening Duuregs - staff increases</li> <li><input type="checkbox"/> Strengthening Khorooos - staff increases difficult</li> <li><input type="checkbox"/> Other Issues</li> </ul> </li> </ol>	<p>Thank you very much</p>
<p><b>Technical Working Group Meeting (23)</b> for THE STUDY ON SOLID WASTE MANAGEMENT PLAN FOR ULAANBAATAR CITY</p> <p>August 5, 2005 JICA Study Team</p>	<p><b>1 . Work Progress</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Analysis of WACS result</li> <li><input type="checkbox"/> Preparation of RDF</li> <li><input type="checkbox"/> First participatory evaluation of PP.1 urgent improvement of UCDS together with press tour</li> <li><input type="checkbox"/> Preparation of first public hearing meeting</li> <li><input type="checkbox"/> Establishment of a monitoring committee for UCDS operation</li> <li><input type="checkbox"/> Preparation of current recycling system survey</li> <li><input type="checkbox"/> Database design and programming</li> <li><input type="checkbox"/> Study on institutional system improvement</li> <li><input type="checkbox"/> Conduct Topographic Survey for NEDS</li> <li><input type="checkbox"/> Construction of Weighbridge</li> </ul>	<p><b>2. Works for the Following Week</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Review of waste flow</li> <li><input type="checkbox"/> Preparation of RDF production</li> <li><input type="checkbox"/> Hold first public hearing meeting, on August 9</li> <li><input type="checkbox"/> Hold inauguration ceremony of five pilot projects, on August 9</li> <li><input type="checkbox"/> Conduct of current recycling system survey</li> <li><input type="checkbox"/> Database design and programming</li> <li><input type="checkbox"/> Study on institutional system improvement</li> <li><input type="checkbox"/> Conduct of topographic survey at NEDS</li> <li><input type="checkbox"/> Construction of weighbridge and on-site road</li> <li><input type="checkbox"/> Tender of soil investigation and water quality analysis</li> </ul>
<p><b>3. Subjects to be discussed</b></p> <ol style="list-style-type: none"> <li>I. Progress of PP.1 urgent improvement of UCDS</li> <li>II. Presentation of the first public hearing meeting</li> </ol>	<p><b>I. Progress of PP.1 urgent improvement of UCDS</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Alignment of Onsite Road</li> <li><input type="checkbox"/> Relocation of Concrete Fence</li> <li><input type="checkbox"/> Leveling for Car park area</li> <li><input type="checkbox"/> Weekly Site Meeting No1</li> </ul>	<p><b>II. Presentation of the first public hearing meeting</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Background of the Public Hearing Meeting</li> <li><input type="checkbox"/> Outline of the Development Projects of New NEDS and Recycling Complex</li> <li><input type="checkbox"/> Outline of the EIA Survey Plan</li> </ul>
<p><b>Technical Working Group Meeting (24)</b> for THE STUDY ON SOLID WASTE MANAGEMENT PLAN FOR ULAANBAATAR CITY</p> <p>August 12, 2005 JICA Study Team</p>	<p><b>1 . Work Progress</b></p> <ul style="list-style-type: none"> <li>① Review of waste flow</li> <li>② Preparation of RDF production</li> <li>③ Hold the first public hearing meeting</li> <li>④ Hold inauguration ceremony of pilot projects</li> <li>⑤ Conduct of current recycling system survey</li> <li>⑥ Database design and programming</li> <li>⑦ Study on institutional system improvement</li> <li>⑧ Construction of weighbridge and on-site road</li> <li>⑨ Sampling for Water Quality Analysis</li> <li>⑩ Start Registration of Waste Pickers</li> </ul>	<p><b>2. Works for the Following Week</b></p> <ul style="list-style-type: none"> <li>① Preparation of RDF production</li> <li>② Registration of Waste Pickers and Develop Database</li> <li>③ Preparation of Waste Educational Tools</li> <li>④ Preparation of PP (Public Consciousness)</li> <li>⑤ FS for NEDS</li> <li>⑥ Database design and programming for WB</li> <li>⑦ Analysis of Recycling Survey Results</li> <li>⑧ Water Quality Analysis</li> <li>⑨ Construction of weighbridge and on-site road</li> <li>⑩ Tender of soil investigation</li> </ul>

<p><b>3. Subjects to be discussed</b></p> <ol style="list-style-type: none"> <li>Some Remaining Institutional Issues</li> <li>Results of Monitoring Committee Meeting 1</li> <li>Waste Picker Registration/ Waste Picking Rules</li> </ol>	<p><b>1. Some Remaining Institutional Issues</b></p> <ol style="list-style-type: none"> <li><b>Strengthening CMPUD</b></li> <li><b>Restructuring Nuuts</b></li> <li><b>Strengthening MUB Professional Supervision Department</b></li> </ol>	<p><b>2. CMPUD Main Functions</b></p> <ol style="list-style-type: none"> <li>Prepare / implement annual SWM Programs - approval by Citizens' Representatives' Khural.</li> <li>Technical support to Waste Fund.</li> <li>Support / supervise Duureg contracting of private sector collection / transport services.</li> <li>Audit Duureg SWM cost statements.</li> <li>Supervise contract with Nuuts Company.</li> <li>Liaise with MUB's Professional Supervision Department.</li> <li>Direct SWM MIS requirements.</li> <li>Report to City Governor on SWM performance.</li> <li>Keep up to date with SWM international best practise.</li> <li>Continually seek improvements for SWM.</li> <li>Organise / carry out training for Duureg staff.</li> <li>Public education.</li> </ol>																		
<p><b>3. Proposed CMPUD Structure</b></p> 	<p><b>4. Restructuring Nuuts</b></p> <p>Nuuts is presently a small low-skill organisation</p> <p><b>Proposed Functions:</b></p> <ul style="list-style-type: none"> <li>NEW control house &amp; MIS for disposal</li> <li>NEW central vehicle services</li> <li>NEW recycling complex (sorting/RDF)</li> <li>NEW methods of disposal</li> </ul> <p>Not easy to absorb these...</p>	<p><b>5. Nuuts Restructuring Strategy</b></p> <p>To best handle new functions - change from:</p> <p>small low-skill organisation ↓ small high-skill organisation with outsourcing</p> <p>Because:</p> <ul style="list-style-type: none"> <li>easier to develop new capacity &amp; skills</li> <li>privatised operations will be more accountable / efficient</li> </ul>																		
<p><b>6. Proposed Nuuts Structure</b></p> 	<p><b>7. Strengthening Professional Supervision Department</b></p> <ul style="list-style-type: none"> <li>Increase MUB State Inspectors dedicated to waste issues to 3 (in Environmental Department of Environment and Infrastructure Supervision Division) - all financed from City Waste Fund.</li> </ul>	<p><b>② Results of Monitoring Committee Meeting No1</b></p>																		
<p><b>③ Introduction of Registration System and Waste Picking Rules at UCDS</b></p>	<p><b>Objectives of the Registration System</b></p> <p>to obtain the following information</p> <ul style="list-style-type: none"> <li>Number of adult and child waste pickers</li> <li>Basic information such as their address</li> <li>Forms of labor (seasonal change, full-time/part-time, and so on)</li> </ul> <p>Based on the obtained data, the database is developed. (Access)</p>	<p><b>Basic Policies</b></p> <ul style="list-style-type: none"> <li>not compulsory (even though they do not register, they can continue to work)</li> <li>The registration continues until the closure of UCDS. (new comers can register)</li> <li>The application is based on the family.</li> </ul> <p>When the new disposal site is open and provides new jobs, waste pickers who registered long will be given a priority.</p>																		
<p><b>Outline of Database</b></p> <p>consisting of two tables: Family data and individual data</p> <table border="1" data-bbox="240 1429 600 1570"> <thead> <tr> <th>Items of Family Data</th> <th colspan="2">Items of Individual Data</th> </tr> </thead> <tbody> <tr> <td>Family No.</td> <td>Individual No</td> <td>Starting year</td> </tr> <tr> <td>Registration date</td> <td>Family No</td> <td>Working period (seasonal change)</td> </tr> <tr> <td>Name of household head</td> <td>Registration date</td> <td>Working days per week</td> </tr> <tr> <td>Age and Sex</td> <td>Name of person who register</td> <td>Going to school (in case of children)</td> </tr> <tr> <td>Address</td> <td>Age and Sex</td> <td></td> </tr> </tbody> </table>	Items of Family Data	Items of Individual Data		Family No.	Individual No	Starting year	Registration date	Family No	Working period (seasonal change)	Name of household head	Registration date	Working days per week	Age and Sex	Name of person who register	Going to school (in case of children)	Address	Age and Sex		<p><b>Waste Picking Rules at the Sanitary Landfill Operation</b></p>	<p><b>Outline of Rules</b></p> <ul style="list-style-type: none"> <li>to separate working areas for waste pickers and heavy vehicles and rotate these areas periodically <ul style="list-style-type: none"> <li>Waste unloading area</li> <li>Waste picking area</li> <li>Waste leveling area</li> </ul> </li> </ul> <p>Waste Pickers are not allowed to enter in the Waste unloading area and Waste leveling area.</p>
Items of Family Data	Items of Individual Data																			
Family No.	Individual No	Starting year																		
Registration date	Family No	Working period (seasonal change)																		
Name of household head	Registration date	Working days per week																		
Age and Sex	Name of person who register	Going to school (in case of children)																		
Address	Age and Sex																			
<p><b>Why rules are necessary?</b></p> <ul style="list-style-type: none"> <li>It is impossible to implement sanitary landfill operation if waste pickers continue to work close with heavy vehicles</li> </ul> <p>Rules could also bring about:</p> <ul style="list-style-type: none"> <li>Decreasing the risk of accidents</li> <li>Improving working conditions for them (sanitary landfill operation could prevent or mitigate such problems as odor, fires, outbreak of vermin)</li> </ul>	<p><b>Waste Unloading Area</b> (waste pickers are not allowed to enter)</p> 	<p><b>Waste Picking Area</b> (after the waste unloading time finishes, they can start waste picking work)</p> 																		



<p><b>Waste Leveling Area</b> (after the waste picking time finishes, a bulldozer starts to do leveling work)</p> 	<p>◆ Detailed rules will be decided through trial and error.</p> <p>Rotation time depends on the number of collection vehicles per hour and how much waste pickers can wait patiently.</p>	<p><b>Thank You Very Much for your attention</b></p>																																										
<p><b>Technical Working Group Meeting (25)</b> for THE STUDY ON SOLID WASTE MANAGEMENT PLAN FOR ULAANBAATAR CITY</p> <p>August 19, 2005 JICA Study Team</p>	<p><b>1 . Work Progress</b></p> <ul style="list-style-type: none"><li>① Review of waste flow</li><li>② Preparation of RDF production</li><li>③ Registration of Waste Pickers and Develop Database</li><li>④ Preparation of Waste Educational Tools</li><li>⑤ FS for NEDS</li><li>⑥ Database design and programming for WB</li><li>⑦ Analysis of recycling survey results</li><li>⑧ Water Quality Analysis</li><li>⑨ Implementation of UCDS PP</li><li>⑩ Tender for Soil Investigation in NEDS</li></ul>	<p><b>2. Works for the Following Week</b></p> <ul style="list-style-type: none"><li>① Tender for RDF production</li><li>② Preparation of Waste Educational Tools</li><li>③ FS for NEDS</li><li>④ Factory Survey</li><li>⑤ Database design and programming for WB</li><li>⑥ Water Quality Analysis</li><li>⑦ Implementation of UCDS PP</li><li>⑧ Soil Investigation in NEDS</li><li>⑨ Time and Motion Survey</li><li>⑩ Preparation for Chirigami Kokan</li></ul>																																										
<p><b>3. Subjects to be discussed</b></p> <ul style="list-style-type: none"><li>① Progress of PP, Field Survey</li><li>② Results of WACS in summer</li><li>③ Results of Waste Pickers Registration</li><li>④ Follow Up Survey for Public Hearing Meeting No1</li><li>⑤ Base line survey for Public Consciousness</li></ul>	<p><b>1 . Progress of PP and Field Survey</b></p> <ul style="list-style-type: none"><li>□ Improvement of UCDS</li><li>□ RDF Trial</li><li>□ Sampling Point for Water Quality Survey and Soil Investigation</li></ul>	<p><b>Onsite Road</b></p> 																																										
<p><b>Enclosing Bank and Dam</b></p> 	<p><b>Enclosing Bank and Dam</b></p> 	<p><b>Warm Garage</b></p> 																																										
<p><b>Soil Cover</b></p> 	<p><b>Weigh Bridge ( Stove Construction)</b></p> 	<p><b>RDF Trial</b></p> 																																										
<p><b>Sampling Points</b></p> 	<p><b>2. Results of WACS in Summer</b></p>	<p><b>WACS Results (Both Seasons) Generation rate (1) Household</b></p> <table><thead><tr><th>Category</th><th>Unit</th><th>Summer season</th><th>Winter season</th></tr></thead><tbody><tr><td rowspan="3">Ger with collection</td><td>Coal ash</td><td>g/person/day</td><td>0</td></tr><tr><td>General</td><td>g/person/day</td><td>260</td></tr><tr><td>All</td><td>g/person/day</td><td>260</td></tr><tr><td rowspan="3">Ger without collection</td><td>Coal ash</td><td>g/person/day</td><td>0</td></tr><tr><td>General</td><td>g/person/day</td><td>170</td></tr><tr><td>All</td><td>g/person/day</td><td>170</td></tr><tr><td rowspan="3">Summer house</td><td>Coal ash</td><td>g/person/day</td><td>0</td></tr><tr><td>General</td><td>g/person/day</td><td>190</td></tr><tr><td>All</td><td>g/person/day</td><td>190</td></tr><tr><td>Apartment with dust chute</td><td>g/person/day</td><td>200</td><td>240</td></tr><tr><td>Apartment without dust chute</td><td>g/person/day</td><td>260</td><td>270</td></tr></tbody></table>	Category	Unit	Summer season	Winter season	Ger with collection	Coal ash	g/person/day	0	General	g/person/day	260	All	g/person/day	260	Ger without collection	Coal ash	g/person/day	0	General	g/person/day	170	All	g/person/day	170	Summer house	Coal ash	g/person/day	0	General	g/person/day	190	All	g/person/day	190	Apartment with dust chute	g/person/day	200	240	Apartment without dust chute	g/person/day	260	270
Category	Unit	Summer season	Winter season																																									
Ger with collection	Coal ash	g/person/day	0																																									
	General	g/person/day	260																																									
	All	g/person/day	260																																									
Ger without collection	Coal ash	g/person/day	0																																									
	General	g/person/day	170																																									
	All	g/person/day	170																																									
Summer house	Coal ash	g/person/day	0																																									
	General	g/person/day	190																																									
	All	g/person/day	190																																									
Apartment with dust chute	g/person/day	200	240																																									
Apartment without dust chute	g/person/day	260	270																																									

### Results in Household Wastes

1. There is no coal ash discharged from Ger Area in summer season
2. Generation rates in Apartment area and Ger area are almost same in summer season
3. Generation rate (without ash) in Ger area in summer is more than in winter. Hence vice versa in Apartment area.

### Generation rate (2) Other source

Category	Unit	Summer season	Winter season
Commercial	Restaurant	g/cha/day	270
	Other shop	g/employee/day	180
Institution	g/employee/day	180	130
Market	g/stall/day	1,720	850
Hotel	g/room/day	110	130
School	g/student/day	1.5	3.0
Roads and parks	gm <sup>2</sup> /day	11.3	3.0

### Results in other sources

- Big difference between summer and winter is;
- Market waste (summer/winter = 2.0)
- School waste (summer/winter = 0.5)
- Road/Park (summer/winter = 3.8)

### Physical composition (1) (wet base %)

Classification	Kitchen waste	Paper	Textile	Plastic	Food waste	Others	Total
Ger with collection	Summer	33.8	10.4	15.7	2.7	18.8	2.8
	Winter	25.0	22.5	2.1	0.0	10.8	0.7
Ger without collection	Summer	38.4	10.0	6.0	5.5	18.1	3.1
	Winter	25.3	10.2	6.4	4.0	15.3	0.0
Summer house	Summer	30.3	13.8	6.2	3.8	18.3	0.8
	Winter	38.4	8.4	8.4	0.1	13.3	0.1
Apartment without dust chute	Summer	40.6	21.6	6.1	1.0	18.1	0.0
	Winter	27.3	6.9	3.4	1.1	38.1	1.5
Apartment without dust chute	Summer	37.6	21.6	3.9	0.8	18.1	0.9
	Winter	43.9	15.4	8.3	1.6	11.7	0.3

### Physical composition (2) (wet base %)

Classification	Kitchen waste	Paper	Textile	Plastic	Food waste	Others	Total
Restaurant	Summer	55.2	6.4	1.4	0.5	19.7	0.0
	Winter	42.5	8.7	0.5	0.2	9.5	0.0
Other shop	Summer	5.4	41.7	1.8	2.8	22.7	1.2
	Winter	3.8	31.3	10.4	0.8	18.9	0.0
Institution	Summer	6.3	25.8	2.5	35.4	18.5	0.0
	Winter	10.6	23.6	4.7	0.1	20.1	0.0
Hotel	Summer	8.3	24.2	2.7	1.4	26.4	3.6
	Winter	4.7	29.4	1.2	0.1	30.6	0.0
Road	Summer	16.6	17.8	0.0	1.6	21.2	0.7
	Winter	14.2	36.8	4.1	1.3	21.3	0.1
School	Summer	2.7	28.1	8.1	15.5	18.4	6.8
	Winter	6.1	25.1	1.6	4.0	13.6	0.0

### Physical composition (3) (wet base %)

Classification	Kitchen waste	Paper	Textile	Plastic	Food waste	Others	Total
Market (Street vendor)	Summer	11.7	48.6	4.9	2.4	29.9	0.0
	Winter	2.4	27.0	2.1	0.3	29.7	0.0
Meat	Summer	17.4	16.1	1.7	0.2	12.1	0.0
	Winter	30.7	0.7	1.5	0.4	3.1	0.0
Fruit	Summer	41.2	48.6	1.6	0.1	10.8	0.0
	Winter	73.1	12.4	0.0	0.0	13.3	0.0
Vegetable	Summer	88.3	8.6	0.1	0.0	4.2	0.0
	Winter	77.2	7.0	0.0	0.0	0.6	0.0
Dairy products	Summer	23.4	21.9	4.1	0.7	36.4	0.0
	Winter	37.1	16.0	0.0	0.0	36.9	0.0
Other	Summer	20.3	24.6	0.6	6.1	28.1	0.1
	Winter	23.2	19.9	0.5	0.4	49.5	0.0

### Results in Physical Composition

1. Generally, generation in kitchen wastes and paper wastes is more in summer
2. Proportion of paper and plastic wastes is high as same as winter

### Items for Estimated Generation

Household	Ger Area	Whole Population (Statistical Hand book)
Commercial	Apartment	Estimated population
	Restaurant	Nos. of Restaurant Nos. of Chair of each all restaurants
Public Institution, Office	Other Shop	Nos. of Other shop Nos. of Employee
		Nos. of Institution and office Nos. of Employee
Market		Nos. of Market Nos. of stall
		Nos. of Hotel Nos. of Room
School		Nos. of School Nos. of Student for every school
		Area and Length of road cleansing.

### Estimated Waste Flow on the All season

- Following criteria will be set in order to establish annual waste flow.
- Summer season : June – September  
→ 4 months
- Winter season : October – May  
→ 8 months  
(same as operation period of Heating plant)
- Example : Dairy Waste generation Amount (All season)  
(261.6 ton/day × 4 + 552.8 ton/day × 8)/12  
= 455.7 ton/day

### Waste generation amount of municipal solid waste (1)

Waste Type	Unit	Number of Generation Sources	Season	Generation rate	Generation Amount (ton/day)
Household Waste	Apartment area	g/person/day	Summer	228	192.7
			Winter	256	115.4
	Ger area	g/person/day	Summer	292	84.8
			Winter	163	67.8
	Commercial area	g/employee/day	Summer	0	0
			Winter	788	327.8
Commercial Waste	Restaurant	g/cha/day	Summer	278	11.3
			Winter	250	10.5
Other shop	g/employee/day	3,009	Summer	1,649	4.8
			Winter	1,200	3.6

### Waste generation amount of municipal solid waste (2)

Waste Type	Unit	Number of Generation Sources	Season	Generation rate	Generation Amount (ton/day)
Market Waste	g/stall/day	4,354	Summer	1,720	7.5
			Winter	850	3.7
School Waste	g/student/day	271,379	Summer	1.5	0.4
			Winter	3.0	0.8
Hotel Waste	g/room/day	11,506	Summer	110	1.3
			Winter	130	1.5
Office Waste	g/employee/day	105,376	Summer	180	19.9
			Winter	130	13.7
Road cleansing Waste	gm <sup>2</sup> /day	2,682,862	Summer	11.3	30.1
			Winter	3.0	8.0
Total				Summer season	261.6
				Winter season	552.8

### Waste generation amount

- waste generation amount
- winter season : 552.8 ton/day
- summer season : 261.2 ton/day
- Wastes in summer is around half of in Winter due to ash for heating

### Result of Registration








#### Result of Registration (1)

Number of registered families: 148






Duureg	Bayangol	Bayanzurh	Songinohairhan	Suhbaatar	Total
Total	2	3	140	3	148

In Songinohairhan

Khoroo in Songinohairhan											total
1	2	3	4	5	6	7	8	10	14		
3	1	26	54	7	4	41	1	1	2	140	

<p><b>Targets</b></p> <ul style="list-style-type: none"> <li>■ Participants of 1<sup>st</sup> Public hearing</li> <li>■ Those who live near the project site</li> </ul> <p>Around 30 samples will be selected.</p>	<p><b>Contents of Questionnaire</b></p> <ul style="list-style-type: none"> <li>■ Preliminary knowledge on the hearing</li> <li>■ Opinions about the contents and methods of presentations</li> <li>■ Level of understandings about the development plan and EIA survey</li> <li>■ Opinions about the development plan</li> </ul>	<p><b>Baseline Survey for Pilot Project of Public Consciousness</b></p>
<p><b>Purpose</b></p> <ul style="list-style-type: none"> <li>■ To obtain the basic information on behaviors of discharging waste and level of awareness regarding problems caused by illegal dumping</li> <li>■ To obtain their opinion about the current collection service</li> <li>■ To obtain their opinion about illegal dumping</li> </ul> <p>The result will be reflected in the plan of community meetings and used for the evaluation of the pilot project.</p>	<p><b>Targets</b></p> <ul style="list-style-type: none"> <li>■ Whole household in Khoroo 4 (40-50 samples will be selected randomly)</li> </ul> <p><b>Contents of Questionnaire</b></p> <ul style="list-style-type: none"> <li>■ Awareness on problems caused by improper waste management in particular illegal dumping</li> <li>■ Behaviors of waste management</li> <li>■ Opinions about the collection service</li> </ul>	<p><b>Thank You Very Much for your attention</b></p>
<p><b>Technical Working Group Meeting (26)</b> for THE STUDY ON SOLID WASTE MANAGEMENT PLAN FOR ULAANBAATAR CITY</p> <p>August 26, 2005 JICA Study Team</p>	<p><b>1 . Work Progress</b></p> <ul style="list-style-type: none"> <li>① Tender for RDF production</li> <li>② Tender for Waste Educational Tools</li> <li>③ Baseline survey for public consciousness of SWM</li> <li>④ Training of Sanitary Landfilling for Noots Staff</li> <li>⑤ FS for NEDS</li> <li>⑥ Preparation for Factory Survey</li> <li>⑦ Database design and programming for WB</li> <li>⑧ Water Quality Analysis and Soil Investigation in NEDS</li> <li>⑨ Implementation of UCDS PP</li> <li>⑩ Time and Motion Survey</li> <li>⑪ Preparation for Chirigami Kokan</li> </ul>	<p><b>2. Works for the Following Week</b></p> <ul style="list-style-type: none"> <li>① Preparation of RDF production</li> <li>② Preparation of Waste Educational Tools</li> <li>③ Waste Pickers Meetings</li> <li>④ FS for NEDS</li> <li>⑤ Factory Survey</li> <li>⑥ Database design and programming for WB</li> <li>⑦ Water Quality Analysis and Soil Investigation for NEDS</li> <li>⑧ Implementation of UCDS PP</li> <li>⑨ Time and Motion Survey</li> <li>⑩ Preparation for Chirigami Kokan</li> <li>⑪ Preparation for Construction Waste Survey</li> </ul>
<p><b>3. Subjects to be discussed</b></p> <ul style="list-style-type: none"> <li>① Progress of PP, Field Survey</li> <li>② Comparison of WACS results with WHO's survey</li> <li>③ FS for NEDS</li> <li>④ Prevention of Illegal Dump Campaign</li> </ul>	<p><b>1 . Progress of PP and Field Survey</b></p> <ul style="list-style-type: none"> <li>□ Improvement of UCDS</li> <li>□ RDF Production</li> <li>□ Soil Investigation</li> </ul>	
<p><b>Weighbridge Control Building</b></p> 	<p><b>Warm Garage</b></p> 	<p><b>En closing Dam</b></p> 
<p><b>Cleaning Access Road</b></p> 	<p><b>RDF Production Equipment</b></p> 	<p><b>RDF Trial</b></p> 



<div>Soil Investigation in NEDS</div> <div></div>	<div>Soil Sample</div> <div></div>	<div>2. Comparison of WACS Result (WHO and JICA)</div>																																																																			
<div>WHO Survey</div> <div><div>1. This survey was carried out to determine Final Disposal Amount and not for Waste Generation Amount (Survey at UCDS and MDDS)</div><div>2. This survey was carried out only in summer and estimate whole year</div><div>3. This survey was carried out in 2002</div></div>	<div>Comparison of Both Survey Results</div> <div><table><tr><th>Source</th><th>WHO (Ton/year)</th><th>JICA (Ton/year)</th></tr><tr><td>Apartment</td><td>31,098</td><td>40,534</td></tr><tr><td>Ger</td><td>47,129</td><td>105,444</td></tr><tr><td>Office, Shop, Restaurants</td><td>16,277</td><td>13,662</td></tr><tr><td>Street Cleaning</td><td>2,624</td><td>5,683</td></tr><tr><td>Hospitals</td><td>413</td><td>-</td></tr><tr><td>Total</td><td>97,540</td><td>165,323</td></tr></table></div>	Source	WHO (Ton/year)	JICA (Ton/year)	Apartment	31,098	40,534	Ger	47,129	105,444	Office, Shop, Restaurants	16,277	13,662	Street Cleaning	2,624	5,683	Hospitals	413	-	Total	97,540	165,323	<div>Composition for Apartment Waste</div> <div><table><tr><th rowspan="2"></th><th rowspan="2">WHO (%)</th><th colspan="2">JICA (%)</th></tr><tr><th>Summer</th><th>Winter</th></tr><tr><td>Kitchen Waste</td><td>43.8</td><td>40.6</td><td>27.3</td></tr><tr><td>Paper</td><td>20.9</td><td>21.6</td><td>6.9</td></tr><tr><td>Textile</td><td></td><td>6.1</td><td>3.4</td></tr><tr><td>Wood and Grass</td><td></td><td>1.0</td><td>1.1</td></tr><tr><td>Plastic</td><td>16.2</td><td>15.1</td><td>36.1</td></tr><tr><td>Rubber and Leather</td><td></td><td>0</td><td>1.5</td></tr><tr><td>Metal</td><td>3.7</td><td>1.5</td><td>4.1</td></tr><tr><td>Glass</td><td>9.3</td><td>6.2</td><td>13.0</td></tr><tr><td>Ceramic, Soil</td><td></td><td>2.9</td><td>1.2</td></tr><tr><td>Others</td><td>6.2</td><td>0</td><td>5.4</td></tr></table></div>		WHO (%)	JICA (%)		Summer	Winter	Kitchen Waste	43.8	40.6	27.3	Paper	20.9	21.6	6.9	Textile		6.1	3.4	Wood and Grass		1.0	1.1	Plastic	16.2	15.1	36.1	Rubber and Leather		0	1.5	Metal	3.7	1.5	4.1	Glass	9.3	6.2	13.0	Ceramic, Soil		2.9	1.2	Others	6.2	0	5.4
Source	WHO (Ton/year)	JICA (Ton/year)																																																																			
Apartment	31,098	40,534																																																																			
Ger	47,129	105,444																																																																			
Office, Shop, Restaurants	16,277	13,662																																																																			
Street Cleaning	2,624	5,683																																																																			
Hospitals	413	-																																																																			
Total	97,540	165,323																																																																			
	WHO (%)	JICA (%)																																																																			
		Summer	Winter																																																																		
Kitchen Waste	43.8	40.6	27.3																																																																		
Paper	20.9	21.6	6.9																																																																		
Textile		6.1	3.4																																																																		
Wood and Grass		1.0	1.1																																																																		
Plastic	16.2	15.1	36.1																																																																		
Rubber and Leather		0	1.5																																																																		
Metal	3.7	1.5	4.1																																																																		
Glass	9.3	6.2	13.0																																																																		
Ceramic, Soil		2.9	1.2																																																																		
Others	6.2	0	5.4																																																																		
<div>Composition for Ger Waste</div> <div><table><tr><th rowspan="2"></th><th rowspan="2">WHO (%)</th><th colspan="2">JICA (%)</th></tr><tr><th>Summer</th><th>Winter</th></tr><tr><td>Kitchen Waste</td><td>16.6</td><td>33.6</td><td>12.5</td></tr><tr><td>Paper</td><td>4.0</td><td>10.4</td><td>5.2</td></tr><tr><td>Textile</td><td></td><td>15.7</td><td>2.0</td></tr><tr><td>Wood and Grass</td><td></td><td>2.7</td><td>0.5</td></tr><tr><td>Plastic</td><td>5.8</td><td>18.8</td><td>7.8</td></tr><tr><td>Rubber and Leather</td><td></td><td>3.6</td><td>0.2</td></tr><tr><td>Metal</td><td>1.9</td><td>1.6</td><td>1.5</td></tr><tr><td>Glass</td><td>4.2</td><td>5.8</td><td>5.5</td></tr><tr><td>Ceramic, Soil</td><td></td><td>5.8</td><td>1.9</td></tr><tr><td>Others</td><td>0.0</td><td>2.0</td><td>2.7</td></tr><tr><td>Sub</td><td>67.5</td><td>0.0</td><td>60.2</td></tr></table></div>		WHO (%)	JICA (%)		Summer	Winter	Kitchen Waste	16.6	33.6	12.5	Paper	4.0	10.4	5.2	Textile		15.7	2.0	Wood and Grass		2.7	0.5	Plastic	5.8	18.8	7.8	Rubber and Leather		3.6	0.2	Metal	1.9	1.6	1.5	Glass	4.2	5.8	5.5	Ceramic, Soil		5.8	1.9	Others	0.0	2.0	2.7	Sub	67.5	0.0	60.2	<div>Feasibility Study for NEDS</div> <div><div>Layout of Facilities</div></div>	<div>NEDS Phase1</div> <div></div>																	
			WHO (%)	JICA (%)																																																																	
	Summer	Winter																																																																			
Kitchen Waste	16.6	33.6	12.5																																																																		
Paper	4.0	10.4	5.2																																																																		
Textile		15.7	2.0																																																																		
Wood and Grass		2.7	0.5																																																																		
Plastic	5.8	18.8	7.8																																																																		
Rubber and Leather		3.6	0.2																																																																		
Metal	1.9	1.6	1.5																																																																		
Glass	4.2	5.8	5.5																																																																		
Ceramic, Soil		5.8	1.9																																																																		
Others	0.0	2.0	2.7																																																																		
Sub	67.5	0.0	60.2																																																																		
<div>Completion of NEDS (2020)</div> <div></div>	<div>4. Campaign on Prevention of Illegal Dump</div> <div><div>Location : Khoroo 3,4 in Songinokhairhan</div><div>Date : End of September</div><div>Role of MUB, Noots, Residents, JICA</div></div>	<div>Thank You Very Much for your attention</div>																																																																			
<div>Technical Working Group Meeting (27) for THE STUDY ON SOLID WASTE MANAGEMENT PLAN FOR ULAANBAATAR CITY</div> <div>September 2, 2005 JICA Study Team</div>	<div>1 . Work Progress</div> <div><div>Preparation of RDF production</div><div>Preparation of Waste Educational Tools</div><div>Waste Pickers Meetings No1</div><div>FS for NEDS</div><div>Factory Survey</div><div>Database design and programming for WB</div><div>Water Quality Analysis and Soil Investigation for NEDS</div><div>Implementation of UCDS PP</div><div>Time and Motion Survey</div><div>Preparation for Chirigami Kokan</div><div>Preparation for Construction Waste Survey</div></div>	<div>2. Works for the Following Week</div> <div><div>Production of RDF production</div><div>Waste Educational Tools-1, Leaflet</div><div>Follow Up Survey for Public Hearing</div><div>FS for NEDS</div><div>Factory Survey</div><div>Database design and programming for WB</div><div>Water Quality Analysis and Soil Investigation for NEDS</div><div>Implementation of UCDS PP</div><div>Time and Motion Survey</div><div>Preparation for Chirigami Kokan</div><div>Tender for Construction Waste Survey</div></div>																																																																			
<div>3. Subjects to be discussed</div> <div><div>Progress of PP</div><div>Use of WACS Results for SWM -1 ( Selection of Area for Chirigami Kokan )</div><div>Waste Pickers Meeting No1</div><div>Community Meeting for Khoroo No4</div></div>	<div>1 . Progress of PP</div> <div><div>Improvement of UCDS</div><div>RDF Production</div><div>Chirigami Kokan</div></div>	<div></div>																																																																			