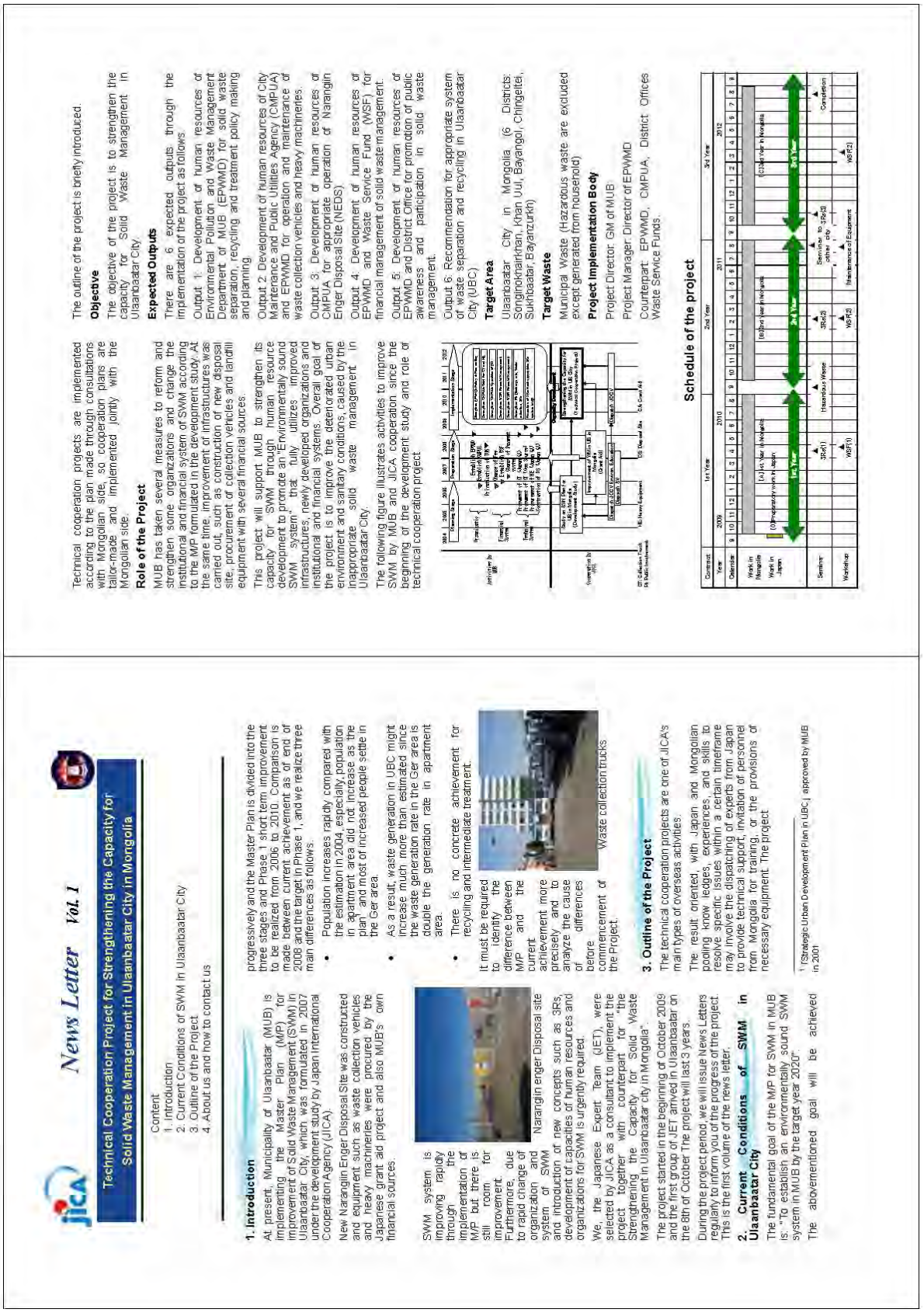
SECTION J Public Relations

J Public Relations

J.1 Newsletter No.1



Technical Cooperation Project for Strengthening the Capacity for Solid Waste Management in Ulaanbaatar City in Mongolia

News Letter Vol. 1

Content
1. Introduction
2. Current Conditions of SWM in Ulaanbaatar City
3. Outline of the Project
4. About us and how to contact us

1. Introduction

At present, Municipality of Ulaanbaatar (MUB) is implementing the Master Plan (MP) for improvement of Solid Waste Management (SWM) in Ulaanbaatar City, which was formulated in 2007 under the development study by Japan International Cooperation Agency (JICA).

New Nariangin Enger Disposal Site was constructed and equipment such as waste collection vehicles and heavy machineries were procured by the Japanese grant aid project and also MUB's own financial sources.

SWM system is improving rapidly through the implementation of M/P but there is still room for improvement. Furthermore, due to rapid change of organization and system of SWM and introduction of new concepts such as 3Rs, development of capacities of human resources and organizations for SWM is urgently required.

We, the Japanese Expert Team (JET), were selected by JICA as a consultant to implement the project together with counterpart for "the Strengthening the Capacity for Solid Waste Management in Ulaanbaatar city in Mongolia".

The project started in the beginning of October 2009 and the first group of JET arrived in Ulaanbaatar on the 8th of October The project will last 3 years.

During the project period, we will issue News Letters regularly to inform you of the progress of the project. This is the first volume of the news letter.

2. Current Conditions of SWM in Ulaanbaatar City

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".

The abovementioned goal will be achieved progressively and the Master Plan is divided into the three stages and Phase 1 short term improvement to be realized from 2006 to 2010. Comparison is made between current achievement as of end of 2008 and the target in Phase 1, and we realize three main differences as follows.

- Population increases rapidly compared with the estimation in 2004, especially, population in apartment area did not increase as the plan[1] and most of increased people settle in the Ger area.
- As a result, waste generation in UBC might increase much more than estimated since the waste generation rate in the Ger area is double the generation rate in apartment area.
- There is no concrete achievement for recycling and intermediate treatment.

It must be required to identify the difference between M/P and the current achievement more precisely and to analyze the cause of differences before commencement of the Project.

Waste collection trucks

3. Outline of the Project

The technical cooperation projects are one of JICA's main types of overseas activities.

The result oriented, with Japan and Mongolian pooling know ledges, experiences, and skills to resolve specific issues within a certain timeframe may involve the dispatching of experts from Japan to provide technical support, invitation of personnel from Mongolia for training, or the provisions of necessary equipment. The project

[1] "Strategic Urban Development Plan in UBC-j approved by MUB in 2001

The outline of the project is briefly introduced.

Objective

The objective of the project is to strengthen the capacity for Solid Waste Management in Ulaanbaatar City.

Expected Outputs

There are 6 expected outputs through the implementation of the project as follows:

Output 1: Development of human resources of Environmental Pollution and Waste Management Department of MUB (EPWMD) for solid waste separation, recycling and treatment policy making and planning.

Output 2: Development of human resources of City Maintenance and Public Utilities Agency (CMPUA) and EPWMD for operation and maintenance of waste collection vehicles and heavy machineries.

Output 3: Development of human resources of CMPUA for appropriate operation of Nariangin Enger Disposal Site (NEDS).

Output 4: Development of human resources of EPWMD and Waste Service Fund (WSF) for financial management of solid waste management.

Output 5: Development of human resources of EPWMD and District Office for promotion of public awareness and participation in solid waste management.

Output 6: Recommendation for appropriate system of waste separation and recycling in Ulaanbaatar City (UBC)

Target Area

Ulaanbaatar City in Mongolia (6 Districts: Songinokhairkhan, Khan Uul, Bayangol, Chingeltei, Sukhbaatar, Bayanzurkh)

Target Waste

Municipal Waste (Hazardous waste are excluded except generated from household)

Project Implementation Body

Project Director: GM of MUB

Project Manager: Director of EPWMD

Counterpart: EPWMD, CMPUA, District Offices Waste Service Funds.

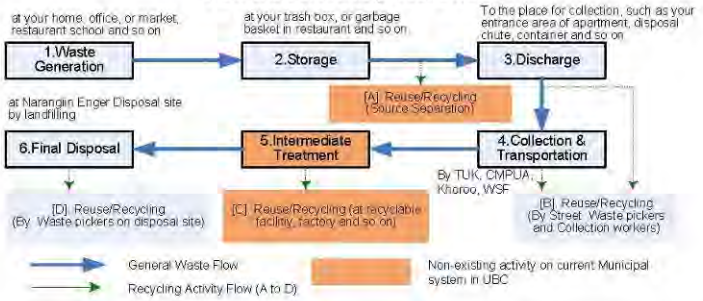
Schedule of the project

Additional Topic: *What is Waste?*

Waste is generated everywhere and everyday in our daily life and we are familiar with the issue of waste. Actually, however, we do not know the details, e.g. how our waste is transported and disposed of at the final disposal site, how much waste is generated every day, and so on. In our newsletter, we will introduce Waste Systems in serial form, so that you can have a clearer image of waste systems.

There are several steps from waste generation to final disposal as shown in the figure below. And we will try to explain each step one by one according to the flow chart.

Flow chart of municipal solid waste



1. Waste Generation

Waste is unwanted materials left over from any human activity.[2] In other words, as long as there are human beings, waste is generated. This is the starting point of SWM and it is one of the most important steps in achieving sustainable SWM.

Amount of waste generation is increasing along with economic development and materialized societies. Recently in developed countries, they are reviewing their lifestyle based on mass production and mass consumption and are trying to create a society which generates as little waste as possible.

On the other hand, the traditional "nomadic" Mongolian lifestyle can be said to be one of the most eco friendly lifestyles, generating minimal waste that can be degraded easily to the soil. It is difficult to revert to the nomadic life, but it is important to respect your ancestors' way of living.

2. Storage

Storage is not so familiar wording to you, but it is the step where waste is generated from human activities and kept in dustbins in your houses, shops or restaurants before being discharged.

This is a necessary step to keep public areas clean such as your streets, surrounding of your living premises and so on. Important issue is to keep your waste in your storage facilities as long as possible to prevent the waste being in public areas for too long.

Dust chute system is common in your old apartments. It is convenient for residents as you do not need to store the waste in your houses and you can discharge it whenever you want. But on the other hand, waste is stored a long time in the dust chute and conditions are unsanitary, especially in summer, and fires occur sometimes. Thus, apartments with dust chutes are decreasing in developed countries.

In order to keep the waste in your storage facilities and reduce the time it is exposed in public areas, punctual collection of waste is essential.

[A]. Reuse/Recycling (Source Separation)

To separate waste at the step of storage in your premises into recyclables and others is called "source separation." Separate collection system will be introduced such that Wednesday is the day for collecting recyclables only. This source separation is an effective way for recovering recyclables with additional effort by the residents. It is much more sanitary and safer than waste pickers recovering recyclables at disposal sites.

We have conducted pilot projects in Chingeltei district khoroo no. 3 in 2006 and it proved that this system is applicable to your UB city. This step is one of the main targets to be achieved in the project, thus, we will explain details in due course.

…We will show other steps on next newsletter, so please check it out !

[2] Key Glossary edited by the World Bank

4. About us and how to contact us

About us and organizational structure of the project

At first, we would like to introduce the Japanese expert team members. The Team consists of 7 people with different assignments as shown below. In addition, Mongolian assistants are working for the project at present.

Assignment	Name
Team Leader / SWM / Financial Management 2	Mr. Ichiro Kono
Maintenance of Equipment	Mr. Koji Uzawa
Collection and transportation	Mr. Junji Anai
Landfill Management	Mr. Hiroshi Fujita
Financial Management 1	Mr. Susumu Shimura
Public Awareness	Ms. Yuko Aoki
Waste separation and Recycling	Ms. Mie Nagayasu
Coordinator	Mr. Shinnosuke ODA

Our counter part organization is Ulaanbaatar City. 10 officers were selected as the counterpart members and are working for the project with us.

Field	Name
1.Policy making and planning	1. EPWMD(S.Ariguun) 2. CMPUA (N.Altangerel),
2.Operation and Maintenance of Equipment	1. CMPUA (G.Damdinsuren) 2. EPWMD (T.Enkh-Amgalan) 3. District Offices(*1)
3.Operation of NEDS	1. CMPUA (V.Davaabaatar) 2. EPWMD (H.Ganbaatar)
4.Waste Service Fund	1. EPWMD (Z.Munguntzul) 2. District WSF (*2)
5.Public awareness raising	1. EPWMD (E.Batbileg) 2. District Offices(*1)
6. Waste separation and recycling	1. EPWMD (O.Odjargal) 2. CMPUA (E.Iderchuluun)

*1: to be appointed at later stage
*2: to be appointed in case district WSF exists.

As already mentioned, it is necessary to make a broad consensus with all the organizations and individuals concerned in order to improve the solid waste management systems here. To achieve a broad consensus, both the Japanese and Mongolian side agreed to form the Joint Coordinating Committee (JCC).

The members of the JCC are officers in charge of SWM in each organization, and its main roles are to monitor and evaluate the progress of the project. The JCC members are shown in the following table.

JCC Members

Organization	Department
Ministry of Finance	Development of Financing and Cooperation
Ministry of Nature, Environment and Tourism	Sustainable Development and Strategy Planning Department
Ministry of Health	Public Health Policy and Implementation Coordination Department
Municipality of Ulaanbaatar	Environmental Pollution and Waste Management Department
Municipality of Ulaanbaatar	City Maintenance and Public Utility Agency
Capital City's Special Inspection Agency	
JICA Mongolia Office	
JICA Expert Team	
Embassy of Japan in Mongolia	

How to contact us

Our office is located in the building of City CMPUA,

The phone and fax number are shown below. You can contact us by phone and fax.

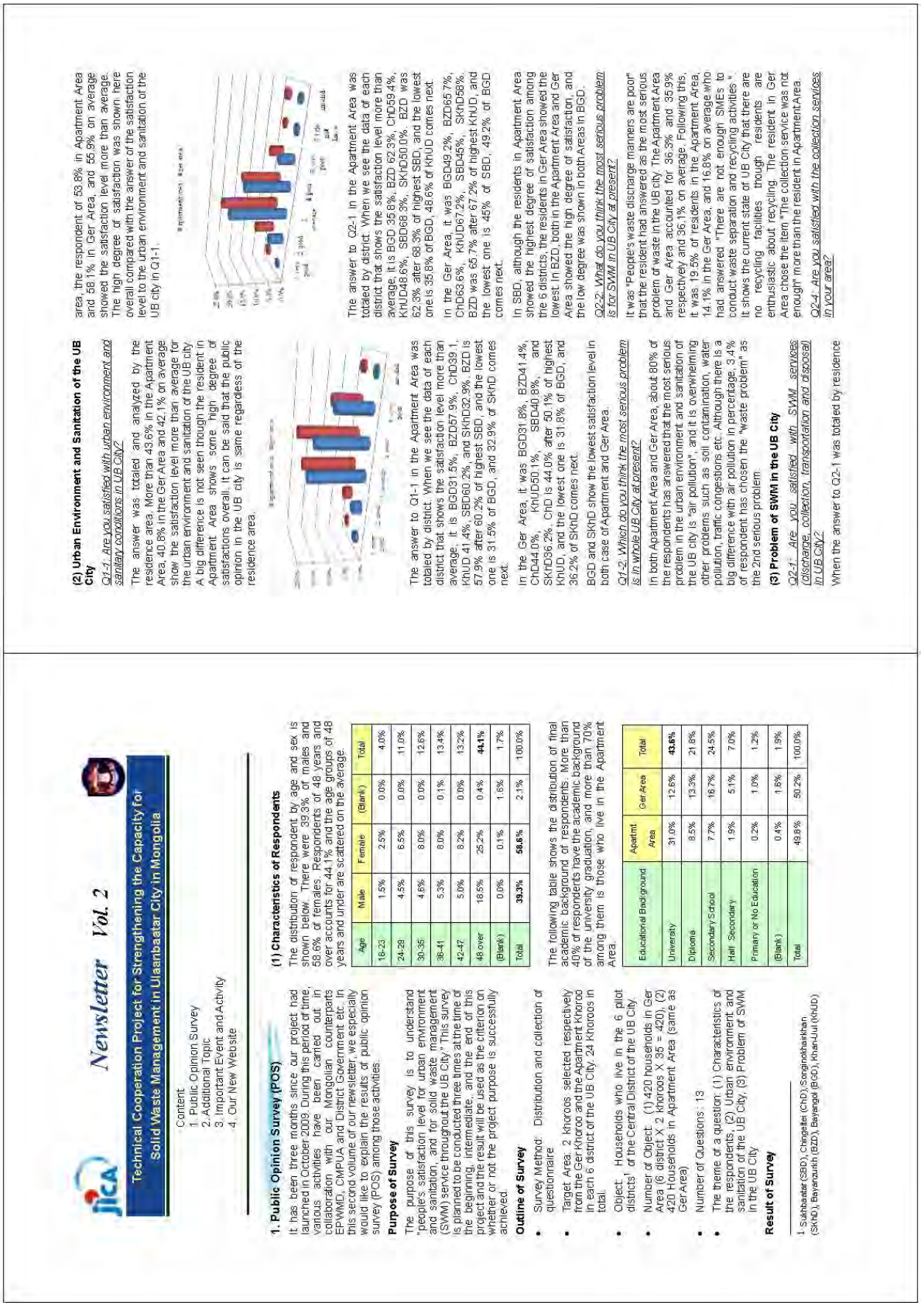
In addition, we have a plan to open a web site soon. You will be able to contact us through the internet. We will also inform the progress of the project on the web site, as well as in the news letter. The news letter and some of the documents will be able to be downloaded from the web site. We also have a plan to distribute the news letter by e-mail. We will inform how to subscribe to the news letter by email soon after we deicide the details.

On the other hand, it is very important for us to know the opinions and ideas all the citizens and organizations about the current solid waste management systems in Ulaanbaatar. Your opinions and comments on the project are always welcome. We hope that we could actively exchange opinions and comments with you through the news letter and web site.

JICA Expert Team for
The Technical Cooperation Project for
The Strengthening the Capacity for Solid Waste Management in Ulaanbaatar City in Mongolia

[Office]
C/O CMPUA
Bumtsend Street-68, Khoroo 6,
Chingeltei District, Ulaanbaatar, Mongolia
TEL. 011-327128
FAX. 011-323128

J.2 Newsletter No.2



Technical Cooperation Project for Strengthening the Capacity for Solid Waste Management in Ulaanbaatar City in Mongolia

Newsletter Vol. 2

Content
1. Public Opinion Survey
2. Additional Topic
3. Important Event and Activity
4. Our New Website

1. Public Opinion Survey (POS)

It has been three months since our project had launched in October 2009. During this period of time, various activities have been carried out in collaboration with our Mongolian counterparts EPWMD, CMPUA and District Government etc. In this second volume of our newsletter, we especially would like to explain the results of public opinion survey (POS) among those activities.

Purpose of Survey

The purpose of this survey is to understand "people's satisfaction level for urban environment and sanitation, and for solid waste management (SWM) service throughout the UB City." This survey is planned to be conducted three times at the time of the beginning, intermediate, and the end of this project and the result will be used as the criterion on whether or not the project purpose is successfully achieved.

Outline of Survey

- Survey Method: Distribution and collection of questionnaire
- Target Area: 2 khoroos selected respectively from the Ger Khoroo and the Apartment Khoroo in each 6 district of the UB City. 24 khoroos in total.
- Object: Households who live in the 6 pilot districts[1] of the Central District of the UB City
- Number of Object: (1) 420 households in Ger Area (6 district X 2 khoroos X 35 = 420), (2) 420 Households in Apartment Area (same as Ger Area)
- Number of Questions: 13
- The theme of a question: (1) Characteristics of the respondents, (2) Urban environment and sanitation of the UB City, (3) Problem of SWM in the UB City

Result of Survey

1: Sukhbaatar (SBD), Chingeltei (ChD), Songinokhairkhan (SKhD), Bayanzurkh (BZD), Bayangol (BGD), Khan-Uul (KhUD)

(1) Characteristics of Respondents

The distribution of respondent by age and sex is shown below. There were 39.3% of males and 58.6% of females. Respondents of 48 years and over accounts for 44.1% and the age groups of 48 years and under are scattered on the average.

Age	Male	Female	(Blank)	Total
18-23	1.5%	2.5%	0.0%	4.0%
24-29	4.5%	6.5%	0.0%	11.0%
30-35	4.6%	8.0%	0.0%	12.6%
36-41	5.3%	8.0%	0.1%	13.4%
42-47	5.0%	8.2%	0.0%	13.2%
48 over	18.5%	25.2%	0.4%	**44.1%**
(Blank)	0.0%	0.1%	1.8%	1.7%
Total	**39.3%**	**58.6%**	2.1%	100.0%

The following table shows the distribution of final academic background of respondents. More than 40% of respondents have the academic background of the university graduation, and more than 70% among them is those who live in the Apartment Area.

Educational Background	Apartmt Area	Ger Area	Total
University	31.0%	12.6%	**43.6%**
Diploma	8.5%	13.3%	21.8%
Secondary School	7.7%	16.7%	24.5%
Half Secondary	1.9%	5.1%	7.0%
Primary or No Education	0.2%	1.0%	1.2%
(Blank)	0.4%	1.6%	1.9%
Total	49.8%	50.2%	100.0%

(2) Urban Environment and Sanitation of the UB City

Q1-1: Are you satisfied with urban environment and sanitary conditions in UB City?

The answer was totaled and analyzed by the residence area. More than 43.6% in the Apartment Area, 40.8% in the Ger Area and 42.1% on average show the satisfaction level more than average for the urban environment and sanitation of the UB city. A big difference is not seen though the resident in Apartment Area shows some high degree of satisfactions overall. It can be said that the public opinion in the UB city is same regardless of the residence area.

The answer to Q1-1 in the Apartment Area was totaled by district. When we see the data of each district that shows the satisfaction level more than average, it is BGD31.5%, BZD57.9%, ChD39.1, KhUD 41.4%, SBD60.2%, and SKhD32.9%. BZD is 57.9% after 60.2% of highest SBD, and the lowest one is 31.5% of BGD, and 32.9% of SKhD comes next.

In the Ger Area, it was BGD31.8%, BZD41.4%, ChD44.0%, KhUD50.1%, SBD40.8%, and SKhD36.2%. ChD is 44.0% after 50.1% of highest KhUD, and the lowest one is 31.8% of BGD, and 36.2% of SKhD comes next.

BGD and SKhD show the lowest satisfaction level in both case of Apartment and Ger Area.

Q1-2: Which do you think the most serious problem is in whole UB City at present?

In both Apartment Area and Ger Area, about 80% of the respondents has answered that the most serious problem in the urban environment and sanitation of the UB city is "air pollution", and it is overwhelming other problems such as soil contamination, water pollution, traffic congestions etc. Although there is a big difference with air pollution in percentage, 3.4% of respondent has chosen the "waste problem" as the 2nd serious problem.

(3) Problem of SWM in the UB City

Q2-1: Are you satisfied with SWM services (discharge, collection, transportation and disposal) in UB City?

When the answer to Q2-1 was totaled by residence area, the respondent of 53.8% in Apartment Area and 58.1% in Ger Area, and 55.9% on average showed the satisfaction level more than average. The high degree of satisfaction was shown here overall compared with the answer of the satisfaction level to the urban environment and sanitation of the UB city in Q1-1.

The answer to Q2-1 in the Apartment Area was totaled by district. When we see the data of each district that shows the satisfaction level more than average, it is BGD 35.8%, BZD 62.3%, ChD59.4%, KhUD48.6%, SBD68.3%, SKhD50.0%. BZD was 62.3% after 68.3% of highest SBD, and the lowest one is 35.8% of BGD, 48.6% of KhUD comes next.

In the Ger Area, it was BGD49.2%, BZD65.7%, ChD63.6%, KhUD67.2%, SBD45%, SKhD58%. BZD was 65.7% after 67.2% of highest KhUD, and the lowest one is 45% of SBD, 49.2% of BGD comes next.

In SBD, although the residents in Apartment Area showed the highest degree of satisfaction among the 6 districts, the residents in Ger Area showed the lowest. In BZD, both in the Apartment Area and Ger Area showed the high degree of satisfaction, and the low degree was shown in both Areas in BGD.

Q2-2: What do you think the most serious problem is for SWM in UB City at present?

It was "People's waste discharge manners are poor" that the resident had answered as the most serious problem of waste in the UB city. The Apartment Area and Ger Area accounted for 36.3% and 35.9% respectively and 36.1% on average. Following this, it was 19.5% of residents in the Apartment Area, 14.1% in the Ger Area, and 16.8% on average who had answered "There are not enough SMEs to conduct waste separation and recycling activities". It shows the current state of UB City that there are no recycling facilities though residents are enthusiastic about recycling. The resident in Ger Area chose the item "The collection service was not enough" more than the resident in Apartment Area.

Q2-4: Are you satisfied with the collection services in your area?

In Apartment Area, 85.4% of residents of an area that CMPUA provides with collection service showed the highest degree of satisfaction more than average, and 42.9% of residents of an area that Private Company (except TUK) provides with collection service showed the lowest. In Ger Area, 72.5% of residents of an area that TUK provides with collection service showed the highest degree of satisfaction more than average, and 53.5% of residents of an area that Khoroo Government provides with collection service showed the lowest.

As a whole, 77.0% of the residents of an area that CMPUA provides collection service showed the highest degree of satisfaction more than average, and the lowest one, when removing the provider that is collecting waste only in one of the two areas in which the respondent of the POS lives, was 66.7% of the residents of an area that TUK provides collection service.

Collection Provider	Apartmt	Ger area	Total
Organization under District Govnmt	82.1%	65.7%	72.1%
Khoroo Govemt	-	**53.5%**	53.5%
CMPUA	**85.4%**	68.6%	**77.0%**
TUK	62.5%	**72.5%**	**66.7%**
Private Company other than TUK	**42.9%**	-	42.9%

- The collection service is not given in the POS target area.

Q2-5: Why aren't you satisfied with waste collection services?

It was "1. Waste collection manner is poor" that most respondents answered as a problem in collection service, and it was 25.6% in the Apartment Area, 19.8% in the Ger Area, and 22.6% on average. If it sees from this result, the residents of an area to whom collection is provided by CMPUA showed the highest degree of satisfaction in Q2-4, it means that such a high degree of satisfaction having been shown is just because they were satisfied with the collection manners of the workers of CMPUA to some extent. "6. Some people do not pay waste collection fee" follows to the next as a problem, and it was 15.9% in the Apartment Area, 26.9% in the Ger Area, 21.5% on average, and especially high ratio was shown in the Ger Area. "3. Waste collection schedule is not fixed" was answered to the third as a problem, and it was 19.7% in the Apartment Area, 22.9% in the Ger Area, and 21.3% on average.

Q2-7: Government is going to introduce separate discharge and collection system in your living area. Do you want to cooperate for separating your waste into "Recyclables and Non-Recyclables" in your house?

The respondent who showed willingness to cooperate was 88.8% in the Apartment Area, 82.7% in the Ger Area, and 85.7% on average, which turned out to be a very high rate.

Findings of Survey

(1) Urban Environment and Sanitation in the City

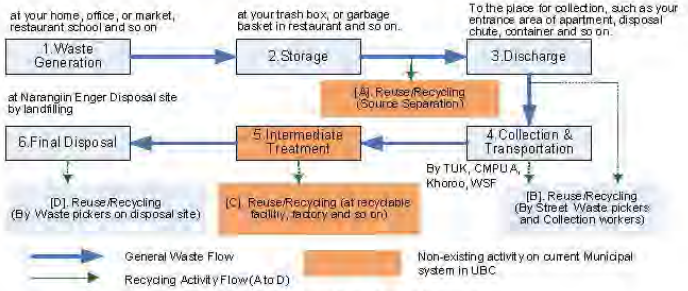
- The degree of satisfaction for the urban environment and sanitation of the UB City was lower than that of the SWM both in the Apartment and Ger Areas. The reason is that the air pollution is recognized by residents as the most serious problem of the UB City.
- In November when the survey was conducted, the temperature was starting to get lower and it was about the beginning of winter, there was increasing number of the Ger residents who warms themselves by burning coal. Since the survey was conducted at the time that the central part of the UB City was covered with thick smoke resulting from the air pollution which is considered as a big social problem in recent years, the results of the survey may have been affected somewhat.

(2) SWM in the City

- It seems that the degree of satisfaction of the residents on the SWM of the UB City is about 10% higher than that of the urban environment and sanitation and residents have not taken it as seriously as the environmental problem. When we look at it by district, the residents of BZD showed the highest degree of satisfaction, and on the other hand the BGD showed the lowest degree. In SBD, although the highest degree of satisfaction was shown among those six districts in the Apartment Area, the lowest degree of satisfaction was shown in the Ger Area. Moreover, BGD showed the lowest degree of satisfaction in total as well as that of the urban environment and sanitation.
- Regarding the problem on the SWM of the UB City, most residents both in the Apartment and Ger Area answered "People's waste discharge manners is poor" as a problem. Although the degree of satisfaction for waste collection service was comparatively high, most residents answered "Collection manner is poor" as a biggest problem. Manners are considered as a serious problem again here.
- Because of the fact mentioned above and that more than 85% of respondents show willingness to cooperate when the UB City implements waste separation and recycling, it seems that the consciousness of the UB citizen for environment and SWM are comparatively high.

2. Additional Topic: What is Waste?

Following the last issue, we would like to explain about how the UB City is currently conducting 3. Discharge in the flows mentioned below in this volume.



Flow chart of municipal solid waste

3. Discharge

The UB city can be roughly divided into the Apartment Area where the infrastructures such as hot water heating system and sewage were prepared, and the Ger Area without those infrastructures. The Apartment Area consists of three types; apartments built in 50s and 60s, apartments built in 70s and 80s, and apartments built in the latest development rushes. Each has adopted the different ways of waste discharging as follows.

1. Apartments built in 50s and 60s

A manager, who usually stays nearby each door, keeps the waste put in a plastic bag and he/she brings them to collection area when collection vehicle comes under the bell collection system. This is the most suitable way of discharging to promote the source separation.

2. Apartments built in 70s and 80s

Most of this type of apartment is equipped with the dust chute, and residents discharge waste whenever they like. Although this system is convenient for residents, since the dust chute is considered as storage, if collection is not conducted everyday, there could be a sanitary problem, and yet it is very difficult to promote recycling such as source separation in this system.

3. Apartments built in recent years

Most of them have the waste discharging point in the site, residents discharge waste there, and collection vehicle comes for collection of waste periodically. This system needs to install the container for recyclable waste separately. Moreover, there is a problem with which West Picker on the street scatters waste while searching for valuables.

On the other hand, in the Ger Area, collection vehicle conducts individual collection, and residents discharge waste accumulated in the drum with arrival of a collection vehicle. Although this way of discharging waste is suitable for waste separation at source, in the Ger Area, the greater part of the waste is the ashes burned by the stove, and the quantity of recyclable waste is very limited.

3. Important Event and Activity

- **3R seminar**: April
- **WEEE survey**: on going
- **Pilot Project**: planning stage

4. Our New Website

Our web site is finally published. At present, there is the only English language site, but the Mongolian site will be ready soon. The URL of site is shown below.
We will try to update the web site as frequently as possible in order to show the prompt reports on our survey and provide information on events such as seminars and workshops.
We hope that many of you will check our web site.

JICA Expert Team for
The Technical Cooperation Project for
Strengthening the Capacity for Solid Waste Management in Ulaanbaatar City in Mongolia

[Office] C/O CMPUA
Bumtsend Street-68, Khoroo 6,
Chingeltei District, Ulaanbaatar, Mongolia
TEL: 011-327128 FAX: 011-323128
Website: http://www.kkcub.mn/

Newsletter Vol. 3

Technical Cooperation Project for Strengthening the Capacity for Solid Waste Management in Ulaanbaatar City in Mongolia

Content

It has been already 8 months since our project has been implemented. In the 3rd volume of our newsletter, we would like to introduce "the pilot project (PP) for waste separation and recycling" as one of our important project activities.

1. Pilot Project for Waste Separation & Recycling

Background

According to the M/P for Solid Waste Management (SWM) in the Municipality of Ulaanbaatar (MUB) which was formulated in 2007, the fundamental goal is: "To establish an environmentally sound SWM system in MUB by the target year of 2020" in which system the concept of "3Rs (Reduce, Reuse and Recycle)" is promoted and the following situation should be established.

1) Waste reduction is encouraged at the generation source such as households and business enterprises.
2) Waste generated after the attempt of waste reduction is reused or recycled as much as possible.
3) Waste is properly collected only after the efforts of waste reduction, reuse or recycling at the generation source, and recycled/treated, then finally disposed of in a proper manner without negative environmental impacts.
4) Such a SWM system will be established by requiring the government sector, private sector and general public to bear adequate responsibilities under a transparent and fair rule is achieved.

Since 2007, in the UB city, the development of infrastructure such as procurement of waste collection trucks and construction of new disposal site applying the sanitary land filling system has been achieved, while at the same time the software system such as establishment of WSF and strengthening the organization for SWM has been improved. On the other hand, promotion of "3Rs" is still untouched but important issues to be tackled in near future. This PP aims to support MUB in selecting the most appropriate SWM system by showing several alternatives of 3Rs taking consideration of severe weather conditions and social conditions of the city.

This PP consists of the following three components;

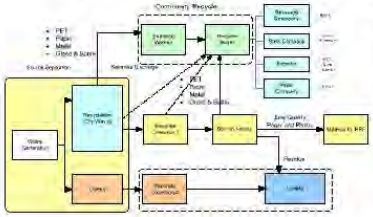
- PP1: Public cooperation PP on separate storage and discharge
- PP2: Verification PP of separate collection system
- PP3: Verification PP of separation system at the landfill site

Overall Plan

The basic policy for PP is as follows;

1) First priority is to reduce waste discharge at generation sources. That is to say, the waste separation for community recycling will be encouraged.
2) Waste will be separated into two types, recyclables and others.
3) Recyclables includes valuables such as PET, Glass container & bottle, can and low quality plastic and paper.
4) Separate collection for recyclables and others will be introduced. However, residents, watchmen, collection workers will be encouraged to sell the valuables to the recyclers in order to reduce the amount of waste transported to NEDS.
5) Sorting yard which is called "Narangiin Enger Recycling Complex (NERC)" will be constructed in NEDS. Those valuables (PET, Glass container & bottle, can) and RPF materials (low quality paper and plastic) will be sorted there.

The flow of separate discharge & collection according to the above basic policy is shown below.



Current Progress of 3 PPs

PP1: Public Cooperation PP on Separate Storage and Discharge

This PP aims to verify the degree of public cooperation on separate storage and discharge while at the same time developing the capacity of C/P in raising public awareness through interacting with residents in the Apartment area.

In selection of the target khoroo for PP, various conditions such as willingness to improve SWM and cooperate for PP by district governor and deputy governor and willingness to compensate additional cost for separate collection by khoroo governor were examined. As a result, four target khoroos; khoroo # 5 and #7 of SBD and khoroo #1 and #7 of BZD were selected.

At present, we are organizing weekly meeting inviting the representative of Apartment Owner's Union (AOU) in each target khoroo. We have decided that first of all we would work on 1) improvement of waste discharging manner by residents, 2) improvement of collection manner by collection service providers, and 3) improvement of waste separation at source to promote community recycling, and then the next step of separate collection will be introduced.

PP2: Verification PP of Separate Collection System

In this PP, ①separate collection area and ②mixed collection area from the Apartment area will be selected to compare the cost (cost for separation and for collection) and the benefits (the amount of valuables collected and the amount of sale of valuables) of each collection system, so that people would understand whether or not there is the significance to introduce separate collection for the UB city.

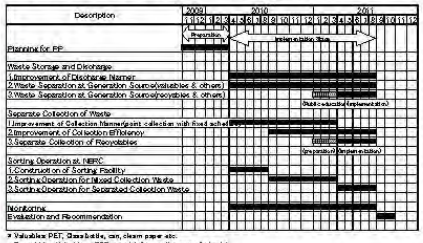
This PP will be implemented after the source separation by residents has been successfully established to some extent in the PP1 of public cooperation on separate storage and discharge.

PP3: Verification PP of Separation System at the Landfill Site

This PP aims to compare the cost and benefit of; ① simple hand sorting system which is equipped only with concrete + scattering prevention fence, and ② simple semi-mechanical sorting system which is equipped with hopper and belt conveyor in order for Waste Pickers (WPs) to collect valuables from wastes at the landfill.

There are about 250 WPs collecting valuables now in NEDS for making their own living. They are planned to work for sorting valuables as soon as a sorting yard has been constructed. It can be helpful for WPs to work in a safer and sanitary environment and also for the NEDS itself to do sanitary land filling more efficiently. Aiming at systematization of WPs, the weekly meeting is being held now so that the recyclables sorting can be immediately started after completion of a sorting yard.

Schedule of Waste Separation & Recycling PP



* Valuables: PET, Glass bottle, can, clean paper etc.
* Recyclables: Valuables + RPF material(ex.quality paper & plastic)

3. The 1st 3R Seminar

"The first 3R seminar" was held in the Ulaanbaatar hotel on April 14 for the following purposes;

1) To obtain the understanding and agreement on the contents of the PP from the stakeholders,
2) To share the important experiences of the stakeholders to promote the 3Rs activities in order to reduce disposal amount and enhance recycling,
3) To exchange opinions among stakeholders in order to promote the 3Rs in UB city.

About 90 persons including representatives of related ministries, EPWMD, CMPUA, WSF and PSD of district government, and AOU's director of each target khoroo for PP, NGO, and the mass media, participated in the seminar.

After presentation of opening remarks from Japanese side (JICA) and Mongolian side (MUB), EPWMD explained the details on PP for waste separation and recycling and continuously the khoroo governor of SBD 7 made a presentation about the experiences and challenges of their community recycling.

In the session of questions and answers for the presentation on the PP, the representative from Gender Centre for Sustainable Development (NGO) asked; "Is there any countermeasures to the toxic gas derived from combustion of RPFs[1] as they are produced from papers and plastics?" In reply to her questions, JET informed the participants about results of the PP conducted during the Development Study on production of RPF for the heating plant of Nalaikh district. According to the results of PP during Development Study, quality of exhausted gasses were investigated and it was within the permission level, if RPF has been mixed few percent as replacing with coal. Actually, the RPF increases the efficiency combustion of the fuel. However, the project will not recommend for heating plants to use a fuel consisted only from RPF.

In relation to the waste separation for community recycling, the representative of the Research Institute of Public Sanitation emphasized the necessity of complete separation of wastes before collection and recommended to educate housewives, children and the public on sorting wastes at the generation sources in order to achieve good results.

In the session of workshop, at first EPWMD explained the current conditions of waste discharging manner and problems in the UB city, then the group discussion by each of the 4 target khoroos has been made addressing the issues on how to improve the waste discharging manner and collection manner, and how to promote source separation for community recycling.

All of the AOU representatives took active parts in discussion and exchanged various opinions. After that, the result of the discussion was presented by the representatives of each group.

Each khoroo differs in the methods of discharging waste according to whether the apartment has a dust chute or not. Also, the collection method is different according to the collection providers and collection trucks. Moreover, there are khoroos in which the source separation has been already implemented to some extent and khoroos in which the problem of discharging manner of business entities is more serious than that of apartment residents. Thus, various measures have been discussed based on those current conditions by each khoroo. The contents and priority of PP which are to be implemented in each target khoroo will be determined respectively based on the result of the discussion and the actual condition of each khoroo.

[1] RPF is "Refused Papers & Plastics Fuel". These waste plastics and papers can be a fuel if they form a certain density and shape for feeding in Power Plant.

In the last session of questions and answers, various issues and recommendations have been presented by participants.

The representative of AOU of khoroo #1 BZD recommended that the PP should involve UBS Channel #1 and #2 as the announcement of achievements of the PP in the municipal television channels would improve the public awareness as of the strongest means among those mass media in Mongolia. The channels should also broadcast cases of violation of laws or regulations related to waste management or waste discharge.

The representative of AOU of khoroo #7 BZD emphasized the importance of competition among the target AOUs. He said; "competition among the AOUs and households is helpful to achieve good results in implementation of the PP. Furthermore, AOUs or households that obtained good results in improvement of residents' discharge manners and implementation of the project activities should be awarded by the MUB".

The JET also made a comment on the frequency of waste collection; "It is possible for the UB city to reduce the collection frequency because the project requesting residents to keep their wastes only for 2 or 3 days and also some of the residents such as in khoroo # 7 of BZD have already been used to keeping wastes for 2 days. Taking example of the Tokyo Japan, residents are allowed to discharge their kitchen wastes twice in a week while the other recyclable wastes are only collected once in a fortnight. Storing wastes for decided period of time relates to the improvement of the residents' awareness about SWM".

Many of the participants requested the supply of plastic bags in order for residents to put their separated waste. In response, the JET said; "if we supply the plastic bag for residents, it would increase the amount of plastig bags to be discharged but the objective of out PP is to reduce the amount of waste. Moreover, providing residents with plastic bags is not sustainable option since the fund for financing the supply of plastic bags is difficult to secure. If supply is necessary, the financial source should be secured. One of the possible ways is the savings by collection companies resulted from the reduction of collection frequency which in turn, resulted from the decrease in waste amount after introduction of separate discharge and collection".

It seemed that through the discussion in the seminar and workshop a mutual understanding over the PP has been increased while at the same time awareness of the issues related to the waste management has been shared among those participants. It is expected that these experiences would be harnessed to our future PP activities in effective way.

4. Important Event and Activity

- AOU meeting at each PP target khorooo: on going.
- Separate collection of waste for trial at BZD1: from June 12.
- WPs meeting at NEDS: on going.
- Time & Motion survey in Ger area: Mid June.

5. Our New Mongolian Website

The Mongolian version of our web site has been set up. The URL of site is shown below.

We will try to update the web site as frequently as possible in order to show the prompt reports on our survey and provide information on events such as seminars and workshops. We hope that many of you will check our web site.

JICA Expert Team
The Technical Cooperation Project for
Strengthening the Capacity for Solid Waste Management
in Ulaanbaatar City in Mongolia
[Office] C/O CMPUA
Bumtsend Street-58, Khoroo 8,
Chingeltei District, Ulaanbaatar, Mongolia
TEL: 011-327128 FAX: 011-323128
Website: http://www.kkcub.mn/

J.4 Newsletter No.4

Technical Cooperation Project for Strengthening the Capacity for Solid Waste Management in Ulaanbaatar City in Mongolia

Newsletter Vol. 4

Content
1. Survey Results on WEEE
2. Progress of Pilot Project on Improvement of Public Cooperation on Waste Discharging Manner and Separate Discharge
3. Important Events and Activities

This is the 4th edition of our newsletter that describes the progress of the project activities which started a year ago. This time we will bring you the update on the implementation of the pilot project (PP) on improvement of public cooperation on waste discharging manner and separate discharge in the selected khoroos, and the results of the survey on the waste of electrical and electronic equipment (WEEE) generated in UB.

1. Survey on WEEE

WEEE is the abbreviation for Waste Electrical and Electronic Equipment and the term describes loosely discarded and broken electrical or electronic devices. The processing of WEEEs causes serious health and pollution problems as well as involves significant risk to workers and communities and great care must be taken to avoid unsafe exposure in recycling operations and leaching of material such as heavy metals from landfills and incinerator ashes.

Under these circumstances, the JET investigated the current conditions of WEEEs being recycled and disposed in UBC from Jan to Feb 2010 in order for the MUB to develop its policy for WEEE.

Objectives

The main objectives of this survey are:

(1) to understand the current way of discharge, recycle and disposal of WEEEs in UBC and

(2) to identify the amount and the flow of WEEEs.

Target WEEEs and the Scope of the Survey

Although 5 types of EEEs (TV set, refrigerator, washing machine, PC and mobile phone) were initially selected as target EEEs, the mobile phone was deselected since its imported quantities can not be obtained and it is impossible to clarify waste flow in UB city.

Current Condition of WEEE Recycling System

According to the interviews, the methods of WEEE recycling in UBC are almost similar for all types of target WEEEs.

The majority of the most common recyclables are metal-containing parts. Generally, metal containing parts are recycled regardless of their functionality as non-functional ones can be sold as metal after segregation. Among non-metal or mixed small parts, any of the functional ones can be used in maintenance as spare parts.

WEEE Recycling Processes

The WEEEs generated in UBC are re-used since most of second hand EEEs purchased by recyclers are resold and repaired/resold back to consumers. Only those that cannot be repaired are dismantled and some of their parts are recycled. All the metals (copper, iron, aluminum and alloys) segregated from WEEE parts, except iron cases of refrigerators, are exported to China. As iron cases of refrigerators are used as raw material for chimneys of ger stoves, most refrigerator cases are purchased by ger stove producers.

WEEE Recyclers

The WEEE recyclers in UBC are repair shops or individual repairmen, collection workers, waste pickers and metal purchasers. The repair shops and the repairmen play the main role in WEEE recycling since they purchase old and broken EEEs from consumers, repair most of the purchased EEEs, resell them to residents and dismantle other EEEs that are impossible to repair.

Findings

According to the above WEEE Recycling Cycle and WEEE Flow 45.1% in the total WEEEs is re-used, 23.0% is recycled (including stored spare parts) and 31.9% is disposed. Re-use rate of each type of WEEEs is usually high (ranging from 66.9% to 80.2%) except PC. As for PC, the indicator is only 28.6% since CRT monitors that occupy the major part in the weights of TV sets, are usually impossible to re-use.

The total disposed amount occupies 31.9% in the total (545.53 tons). As the amount is estimated by weights of the disposed parts, the majority of the total disposed waste has been resulted from disposed CRTs of PCs and TV sets. The main reasons for the conclusion are (1) all the CRTs of PC cannot be sold and around 80% of those of TV sets are disposed; and (2) a CRT weights more than 10 kg occupying the majority in the weights of TV sets and PCs, according to survey results. Therefore, the sum of disposed amounts of CRTs from TVs and PCs occupy 94% in the total landfill amount

Recommendations

CRTs contain heavy metals such as mercury that cause serious health problems to human beings, the major attention should be paid to their disposal. A separate disposal site where hazardous wastes are disposed in safe manner is required to be constructed in order to prevent the negative impacts on surrounding environment. Until such hazardous waste disposal site is ready, these hazardous wastes should be stored in dry places away from the sun light.

There are no manufacturers of the target EEEs in Mongolia; as the result, all of these EEEs are imported from abroad. Therefore, encouraging imports of EEEs that do not contain hazardous substances is needed.

The re-use and the recycle of WEEEs are conducted mainly by individual recyclers. Thus, it is necessary to promote and develop these individuals as formal recyclers by supporting their status such as accommodating low interest rate loans after achieving a complete control on their activities by registering the recyclers, identifying the amounts and the flows of parts dismantled by them and preventing possible illegal dumping.

2. Public Cooperation PP on Improvement of Waste Discharging Manner and Separate Discharge

Purpose of PP

This PP aims to verify the degree of public cooperation on separate storage and discharge, and at the same time to develop the capacity of C/P in raising public awareness through interaction with the apartment residents.

Implementation of PP

The PP has been implemented since April 2010 in 4 target khoroos (SBD#5 and #7, BZD#1 and #7), and it will continue until the last phase of the Project. The PP implementation can be divided into the following

four phases:

- Baseline survey (collection of the data and information in the target khoroos)
- Public education activities
- Monitoring
- Final evaluation

The activities to be implemented during the PP, and roles and responsibilities of each organization were detailed out among C/P, JET, district and khoroo Governments, WSF, AOU and collection providers.

Collection of Basic Information

Baseline survey was conducted from May 2010 until early June 2010 to the residents and business entities of the target khoroos with the purpose to identify the current situation of waste management and people's satisfaction level for waste collection services, and to verify the possibilities of introducing waste separation for recycling. The result of the survey can be used for the baseline data and the same survey for the same respondents will be conducted in the end of the PP again to see the progress of the PP.

Result of the Survey

More than half of the answers showed "satisfied" with the waste collection service in all the target khoroos. Jijuur who clean orts, dust chutes and do the waste management of apartments were evaluated "good" by the residents of all target khoroos. The discharge points of the waste for the residents were varied according to the structure of the apartments (with dust chute or no etc…) and their numbers. There are more dust chutes in SBD#7 compare to other khoroos. Two to three times per week of the waste discharge is the most common frequency of the waste discharge among all the khoroos. More than half have answered that they did not separate recyclable waste in all the target khoroos. The recycling of household waste largely depends on jijuur or waste collection workers. However, most respondents have answered that the waste separation can be done "easy". So, the willingness for waste separation can be high. Most of them answered that they could store the recyclables in their house about two to three days.

As for the business entities, the respondents of all the target khoroos were satisfied with the current waste collection services. Restaurants and bars were generating kitchen waste mostly; other businesses were discharging paper (cardboard) mainly. As for the current status of recycling, restaurants and bars were recycling glass bottles and pet bottles, while other businesses were not keen to recycle.

Public education activities

AOU meetings

The weekly meetings were organized by EPWMD and JET inviting WSF, PSD, collection providers, the khoroo governors and the representatives of AOUs in each target khoroo since the mid of April. The priorities to tackle were to improve waste discharging manners of residents and collection manners of service providers, and to promote community recycling at sources.

PR tools

In the AOU meetings, the waste collection time schedule has been fixed based on the result of the time & motion survey and also the waste discharging rules have been discussed and agreed among those AOU directors. JET and EPWMD prepared the following PR tools for the residents and Jijuur through the discussion at AOU meetings.

Common PR tools for all target khoroos were prepared such as brochures, big sacks for Jijuur to storage recyclables, and stickers placed on collection trucks that sound music with the messages about the proper discharge.

Progress and monitoring

Closure of Dust Chutes

There are many apartments with dust chutes in UB. Residents can discharge waste into dust chutes anytime, any type of waste without separation and without putting into plastic bags. Dust chutes are not match to today's life styles. There are many cases of blocking up the waste, getting worms and flies, bad odor in summer, and cases of fire too. There are constant complains about them from the residents, and the collection operation is in-efficient.

In order to ensure a proper sanitary and efficient waste collection, it is important to have a short time gap between waste collection by collection vehicle and putting out the waste by the residents. It's essential to achieve those two things at once that are 1.collection vehicle comes on time, regularly, and 2.residents put out waste on designated day and time.

Closure of dust chutes has been discussed at the AOU meetings, and based on the decision of AOU leaders, the dust chutes were closed. AOU leaders closed the dust chutes by plastic tapes, ropes and cloth etc, while JET made the notice or mini poster with logos of JICA and Ulaanbaatar city to inform about closure.

It's a great improvement in SBD#7. There was no defined waste collection schedule and the accumulated waste was collected randomly before implementation of the PP. During the pilot project, JET supported making the collection schedule for WSF and EU (collection service provider), and supported familiarizing the information thorough AOU about the fixed waste collection schedule, discharging manner and waste separation for residents of the apartments.

Once success of the closure of dust chutes was observed at an apartment, other apartments followed the procedure and closed their dust chutes. As a result, collection time was drastically reduced from 2 hours/collection point at maximum to 2 minutes at minimum.

Recycling amount by Jijuur

Amount of recyclables collected by Jijuur has been counted to evaluate the progress of waste separation at source. There are three ways to grasp the recycling amount, 1. by the monitoring sheet distributed to selected Jijuur, Jijuur record the amount every time they go and sell recyclable, 2. by estimation the amount from the data of separate collection on Saturdays at BZD#1, and 3. by estimation from the data of paid amount at the recycling shop at Apt.5a in SBD#7.

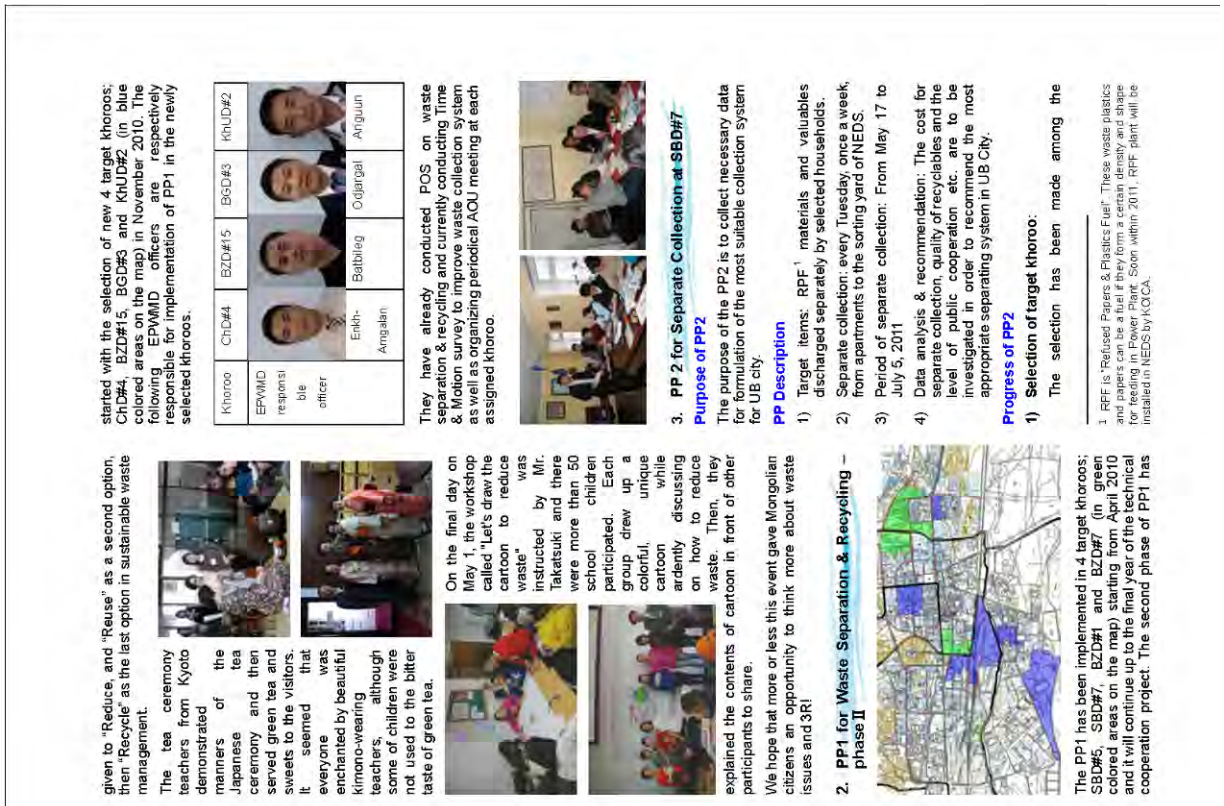
In any form of counting, it has been for only 1 month since the first distribution of PR tools to inform the residents about waste discharging manner and waste separation, thus it cannot be observed the remarkable increase of recyclable amount. It's necessary to follow the progress of monitoring.

3. Important Event and Activity

- AOU meetings at each PP target khoroo: re-start from October.
- Monitoring of separate collection by Jijuur.
- Monitoring of waste collection by new schedule in SBD7
- Collection of basic information of ChD12 to for Time & Motion survey in Ger area.

JICA Expert Team
The Technical Cooperation Project for
Strengthening the Capacity for Solid Waste Management
in Ulaanbaatar City in Mongolia
[Office] C/O CMPUA
Bumtsend Street-68, Khoroo 6,
Chingeltei District, Ulaanbaatar, Mongolia
TEL: 011-327128 FAX: 011-323128
Website: http://www.kkcub.mn/

J.5 Newsletter No.5



Technical Cooperation Project for Strengthening the Capacity for Solid Waste Management in Ulaanbaatar City in Mongolia

Newsletter Vol. 5

Content
1. Mongolia-Japan 3R Public Event
2. Pilot Project 1 for Waste Separation & Recycling – phase II
3. Pilot Project 2 for Separate Collection at SBD#7
4. Pilot Project 3 for Sorting Operation at NEDS
5. Workshop for Operation & Maintenance of Collection Trucks with TUKs
6. Future Events and Activities

In the 5th volume of our newsletter, we would like to introduce the current progress in relation to three kinds of our pilot project activities and "operation & maintenance of equipment".

1. Mongolia-Japan 3R Public Event

"Mongolia-Japan 3 R Public Event" was held at the Japan Center from April 29 to May 1, 2011. The purposes of this event are to enhance the public awareness on the waste issues and promote active participation in our waste separation & recycling PP.

Especially for this event, we invited a famous environmental cartoonist Mr. Hiroshi Takatsuki and 6 other volunteers from Japan.

Mr. Takatsuki is a professor of Ishikawa Prefectural University and professor emeritus of Kyoto University. He has been drawing environmental cartoons as a pen-name "High Moon" since his early childhood for over sixty years. His cartoons are very adorable and easy to understand so being widely used as an environmental education material by NGO, the municipality, and researchers not only in Japan but also in other countries.

During the whole 3-day event, we had various kinds of program activities and in total there were around 260 peoples participated. In the exhibition hall, we displayed original "High Moon" cartoons and some recycled goods such as shopping bag, coasters made from waste, and also had eco-bag making work shop for school children.

In the opening ceremony on April 30, EPWMD senior officer, the Japanese ambassador and JICA representative made opening remarks. Then, Mr. Takatsuki made a presentation regarding essential waste problems in Japan and a learning program concerning waste reduction. All of the participants were listening attentively to his comprehensible lecture that used many "High Moon" cartoons. Zorig Foundation (Mongolian NGO) also made a presentation on the recycling of used batteries.

In the seminar room, "3R knowledge quiz" was given for 45 students in order to examine the recognition level of 3R of Mongolian citizens. Although the concept of "3R (Reduce, Reuse, Recycle)" has not been well known yet in Mongolia, it seemed that Mongolian citizens became known through this program that the first priority should be given to "Reduce, and "Reuse" as a second option, then "Recycle" as the last option in sustainable waste management.

The tea ceremony teachers from Kyoto demonstrated manners of the Japanese tea ceremony and then served green tea and sweets to the visitors. It seemed that everyone was enchanted by beautiful kimono-wearing teachers, although some of children were not used to the bitter taste of green tea.

On the final day on May 1, the workshop called "Let's draw the cartoon to reduce waste" was instructed by Mr. Takatsuki and there were more than 50 school children participated. Each group drew up a colorful, unique cartoon while ardently discussing on how to reduce waste. Then, they explained the contents of cartoon in front of other participants to share.

We hope that more or less this event gave Mongolian citizens an opportunity to think more about waste issues and 3R!

started with the selection of new 4 target khoroos; ChD#4, BZD#15, BGD#3 and KhUD#2 (in blue colored areas on the map) in November 2010. The following EPWMD officers are respectively responsible for implementation of PP1 in the newly selected khoroos.

Khoroo	ChD#4	BZD#15	BGD#3	KhUD#2
EPWMD responsible officer	Enkh-Amgalan	Batbileg	Odjargal	Anguun

They have already conducted POS on waste separation & recycling and currently conducting Time & Motion survey to improve waste collection system as well as organizing periodical AOU meeting at each assigned khoroo.

3. PP 2 for Separate Collection at SBD#7

Purpose of PP2

The purpose of the PP2 is to collect necessary data for formulation of the most suitable collection system for UB city.

PP Description

1) Target items: RPF[1] materials and valuables discharged separately by selected households.
2) Separate collection: every Tuesday, once a week, from apartments to the sorting yard of NEDS.
3) Period of separate collection: From May 17 to July 5, 2011
4) Data analysis & recommendation: The cost for separate collection, quality of recyclables and the level of public cooperation etc. are to be investigated in order to recommend the most appropriate separating system in UB City.

Progress of PP2

1) **Selection of target khoroo**:

The selection has been made among the

2. PP1 for Waste Separation & Recycling – phase II

The PP1 has been implemented in 4 target khoroos; SBD#5, SBD#7, BZD#1 and BZD#7 (in green colored areas on the map) starting from April 2010 and it will continue up to the final year of the technical cooperation project. The second phase of PP1 has

[1] RPF is "Refused Papers & Plastics Fuel". These waste plastics and papers can be a fuel if they form a certain density and shape for feeding in Power Plant. Soon within 2011, RPF plant will be installed in NEDS by KOICA.

khoroos under the first phase of PP1; SBD#5 SBD#7, BZD#1, BZD#7. Considering several conditions such as 1) the expected generation amount of target items, 2) existence of places for storing target items i.e., closed DCs, and 3) degree of cooperation by AOUs and collection provider, SBD#7 was selected as a target area.

2) Arrangement of vehicles & equipments:

Tsuzuku Yume which provides SBD#7 with usual collection was selected as a separate collection provider. They allocate 1 compactor truck for separate collection and PR sticker and different music from usual collection was attached to their collection vehicle.

3) Public education activities &:

AOU meetings were held on May 3 & 10, 2011 and public meetings on May 15, 2011. Furthermore, the house-to-house visit to the target apartments was conducted from May 17 to May 20.

4) Distribution of PR tools

The following PR tools such as collection schedule table & collection calendar have been prepared and distributed through public meetings and house-to-house visit.

5) Separate collection

Separate collection is currently being conducted and after that, data will be combined with the result of the following PP3 or sorting operation.

4. PP3 for Sorting Operation at NEDS

Purpose of PP3

The purpose of the PP3 is to verify what kind of sorting system is suitable for UB City.

PP Description

1) Type of waste: 1) separated waste collected in SBD#7 under PP2 and 2) mixed waste collected in other khoroos.
2) Sorting method: 1) manual sorting and 2) belt conveyor sorting are to be conducted for above 2 types of waste by employing 20 WPs who are normally picking valuables at landfill site.
3) Place: NEDS sorting facility
4) Period of sorting operation: From May 17 to July 5, 2011.
5) Data analysis & recommendation: Weight and price of sorted recyclables and RPF materials are to be recorded. The 4 types of scenarios are to be compared taking account of working environment, technical feasibility, operation cost, social consideration, and efficiency of separation. The recommendation for the most appropriate sorting system in the UB City will be given to the EPWMD in the end.
6) The data will also be used to examine the feasibility of KCICA's RPF plant in the future.

Progress of PP3

1) Construction of sorting facilities:

The sorting facilities were constructed in NEDS next to the control building in July 2010 and the 20m straight conveyor was installed inside of the building in September, 2010.

2) Waste pickers (WP) meeting

One of the objectives of operation of sorting facility is to provide employment opportunity to WPs who are working in the NEDS so that the sanitary land filling will be improved. In order to train WPs to work under rules and conditions, WP meetings have been held since April, 2010. About 20 WPs who work at the sorting facility have signed the contract to follow the working requirements.

3) Sorting operation

The manual sorting and belt conveyor sorting of mixed waste have been already conducted but currently those of the separated waste are still being conducted as follows.

	Mixed Waste	Separated Waste
Manual sorting	July 27 to August 2, 2010	May 17 to July 5, 2011, Once in 2 weeks
Belt conveyor sorting	April 20 to April 28, 2011	May 17 to July 5, 2011, Once in 2 weeks

Manual sorting of mixed waste:

The collected waste from mixed collection area was unloaded from the collection vehicle to the manual sorting ground.

WPs sorted the waste into 12 types of materials by hands and then weighed the total amount of each material.

The necessary information such as WPs' attendance and their working hours, operation hours of heavy machineries, weight and price of sorted recyclables were recorded for later analysis.

Conveyor sorting of mixed waste:

The mixed waste was loaded into the belt conveyor from the collection vehicle and WPs sorted recyclables and RPF materials out of waste moving on the conveyor.

After sorting, 80 - 90% of residues were transported to the landfill site in the end.

All collected data will be incorporated for analysis after the completion of manual and conveyor sorting experiments of the separated waste in July, 2011.

5. Workshop for Operation & Maintenance of Collection Trucks with TUKs

"Workshop for Operation & Maintenance of Collection Trucks with TUKs" was held in the Ulaanbaatar hotel on April 14. One of the expected outcomes of our project is to strengthen the capacity for the operation and maintenance of equipment. Since commencement of the project, various inspections on conditions of waste collection trucks were conducted by JET and various kinds of training in the field were conducted as well.

The purposes of this workshop are to disseminate the findings during the inspections and to recommend for longer use of the equipment under good working conditions in the future.

In total, 36 persons including representatives from all district TUKs, EPWMD, CMPUA, CWSF participated in the workshop.

After opening remarks from both Mongolian and Japanese side, JOCV senior volunteer Mr. Matsuda explained on "Hycraulic system".

One of the JET members Mr. Uzawa made a presentation on "Improvement of maintenance of waste collection trucks".

After tea break, another meeting room was prepared to make free discussion on the current issue relating to the waste collection trucks. During the management group workshop, the participants agreed on the following issues.

- CMPUA will conduct maintenance services two times a year according to the schedule.
- Maintenance services will be conducted according to the contract.
- TUKs agree to submit operation and maintenance report monthly.
- Utilization contract will be amended and scheduled to be signed.

We hope this workshop will contribute to improve operation and maintenance of collection trucks and to maintain service level of waste management in UB City in longer term.

6. Future Events and Activities

- AOU Meeting at each PP1 target khoroo: on going.
- Separate collection at SBD#7 & sorting operation at NEDS: from May 17 to July 5, 2011.
- Waste amount and composition survey: June 4, 2011 on going.
- Workshop for formulation and implementation of SWM Master Plan based on the experience in UB City to major aimags: June 28 - 30, 2011.

JICA Expert Team
The Technical Cooperation Project for
Strengthening the Capacity for Solid Waste Management
in Ulaanbaatar City in Mongolia
[Office] C/O CMPUA
Bumtsend Street-68, Khoroo 5,
Chingeltei District, Ulaanbaatar, Mongolia
TEL: 011-327128 FAX: 011-323128
Website: http://www.kkcub.mn/

Every directors and officers in every provincial center has intention to improve SWM in their area, but lack of appropriate improvement plan has made difficult for them to acquire necessary budget. Therefore, plan of improving SWM in Bulgan Provincial center was formulated by JET for officers of NET in Bulgan Provincial center. Under the improvement plan, JET made several recommendations including improvement of final disposal site as follows.

Concept of improvement plan is to utilize existing final disposal site as much as possible and to consider operation and maintenance works as well after improvement work is implemented.

JET and Project Team is willing to contribute to assist these planning and waiting request from other Provincial centers as well.

6. Practical Training for Electrical System on Collection Trucks

Since commencement of the project, various activities for improvement of maintenance and operation of collection trucks such as investigation of conditions of trucks and field training has been conducted by JET in cooperation with EPWMD, CMPUA and all TUKs.
Under such circumstances, our project organized practical training for electric system on collection trucks based on request of engineers and mechanics of CMPUA and TUKs during our cooperative activities for longer use of the equipment under good working conditions in future.

The outputs expected of the Training are:

Participants learn how to calculate voltage of battery measuring specific gravity of it using hydrometer.
Participants understand operation and role of relay.
Participants learn how to read electric circuit diagram.
Participants learn to properly make electric circuit using relay and fuse according to circuit diagram.

Lecture for Operation of Relay

Measuring Specific gravity of electrolyte

Disassembling relay

Making electric circuit according to diagram

JICA senior volunteer Mr. Matsuda who works on central workshop of CMPUA since Nov 2010 lectured on the training. He has career for 40 years as mechanic in Japan and covered various kinds of vehicle for special use such as fire-fighting, waste collection trucks and so on. We hope participants use what they learned on their daily work. We are planning to have training on next spring so far. Also of course, we would like to frequently hold small scale of trainings according to their request.

JICA Expert Team
The Technical Cooperation Project for
Strengthening the Capacity for Solid Waste Management
in Ulaanbaatar City in Mongolia
[Office] C/O CMPUA
Bumtsend Street-68, Khoroo 6,
Chingeltei District, Ulaanbaatar, Mongolia
TEL: 011-327128 FAX: 011-323128
Website: http://www.kkcub.mn/

Newsletter Vol. 6

Technical Cooperation Project for Strengthening the Capacity for Solid Waste Management in Ulaanbaatar City in Mongolia

Content

1. Results of the Separate Collection in SBD7

Pilot project on separate collection was conducted in SBD 7 and we would like to explain its results!

The separate collection was conducted 8 weeks throughout the project under the following conditions;

Collection time: from 9:00 – 11:30 am on every Tuesday

Duration: 17 May to 5 July, 2011 (50 days)

Target items: RPF materials and valuables

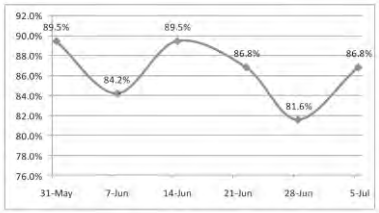
Target apartment: 9-story apartments (38 entrances) with closed DC

The result shows that the total amount of collected waste is 5,363.2kgs of target waste and its average is 670.4kgs/trip. *The amount of the target items increased gradually along with each time of the separate collection towards the end.*

As the DCs in the apartments had been closed, residents discharged their waste at the side of DC trays and watchmen carried waste down to the storage rooms of Dcs.

The watchmen played the important role in separation and putting target wastes in front of their entrance before the collection truck comes.

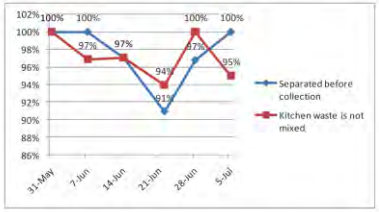
The following figure shows that the shares of the entrances covered by the separate collection on each collection day. Some of the watchmen discharged all their waste together with the regular collection as it did not require separation of waste.



However, the result shows that the share of the collected entrance was 86.4% on average, so *the degree of cooperation by watchmen/AOUs is considered high.*

The conditions of waste discharging at the time of collection were evaluated with 2 criteria – the timing of waste separation (whether waste was separated before the arrival of track or not) and the composition of the separated waste (whether kitchen waste is mixed or not).

The result shows that the both average rates are



quite high (more than 95%) so *the degree of cooperation in waste discharging by watchmen is considered very high.*

Throughout the PP, the total trip number of the regular mix collection in SBD7 was supposed to be 112 trips if without PP, but actual regular collection was conducted only 101 times (excluding 8 trips of separate collection). Therefore, 3 trips decreased from the "without PP case". One of the reasons is that cardboard was collected and transported separately, compaction efficiency of regular mix collection was improved.

Therefore, it can be said that *the separate collection may improve regular waste collection efficiency and may not require additional cost for transportation judging from PP results.*

2. Results of Sorting Experiment in NEDS

In order to recommend the most appropriate waste separation and recycling system for the UB city, the sorting experiment was conducted in NEDS under the following conditions; .

Types of waste: 1) separated waste collected from SBD7, and 2) randomly selected waste collected from regular mix collection.

Sorting method: 1) manual sorting, and 2) belt conveyor sorting for above 2 types of wastes by employing about 20 Wps.

Period of sorting operation:

	Mixed Waste	Separated Waste
Manual sorting	July 27 to August 2, 2010	May 17 to July 5, 2011, Once in 2 weeks
Belt conveyor sorting	April 20 to April 28, 2011	May 17 to July 5, 2011, Once in 2 weeks

The above-mentioned 4 types of scenarios were analyzed and compared in terms of technical feasibility, operation cost, social consideration, and efficiency of separation, and working environment.

The results are to be used to examine the feasibility of KOICA's RPF plant, which had been already constructed in November, 2011.

The following table shows the composition of wastes sorted by each type of scenario.

Item	Mix Collection		Separate Collection	
	Hand	Conveyor	Hand	Conveyor
Valuables	9.5%	10.7%	52.0%	47.5%
RPF Total	2.9%	5.8%	26.9%	30.4%
Residue	87.6%	83.4%	21.1%	22.1%
Total	100.0%	100.0%	100.0%	100.0%

The table shows that the biggest difference among 4 types of scenarios is the amount of residue, which shows over 80 % for mix collection waste and 20% for separated collection waste.

Residue (mix collection)

Residue (separate collection)

The amount of valuables shows about 10% is for mix collection waste and about 50 % is for separate collection waste. The amounts of RPF materials are 2.9%, 5.8%, 26.9%, 30.4% shown in the table from left to right. *Therefore, technically speaking, separate collection is more desirable than mix collection and belt conveyor sorting is more desirable than hand sorting in terms of collecting RPF materials.*

The following table shows that the cost analysis under 7 hours of sorting operation.

Description (MNT/day)	Mix Collection		Separate Collection	
	Hand	Conveyor	Hand	Conveyor
Sorting	305.083	214.872	274.039	260.432
Income	101.527	89.973	374.334	302.641

In terms of sorting cost, conveyor sorting with mix collection is most economical, but in terms of income from selling valuables, such as PET, glass, can etc., sorting with separate collection is more desirable.

When it comes to think of the working environment of waste pickers, the separate collection is much better than mix collection in terms of sanitation and safety.

3. Interview with Ms. Chantsalnurmaa of EPWMD on JICA's Japan-Training

Please introduce yourself.

My name is Chantsalnurmaa. I work as an officer in charge of soil and water pollution, medical and hazardous wastes at Environment Pollution and Waste Management Department of Mayor's Office.

What kind of international training course organized by JICA did you take part?

I was enrolled in the training course entitled "Waste Management and 3R (Reduce, Reuse and Recycle) Policies" organized by JICA at "Tokyo International Center" in Tokyo, Japan from June 12 to July 14, 2011.

Please share with us your thoughts after being enrolled in that training course.

This training was an international training course, thus all classes were taught in English. I studied with 12 representatives from 7 countries. The main purpose of JICA was to enhance the capacity of government officials of developing countries, to share the Japanese experiences with them and to introduce up-to-date technologies and techniques by visiting the Japanese industrial plants and facilities on-site.

During the training course, we visited waste recycling facilities located nearby Tokyo. Also, we have been introduced to operations of final disposal site and its landfill technology, waste incineration plant and its electricity production, electronic, construction and car waste recycling facilities as well as medical waste treatment facility.

As a result of enrollment in this training course, I have realized the importance of waste recycling for society and economy on a whole as well as its environment friendliness. Also, I have learned that waste is no longer considered as waste, it is resources that can be used, and as like saying "better see it once than hear thousand times" I have observed and learned a lot by participation in the training course.

What are your plans to realize what you have learned in Japan?

Of course, there are economic and technical hurdles to implement directly the Japanese experience here in Mongolia. At first, I think it would be worth working on changing the current attitude of people towards waste. Thus, I am planning to work with khoroo governments and residents of the district that I am responsible for.

4. Workshop on Formulation of M/P for Provincial Cities

MONET has ordered every Provincial Center to formulate Master Plan on SWM and allocated certain amount of money to implement the plan. But many Provincial centers has difficulty in formulating M/P since there is no such experience before.

Workshop on formulation of M/P for Provincial center was held from Jun 28 to 30, 2011 in UBC. 18 Officers and Directors of NET from 10 Provincial Cities (PCs) attended.

This three-day workshop required the participants to do planning practices on Action Plan using PC in day 2nd and day 3rd and all trainees completed this intensive program.

As a result, the trainees obtained the basic knowledge and information required for the formulation of a MSWM M/P, which was the primary objective of the workshop. In order to determine trainee's understanding, they were asked to prepare the Concept of the M/Ps of their own respective cities.

In regard to this, they had to have an understanding of what the MUB SMW M/P was, and use it as an example to prepare the Concept of the M/Ps of their cities by themselves. At the end of the training, the Concepts of 10 cities were presented to confirm their understanding. The participants would be able to formulate their M/Ps provided they had a certain amount of expert support.

5. SWM in Local Province

Just after the above workshop, PC officials requested JET to give technical assistance on site and MONET has officially requested JET to visit three Provincial centers which are Darkhan, Erdenet and Bulgan.

JET has visited these three centers from 4th to 6th July 2011 and travelling distances are reached to 1,000km.

J.7 Newsletter No.7

Technical Cooperation Project for Strengthening the Capacity for Solid Waste Management in Ulaanbaatar City in Mongolia

Newsletter Vol. 7

Content
1. Additional PR Tools
2. Current Waste Flow in UBC
3. Change of Waste Fee Collection System in Ger Area
4. Introduction of the New JICA SV and JOCV
5. Farewell Greeting from the JICA SV, Mr. Matsuda
6. Greeting from EPWMD
7. Monthly Meeting

This time, we will be sending the last version of our Newsletter! We would like to express our sincere appreciation for all of your collaboration for our project over three years.

1. Additional PR Tools

Through the activities of the PP, various kinds of PR tools were developed to improve waste discharging manner and waste separation at source. However, in order to make it well known to the Mongolian citizens efficiently, we prepared some audio visual tools as follows;

Items	Purposes	Contents
1)3R Promotion program1 (17min.)	Introduction of the waste management of the UBC	Population, waste amount, waste composition, collection system, NEDS, RPF plant, interview with EPWMD and CMPUA
2)3R Promotion program2 (13min.)	Let us reduce waste by separating at generation sources	Waste separation PP, instruction on how to discharge waste for residents and business entities, Promotion of waste reduction and 3R
3)3R Promotion CM1 (25 sec.)	Prohibition of littering of waste	Sending message of prohibition of littering of cigarette bud and banana peal etc. by residents
4)3R Promotion CM2 (43 sec.)	Promotion of waste separation	Sending message of "Waste if mixed, resource if separated!"

These programs and commercials have been broadcasted in April 2012, and then the series of these AV tools were compiled into one DVD. Also the 3R promotion booklet was prepared for the students as well as the UB citizens for the educational purpose.

2. Current Waste Flow in UBC

One of the expected outcomes of this project is to revise current Solid Waste Management Master Plan which was formulated in 2006. Since then, Ulaanbaatar City has enjoyed more economic development than expected and more population growth was observed. But these changes caused more waste generation, waste collection and waste disposal amount which MUB has to tackle. It is very important to grasp current situation of SWM with illustration of waste flow.

Under the project, JET and C/P has investigated current SWM situation and waste flow in Winter and Summer in 2010 was developed as follows.

As shown in the waste flow, 1000 ton and 500 ton of waste are generated everyday in winter and summer respectively in UBC. And around 900 ton of wastes are collected, transported and landfilled in Disposal Site.

During the project, capacity development was conducted targeting not only civil servants of city, district, khoroo offices, but also relevant staffs of waste transporting organizations through trainings organized in Mongolia and Japan. In addition to the capacity development, many activities including PR activities on SWM, pilot project on waste separation at generation sources, SWM data creation and data update through numerous surveys were implemented.

One of the major achievements of the project is the technical understanding, knowledge and skills obtained by the officers of city government and district offices on organization of trainings and PR activities, implementation of surveys and policy-oriented decision making processes related to their positions and assignments.

I would like to express my gratitude on behalf of the Mayor's Office and myself to Mr.Toshinori Isogai, the Resident Representative of JICA Mongolia Office, Mr.Ichiro Kono, the chief advisor of the Japanese Experts Team and their staff for the efforts in implementation of this project, and wish them all the best for their future activities.

7. Monthly Meeting

In order to continuously help realize clean environment in UBC, the member of the SWM Study Team which consists of EPWMD, CMPUA and other relevant agencies will hold a monthly meeting with assistance of JICA Volunteers.

Date: 10:00 am on each Wednesday of the last week of the month

Venue: EPWMD meeting room

"My voluntary activities of *Mongolization*" will be finally over!

The collection vehicles coming along with the melody of the Ouma no Oyako has already spread out over the Ulaanbaatar City. Whenever I had a chance to introduce myself, I used to use this music.

The used collection vehicles were donated by the grass roots aid, new collection vehicles, heavy machines and dump trucks were donated by the grant aid assistance of the Japanese Government. Since those machines have been working harder than me every day, when I started working here, I wished to do my duties on daily maintenance and repairing properly in order for them to work even longer. However, I found some difficulties in finding the proper equipments and tools, which always kept me busy thinking of how to do without these necessary tools.

That is why I always tried hard to "mongolize" something that we already have in Mongolia.

In the end, I've done repair works on 23 nits of 15-m3 collection trucks spending 2 days for each truck, while wishing that each 2-day work would help prolong its lifespan.

Through the activities on site with those Mongolian engineers and drivers, I am sure that I could have transferred something non-describable by means of language.

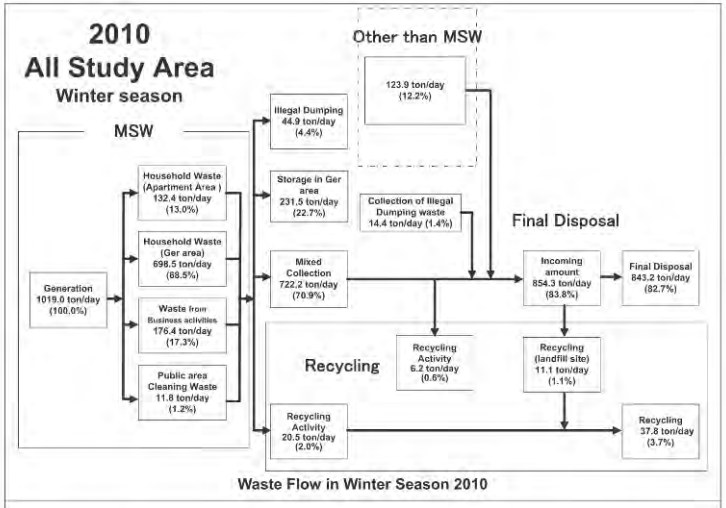
I myself do jogging slowly so I wish that all the vehicles that I repaired runs as long as possible in the Ulaanbaatar City.

6. Greeting from EPWMD

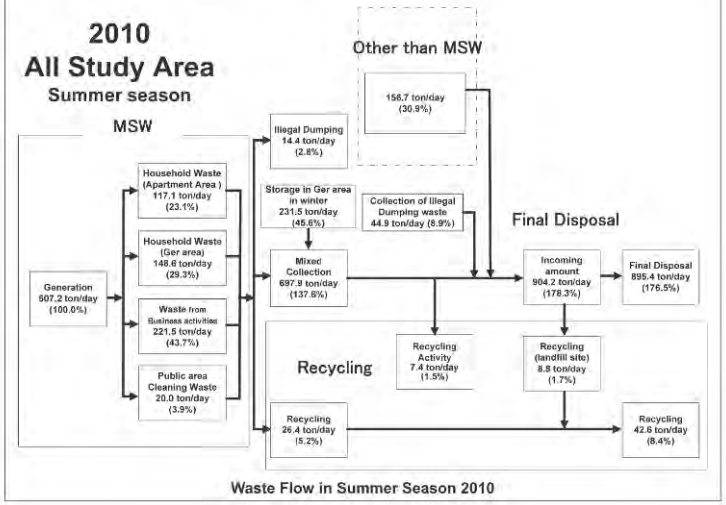
Mr.Ariguun S (Senior Officer of EPWMD)

Under the technical cooperation by the Government of Japan, we have implemented the Project on Strengthening the Capacity for Solid Waste Management in Ulaanbaatar City in cooperation with JICA for three years since October 2009.

JICA Expert Team
The Technical Cooperation Project for Strengthening the Capacity for Solid Waste Management in Ulaanbaatar City in Mongolia
[Office] C/O CMPUA
Burntsend Street-68, Khoroo 6,
Chingeltei District, Ulaanbaatar, Mongolia
TEL: 011-327128 FAX: 011-323128
Website: http://www.kkcub.mn/



Waste Flow in Winter Season 2010



Waste Flow in Summer Season 2010

3. Change of Waste Fee Collection System in Ger Area

MUB has introduced new waste fee collection system in ger area, which waste collection fee is charged together with electricity bill, in Jul 2011. Before, the fee was collected in following manner

1. Fee collector rides with waste collection trucks.

2. Trucks go to individual ger and ask residents to pay waste collection fee which is 2500tg/month/household.

3. If residents agree to pay the fee, then waste collector start to collect waste from that ger.

In this system, residents who do not wish to discharge wastes in particular month, it was not required to pay the fee.

When we refer to waste flow in 2010 winter, 230 ton of wastes are stored every day during winter season. Difficulty of waste collection in UBC is that the amount of wastes generated in winter is double the amount in summer which are 1000 ton/day and 500 ton/day respectively.

Previous waste fee collection system has contributed to equal the waste collection amount in winter and summer indirectly. According to the new fee collection system, the residents in ger area should pay the fee compulsory with or without discharging the wastes.

Therefore peoples demand to waste collection company to come and collect waste every month is becoming more and more.

In order to satisfy peoples demand in ger area, collection company should increase the collection capacity to double in winter compare in summer.

MUB and District Government is now trying hard to settle these issues together with collection companies with increasing number of collection trucks which are funded by MUB.

But current waste collection fee for ger area might not be enough to cover current waste collection cost since residents in ger area are generating more than triple in winter due to coal ash because of heating.

4. Introduction of the New JICA SV and JOCV

Mr. SAKATA Hiromichi

JICA senior volunteer (2012/1/6～2014/1/5)

Technical field: Waste Management

1) Counterpart:

Municipality of Ulaanbaatar City Environmental Pollution and Waste Management Department（EPWMD）

2) Ambition

The project by the JET is over in this August leaving much information and valuable proposals.

Mongolian people must work hard to realize appropriate waste management without help from the outside from now on.

I would like to cooperate with realization of the appropriate waste management in Mongolia by supporting the administration of the voluntary study team that was established for this purpose.

In addition, through one of my hobbies the Kyudo; the Japanese archery, I look forward to exchanging our culture together with Mongolian people.

MR. KINOSHITA Satoshi

JICA volunteer (2012/1/6～2014/1/5)

Technical field: Environmental Education

1) Counterpart:

Municipality of Ulaanbaatar City Environmental Pollution and Waste Management Department（EPWMD）

2) Ambition

Problem of waste can not be easily resolved in a short period of time. So we need to change the consciousness of people little by little through education.

I would like to do two activities for that. One is to get to know citizens about the problem of waste in Ulaanbaatar properly. Another is to think together with the people of Ulaanbaatar city about what we should do in order to solve the problem.

I would like to conduct the activities cooperating with city hall staff, school officials, JICA volunteers, and a variety of people.

5. Farewell Greeting from the JICA Senior Volunteer

Mr. MATSUDA Kazutoshi

JICA volunteer (2010/9/29～2012/9/28)

Technical field: Vehicle maintenance.

Counterpart: CMPUA

SECTION K Weekly Meeting

K Weekly Meeting

K.1 Presentation Materials

Schedule for next week

1. Regular landfill operations at NEDS and MDDS (Solution of problem for electricity supply to WB in MDDS)
2. Regular waste collection operations in 15 khoroos of BZD

10

c. Waste Fee Collection Rate in Ger area after introduction of New Fee Collection System

Background

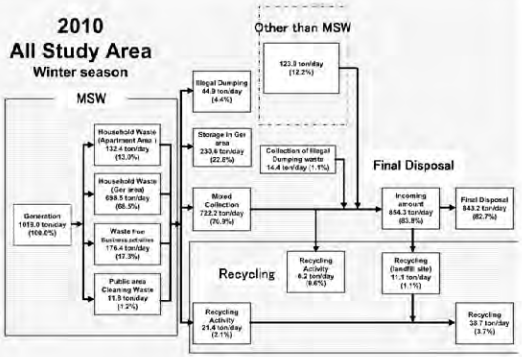
- City Mayor issued ordinance for collecting waste collection fee together with electricity bill sometime June 2011.
- Accordingly power distribution company started to collect waste fee from July 2011.
- Commission for power distribution company is 23%
- Previous waste fee collection rate surveyed by JET is 24% for 6 districts during Sep 2008 to Aug 2009

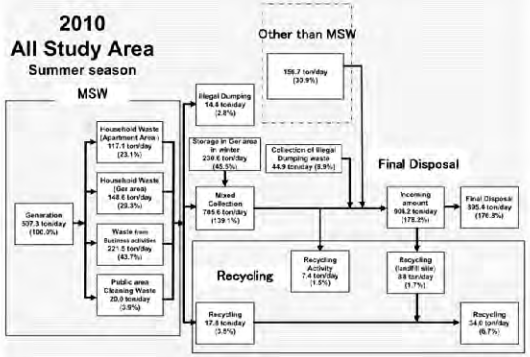
Waste Fee Collection from Ger Area Households in each district

	District	100%Collection Amount			Actual Collection Amount in 2011						
		HH number	Fee	Total Fee	7	8	9	10	11	12	
		①	Tg/HH	1000Tg	1000Tg	1000Tg	1000Tg	1000Tg	1000Tg	1000Tg	%
1	BGD	11,963	2,500	29,908	1,731.90	13,462.80	16,003.60	18,272.67	14,431.00	16,541.07	55%
2	BZD	46,089	2,500	115,208	33,899.10	51,238.20	58,338.41	61,337.00	50,346.10	70,944.09	62%
3	SBD	20,013	2,500	50,033	12,580.10	25,216.38	25,688.04	28,266.69	26,875.80	28,550.42	57%
4	SKhD	41,824	2,500	104,559	16,751.20	29,533.28	41,484.95	59,318.84	56,624.80	64,891.61	62%
5	KUC	18,501	2,500	46,253	14,239.30	22,607.10	23,187.13	24,808.65	25,640.25	25,130.05	54%
6	CHD	27,199	2,500	67,793	19,545.00	36,266.80	37,580.38	38,897.53	41,043.90	46,008.05	68%
8	Nalaikh	6,732	2,500	16,830				4,458.73	6,783.25	9,950.52	54%
	Total	172,220		430,550	99,746.60	179,320.56	202,192.51	235,360.25	231,744.75	261,116.81	61%
	Fee Collection Rate against theritical amount				23%	42%	47%	55%	54%	61%	
	Fee Collection Rate considering 20% Commision by Power Co.				19%	33%	38%	44%	43%	49%	

① 2010MUB Statistic

e. Ger Area Waste Collection





Guide Line for Appropriate Waste Collection Fee

Unit Cost for collecting waste in each area (Tg/ton)

Description	SBD	ChD	SKhD	BZD	BGD	KhUD
Apartment Area (CT5m3)	20,000	19,700	17,600	21,200	18,600	20,300
Ger (DT6ton)	26,800	26,200	22,100	29,200	24,000	27,500

Waste collection fee which residents are paying (Tg/ton)

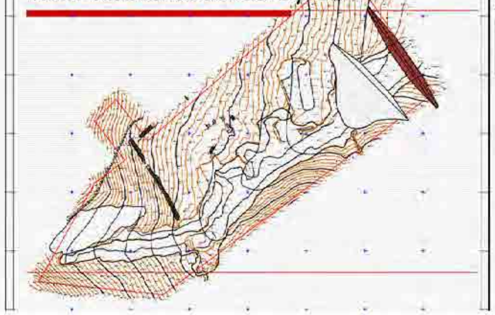
Description	SBD	ChD	SKhD	BZD	BGD	KhUD
Apartment Area	53,054	56,098	64,325	57,886	47,673	61,378
Ger Area	24,548	22,313	23,328	25,190	25,914	27,934

Factors of the problem

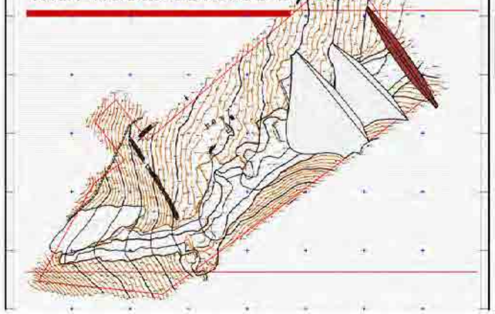
- Increase fee collection rate.
- More pressure on waste collection from Ger residents
- Waste generation in winter and summer is not balance.
- Increase waste collection trucks for winter generation is difficult
- TUK is not willing to increase waste collection in ger area since it is not profitable.

Skip Loader
コンテナ吊上げ開始
走行状態
ダンプ排出
Possible solution
Cross subsidy
Use profit arising from apartment area for Ger area collection
Decrease cost of collection
Stop door to door collection
Container with skip loader
Special collection method for ash
Balance waste generation
Waste separation- ash and others
Waste reduction- change heating system
Construct Lowest Embankment dam with soil
Filling Gully with Wastes
Excavate drain along boundary
e. Basic Plan for Future Landfill Operation at TDDS
Waste Fee Collector and Service Provider

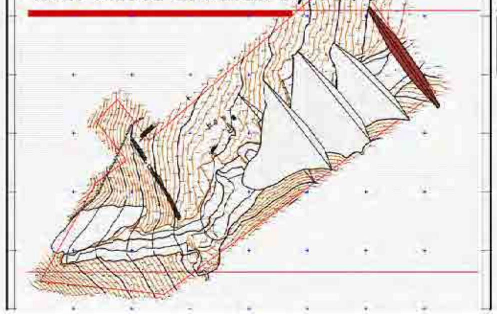
Construct 1st Embankment Dam with waste covered by soil



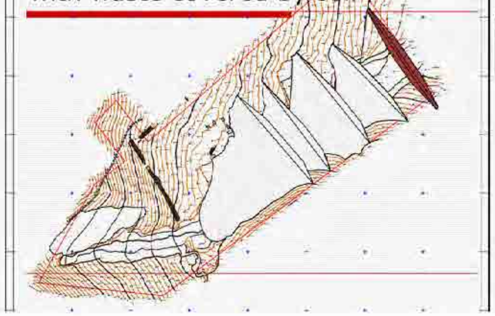
Construct 2nd Embankment Dam with waste covered by soil



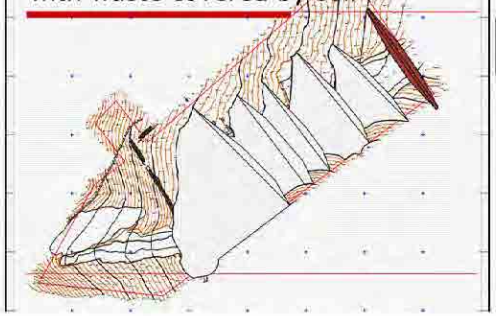
Construct 3rd Embankment Dam with waste covered by soil



Construct 4th Embankment Dam with waste covered by soil



Construct 5th Embankment Dam with waste covered by soil

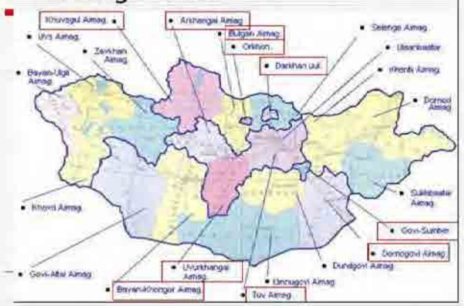


Landfill Volume

	EL(m)	Formula	Volume
Prep.		600m x 70m x 5m=	210,000m3
Step1	1470	180m x 180m x ½ x 5m=	81,000m3
Step2	1475	200m x 180m x ½ x 5m=	90,000m3
Step3	1480	200m x 180m x ½ x 5m=	90,000m3
Step4	1485	200m x 250m x ½ x 5m=	125,000m3
Step5	1490	250m x 250m x ½ x 5m =	156,250m3
Total			752,250m3

Waste from Bayanzurkh in 2011: 79,000 ton

f. Implementation of SWM MP in Aimag Center



Progress of Formulation of MP and progress of its implementation

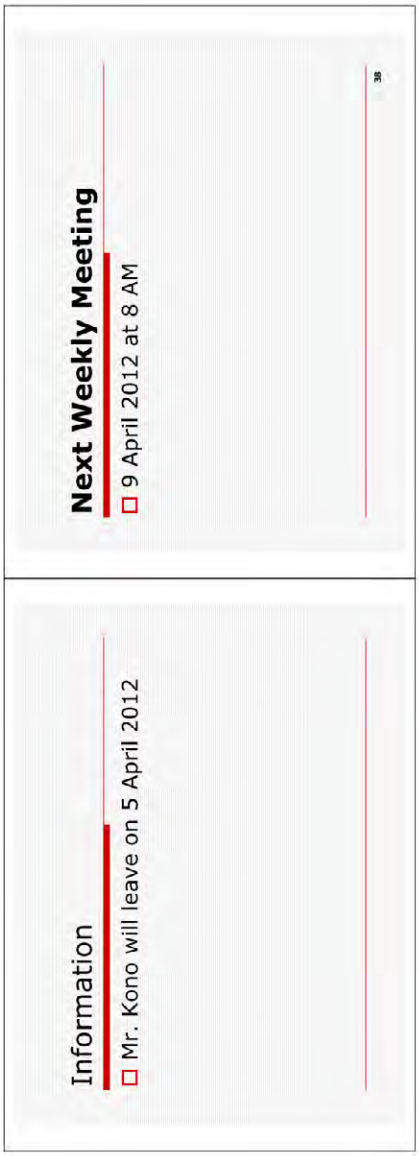
表 1: Progress of Formulation of MP on SWM and its Implementation

No	Aimag	WS Attended	MP Submitted	MP approved by local government	Budget Approved	Budget Utilized
1	Bayan-Ulgii		○		○	○
2	Khuvd					
3	Uvs		○			
4	Zavkhan					
5	Govi-altai		○		○	○
6	Bayankhongor	○			○	○
7	Khuvsgul	○	○			
8	Arkhangai	○	○			
9	Uvurkhangai	○				
10	Bulgan	○	○	○	○	○
11	Selenge				○	○
12	Darkhan-Uul	○	○			
13	Orkhon-Uu	○	○		○	○
14	Tuv	○	○			
15	Dundgovi					
16	Umnugovi				○	○
17	Dornogovi	○	○			
18	Govi-Sumber	○	○	○	○	○
19	Khenti					
20	Sukhbaatar					
21	Dornod		○	○		
Total		10	12	3	8	8
(%)		45%	57%	14%	38%	38%

情報源：MONET

Request from one of the Aimag Center

- ☐ Representative from Govi Sumbre
- ☐ Request for Inspection of Improved Landfill Site
- ☐ Request for assistance for commencement of pilot project on waste separation at generation sources and education for waste discharge manner
- ☐ EPWMD staff with JET


Next Weekly Meeting
9 April 2012 at 8 AM
Information
Mr. Kono will leave on 5 April 2012

Weekly Meeting (99)

Apr 9, 2012
JICA Expert Team
For Strengthening the Capacity for Solid Waste Management in Ulaanbaatar City

1

Agenda

1. Work Progress
2. Schedule for This Week
3. Subjects to be Discussed
4. Material Needed

2

1. Progress from 2 to 8 Apr 2012

1. Implementation of PP1 Phase II by EPWMD
   - Preparation for distribution of 3R booklet and brochure
   - Preparation for broadcasting 3R TV program
   - AOU meeting has been held 6th (Fri)
2. Improvement of WB Operation
   - MUB Web Site?? WB record at web site.
3. Preparation of Revised M/P
4. Analysis of POS answers in Excel Form
5. Japanese Grant Aid Auditing from 27 Mar up to 6th April
6. Preparation for Action Plan of EPWMD year 2013 to 2016
   - Discussing with EPWMD and CMPUA
7. To research the solution for radiator issue
   - Uzawa and Matsuda are working on this issue.
8. Progress report no.5

3

a. Progress of Work for EPWMD Apr 2 – 8, , 2012

By EPWMD staff

4

2. Schedule from 9 Apr to 15 Apr, 2012

1. Implementation of PP1 Phase II by EPWMD
   - AOU meeting for distribution of 3R booklet and brochure
   - Broadcasting 3R TV program
   - Education material toward schools
2. Improvement of WB Operation
   - MUB Web Site?? WB record at web site.
3. Analysis of POS answers in Excel Form
4. Preparation for Action Plan of EPWMD year 2013 to 2016
   - Discussing with EPWMD and CMPUA
5. Analysis for proper operation of RPF plant
6. Operation & Maintenance of machineries
   - Maintenance report from TUK to CMPUA, EPWMD
   - Preparation of O&M workshop directing to TUKs on 19th April
7. Printing Progress report no.5

5

3. Subjects to be Discussed

a. Progress of Work for EPWMD
b. Progress of Work for CMPUA
c. Progress of 3R PR tool
d. Calculation for Waste Collection Tariff
e. Financial Analysis (Income and Expenditure) of Collection Service for Apart and Ger Area
f. Proposed A/P of SWM in MUB from 2013 to 2016

6

b. Progress of Work for CMPUA Apr 2 – 8, , 2012

By CMPUA staff

7

Content of work conducted last week

1. Regular landfill operations at NEDS and MDDS
   - Due to overheating of the bulldozers' engines at NEDS, the bulldozers could not operate at the landfill site which caused the fire outbreak on 5 April 2012 with the accumulation of waste at the working face.
   - A new bulldozer operator was hired at MDDS, then its bulldozer was repaired and started to operate from 6 April 2012. A previous operator was called back to NEDS.
   - A medical inspection was conducted by the Department of Children of Ulaanbaatar city Government for the children who is working at NEDS on 5 April 2012.
   - The students of Ulaanbaatar International School have visited NEDS on 2 April 2012. The school has sent its students of 3rd to 5th grade to NEDS for the third consequent years.
2. Regular waste collection operations in 15 khoroos of BZD

8

Weekly Disposal Amount (ton) 2012 III/23-IV/5

	(III/23-29)	(III/30-IV/5)
NEDS / weekly	8,056	9,055
NEDS / daily average	1,151	1,294
MDDS / weekly	510	552
MDDS / daily average	73	79

Schedule for next week

1. Regular landfill operations at NEDS and MDDS
   - (Solution of problem for electricity supply to WB in MDDS)
2. Regular waste collection operations in 15 khoroos of BZD

10

c. Progress of 3R PR tool

Schedule of Broadcasting

T.V	Time/Program	Date	Type
TV9	19.30-21.10 News	04.02(Mon)	CM1(2 ver.)
	19.30-21.10 News	04.05(Thu)	CM2
	19.30-21.10 News	04.08(Sun)	CM1(2 ver.)
	19.30-21.10 News	04.09(Mon)	CM1(2 ver.)
	19.30-21.10 News	04.12(Thu)	CM2
	19.30-21.10 News	04.15(Sun)	CM1(2 ver.)
	19.30-21.10 News	04.16(Mon)	CM1(2 ver.)
	19.30-21.10 News	04.19(Thu)	CM2
	19.30-21.10 News	04.22(Sun)	CM1(2 ver.)
	19.30-21.10 News	04.23(Mon)	CM1(2 ver.)
	19.30-21.10 News	04.26(Thu)	CM2
	19.30-21.10 News	04.29(Sun)	

T.V	Time/Program	Date	Type
UBS	20.00 News	04.04(Wed)	CM1 (3 ver.)
	20.00 News	04.11(Wed)	
	20.00 News	04.18(Wed)	
	20.00 News	04.25(Wed)	
	20.00 News	04.07(Sat)	CM2
	20.00 News	04.14(Sat)	
	20.00 News	04.21(Sat)	
	20.00 News	04.28(Sat)	

* PR of 3R promotion has been put on the famous magazine "T.V 7 days"
* Under broadcasting negotiation with "MNB", "NTV" and "TV25"

12

AOU meeting

District	Khoroo	Date	Status
KhUD	2	4/6	finished
BZD	15		
ChD	4		

13

Plan of Distribution of PR materials

No.	Organization to be distributed	Number of org.	Booklet		Brochure		DVD	
			num	total	num	total	num	total
1	AOU	31		62		4884		0
2	KHUD AOU	10	2	20		1880		0
3	CHD AOU	14	2	28		1168		0
4	BZD AOU	7	2	14		1836		0
9	Khoroo	3	100	300	300	900	1	3
6	School	130	3	390	10	1300	1	130
7	University	6	30	180	50	300	1	6
8	kindergarten	100	2	200	10	1000	1	100
10	TV	30	1	30	2	60	1	30
11	JICA	1	30	30	30	30	5	5
12	EPPMD	1	500	1748	1466	1466	27	27
13	Department of Education	1	50	50	50	50	1	1
14	Ministry of Education	1	10	10	10	10	1	1
				3000		10000		300

d. Ariguun's Report on Calculation for Waste collection Tariff

e. Financial Analysis (Income and Expenditure) of Collection Service for Apart and Ger Area

Background

- City Mayor issued ordinance for collecting waste collection fee together with electricity bill sometime June 2011.
- Accordingly power distribution company started to collect waste fee from July 2011.
- Previous waste fee collection rate surveyed by JET is 24% for 6 districts during Sep 2008 to Aug 2009
- Current waste fee collection rate in Ger Area clime up to 61% in December 2011.
- However, collection service (frequency) has not changed. Consequently huge complains came from Ger area.

Waste Fee Collection from Ger Area Households in each District

	District	100%Collection Amount			Actual Collection Amount in 2011					
		Hh-number	Fee	Total Fee	7	8	9	10	11	12
		①	Tgrk	1000Tg	1000Tg	1000Tg	1000Tg	1000Tg	1000Tg	1000Tg
1	BGD	11,963	2,500	29,908	1,731.90	13,462.30	16,003.60	15,222.67	14,431.00	16,644.07
2	BZD	46,083	2,500	115,208	33,899.10	51,238.20	58,336.41	61,307.00	60,346.10	70,944.09
3	SBD	20,013	2,500	50,033	13,560.10	25,219.38	25,586.04	28,286.69	26,875.80	28,563.42
4	SNHD	41,623	2,500	104,058	16,751.20	30,533.25	41,484.55	59,318.84	56,524.80	64,891.61
5	KUD	18,591	2,500	46,253	14,209.30	22,607.10	23,187.13	24,308.65	25,643.20	25,130.05
6	CHD	27,165	2,500	67,763	10,545.60	36,259.80	37,596.38	35,867.50	41,243.60	46,006.05
8	Nalaikh	6,732	2,500	16,830				4,458.70	6,783.20	9,050.52
	Total	172,220		430,550	99,746.69	179,320.56	202,192.51	235,969.25	231,744.72	261,116.81
	Fee Collection Rate against theritical amount				23%	42%	47%	55%	54%	61%
	Fee Collection Rate considering 20% Commision by Power Co.				19%	33%	38%	44%	43%	49%

①: 2010MUB Statistic

Cost & Income of Waste Collection for Apart and Ger Area (1)

□ Unit Cost for collecting waste in each area (Tg/ton)

Description	SBD	ChD	SKhD	BZD	BGD	KhUD
Apartment Area (CT8m3)	20,000	19,700	17,600	21,200	18,600	20,300
Ger (DT6ton)	26,800	26,200	22,100	29,200	24,000	27,500

□ Waste Generation Rate in 2010:
Apartment Area: 294 g/person/day (312w and 276s)
Ger Area: 627 g/person/day (1,034w and 220s)

□ Number of Family Member of a Household in 2010
Apartment Area: 3.8 person/household
Ger Area: 4.1 person/household

Cost & Income of Waste Collection for Apart and Ger Area (2)

□ Waste Generation of a Household per Month in 2010
Apartment Area: 33.5 kg/household/month
Ger Area: 71.5 kg/household/month

Area	Description	SBD	ChD	SKhD	BZD	BGD	KhUD
Apart (CT8m3)	Tg/ton	20,000	19,700	17,600	21,200	18,600	20,300
	Tg/HH/month	670	660	590	710	623	680
Ger (DT6ton)	Tg/ton	26,800	26,200	22,100	29,200	24,000	27,500
	Tg/HH/month	1,916	1,873	1,580	2,088	1,716	1,966

□ Estimated Income from a Household per Month
Apartment Area: 1,692 Tg
2,000Tg x 0.9 (collection rate) x 0.94 (OSNAAG commission)
Ger Area: 1,174 Tg
2,500Tg x 0.61 (collection rate) x 0.77 (UBTsTS JSC commission)

f. Proposed A/P of SWM in MUB from 2013 to 2016

f.1 Goal

The fundamental goal of the A/P for SWM in MUB is:

□**"To establish an environmentally sound SWM system in MUB by 2016 through the promotion of 3R (reduce, reuse, recycle)".**

f.2 Strategies (1)

Strategy 1: Establishment of proper waste management and recycling at generation sources

□Establishment of discharge rules

□Promotion of 3Rs at generation sources

f.2 Strategies (2)

Strategy 2: Improvement of collection and transportation system

□Strengthening of waste collection and transportation capacity

□Improvement of waste collection fee management systems

Strategy 3: Improvement of public area cleaning system

□Strengthening of public area cleansing services

□Elimination of littering

f.2 Strategies (3)

Strategy 4: Promotion of recycling

□Operation of RPF plant

□Support of recycling industries

Strategy 5: Improvement of final disposal system

□Implementation of sanitary landfill operation

□Construction of a new disposal site (TDDS) for eastern districts

f.2 Strategies (4)

Strategy 6: Establishment of hazardous waste management

□Improvement of legal background

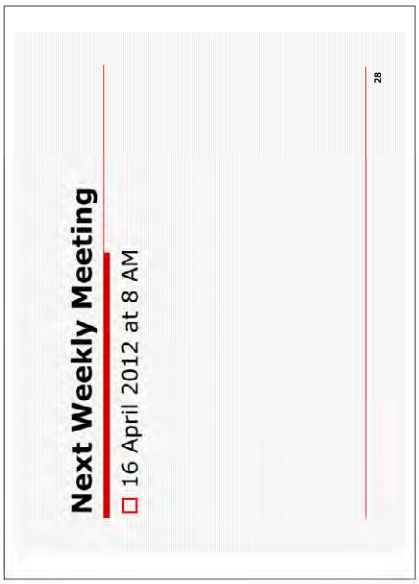
□Establishment of hazardous industrial waste management

Strategy 7: Establishment of construction waste management

□Improvement of legal background

Information

□ Mr. Kono left on 5 April 2012


Next Weekly Meeting
16 April 2012 at 8 AM
28

Weekly Meeting (100)

Apr 17, 2012
JICA Expert Team

For Strengthening the Capacity for Solid Waste Management in Ulaanbaatar City

1

Agenda

1. Work Progress
2. Schedule for This Week
3. Subjects to be Discussed
4. Material Needed

2

1. Progress from 9 to 15 April 2012

1. Preparation of Revised M/P
   - To summarize Plan and Achievement for Implementing SWM M/P
   - Analysis for proper operation of RPF plant
2. Implementation of PP1 Phase II by EPWMD
   - Distribution of 3R booklet and brochure
   - Distribution for broadcasting 3R TV program
   - AOU meeting has been held 10th (Tue) at ChD #4
3. Improvement of WB Operation
   - MUB Web Site?? WB record at web site.
4. Preparation of Analysis of POS answers in Excel Form
5. Operation & Maintenance of machineries
   - Workshop for Analysis of O&M for TUKs held 13th (Fri)
   - To research the solution for radiator issue
6. On-the-site lecture at Choir city 13th (Fri)
   - Odjagal from EPWMD attended and well lectured toward local people
7. Printing Progress report no.5

3

a. Progress of Work for EPWMD Apr 9 – 15 , 2012

By EPWMD staff

Weekly Disposal Amount (ton) 2012 III/30-IV/12

	(III/30-IV/5)	(IV/6-12)
NEDS / weekly	9,055	8,215
NEDS / daily average	1,294	1,174
MDDS / weekly	552	436
MDDS / daily average	79	62

2. Schedule from 16 to 22 April 2012

1. Preparation of Revised M/P
   - To summarize Plan and Achievement for Implementing SWM M/P
   - Analysis for proper operation of RPF plant
2. Implementation of PP1 Phase II by EPWMD
   - Distribution of 3R booklet and brochure
   - Distribution for broadcasting 3R TV program
   - AOU meeting at BZD#15
3. Improvement of WB Operation
   - MUB Web Site?? WB record at web site.
4. Analysis of POS answers in Excel Form
5. Operation & Maintenance of machineries
   - Preparationg for Technical Workshop on hydraulic system for TUKs on 23th (Mon)
   - To research the solution for radiator issue
6. Printing Progress report no.5

4

3. Subjects to be Discussed

a. Progress of Work for EPWMD
b. Progress of Work for CMPUA
c. Progress of 3R PR tool
d. Problems of Cross-subsidy by Apart to Ger
e. Proposed Operation Plan for RPF Facility and Separate Collection
f. Achievement of M/P for Institutional System by March 2012

5

Content of work conducted last week

1. Regular landfill operations at NEDS and MDDS
   - Big fire occurred during April 7-10, it was down on April 11 fully.
   - New collection trucks of ChD TUK and ShD TUT have started its operations. The registration at NEDS WB is in progress.
   - Due to the coolant heating of bulldozer radiators, CMPUA could not conduct landfill operations. The landfill operations became normal only after the removal of the grille.
2. Regular waste collection operations in 15 khoroos of BZD

b. Progress of Work for CMPUA Apr 9 – 15, , 2012

By CMPUA staff

Schedule for next week

1. Regular landfill operations at NEDS and MDDS
   - (Solution of problem for electricity supply to WB in MDDS)
2. Regular waste collection operations in 15 khoroos of BZD

10

c. Progress of 3R PR tool

11

Schedule of Broadcasting

T.V	Time/Program	Date	Type
NTV	21:00 News, before and after	04.09(Mon)	Both version of C.M
	21:00 News, before and after	04.11(Thu)	Both version of C.M
	21:00 News, before and after	04.15(Sun)	Both version of C.M
	21:00 News, before and after	04.16(Mon)	Both version of C.M
	21:00 News, before and after	04.18(Thu)	Both version of C.M
	21:00 News, before and after	04.22(Sun)	Both version of C.M
	21:00 News, before and after	04.23(Mon)	Both version of C.M
	21:00 News, before and after	04.25(Thu)	Both version of C.M
	21:00 News, before and after	04.29(Sun)	Both version of C.M

* PR of 3R promotion has been put on the famous magazine "T.V 7 days"
* Under broadcasting negotiation with "MNB" and "TV25"

12

AOU meeting

District	Khoroo	Date	Status
KhUD	2	4/6	finished
BZD	15		
ChD	4	4/10	finished

13

d. Problems of Cross-subsidy by Apart to Ger

14

Problems of Cross-subsidy by Apart to Ger (1)

- As we discussed last WM, cost of Ger area waste collection much more than income (even fee collection rate comes 61%)
- Then, we concluded for the waste collection service of Ger area requires some cross-subsidy mechanism, i.e. surplus of apartment area may use to Ger area.
- However, this explanation may cause problems to the waste collection companies.

15

Problems of Cross-subsidy by Apart to Ger (2)

- Apartment area where AOU is collecting waste fee in SkhD causes problems to TUT of SkhD.
- AOU does not pay 94% of waste fee. Instead it pay according to trip base.
- TUT is very afraid of that this kind of manner will spread to the other apartment area if people of apartment area knows about their waste fee subsidizes Ger area collection.
- Other cross-subsidy mechanism shall be examined.

16

Cost & Income of Waste Collection for Apart and Ger Area

- Waste Generation of a Household per Month in 2010
  - Apartment Area: 33.5 kg/household/month
  - Ger Area: 71.5 kg/household/month

Area	Description	SBD	ChD	SkhD	BZD	BGD	KhUD
Apart. (CTBm3)	Tg/ton	20,000	19,700	17,600	21,200	18,600	20,300
	Tg/HH/month	670	660	590	710	623	680
Ger (DT6ton)	Tg/ton	26,800	26,200	22,100	29,200	24,000	27,500
	Tg/HH/month	1,916	1,873	1,580	2,088	1,716	1,966

- Estimated Income from a Household per Month
  - Apartment Area: 1,692 Tg
    2,000Tg x 0.9 (collection rate) x 0.94 (AUNAG commission)
  - Ger Area: 1,174 Tg
    2,500Tg x 0.61 (collection rate) x 0.77 (UBTsTS JSC commission)

17

e. Proposed Operation Plan for RPF Facility and Separate Collection

18

Basic Considerations

- ☐ Capacity of Sorting Plant: 10 ton/hour
- ☐ Capacity of RPF Plant:
  1 ton/hour ← Critical aspect
- ☐ Calculation of Maximum Production of RPF (ton/day): => From F/S of JICA Study
  1. Daily operation hours: 5 hours
  2. Annual operation days: 300 days
  3. RPF production (year and day):
  Year: 1 x 5 x 300 = 1500 ton/year
  Day: 4.1 ton/day <= Target of 2016

Result of WACS in 2011 (1)

unit:g/person Category	winter		summer		
1. Kitchen Waste	98.6	31.6%	70.4	25.5%	
2. Paper	29.0	9.3%	20.4	7.4%	Recyclable & RPF:
3. Textile	4.7	1.5%	4.4	1.6%	Recyclable: 5, 9, (10 x 0.7)
4. Plastic (RPF 1)	15.6	5.0%	12.4	4.5%	RPF: 2, 4, 6
5. Plastic (Valuable)	17.5	5.6%	34.8	12.6%	Others:
6. Plastic (RPF 2)	3.4	1.1%	1.7	0.6%	1, 3, 7, 8, (10 x 0.3), 11, 12
7. Grass and Wood	1.6	0.5%	1.7	0.6%	
8. Rubber and Leather	0.3	0.1%	3.0	1.1%	
9. Metal	4.7	1.5%	5.2	1.9%	
10. Bottle and Glass	107.0	34.3%	96.6	35.0%	Note:
11. Ceramic & Stone	1.2	0.4%	0.6	0.2%	Difference of RPF 1 & 2 is size for segregation
12. Others	28.4	9.1%	25.1	9.1%	
Total	312	100.0%	276	100.0%	
	312.0		276.3		

Result of WACS in 2011 (2)

Recyclable & RPF:

Recyclable: 5, 9, (10 x 0.7)

RPF: 2, 4, 6

Others:

1, 3, 7, 8, (10 x 0.3), 11, 12

unit: g/person/day	winter	summer	Average	
Recyclable & RPF	145.1	142.1	143.7	49%
Recyclables	97.1	107.6	102.4	35%
RPF	48.0	34.5	41.3	14%
Others	166.9	133.9	150.4	51%
Total	312	276	294.0	100%

Result of Separate Collection Pilot Project (PP) in 2011 (1)

	6weeks	1week		Without 9	
1. Pet-bottle	13.6 kg	2.3 kg	0.3%	2.3 kg	0.5%
2. Colored plastic container	38.5 kg	6.4 kg	0.9%	6.4 kg	1.4%
3. Glass Bottle	31.9 kg	5.3 kg	0.7%	5.3 kg	1.2%
4. Iron	12.7 kg	2.1 kg	0.3%	2.1 kg	0.5%
5. Paper	368.2 kg	61.4 kg	8.5%	61.4 kg	13.8%
6. Bone	0.0 kg	0.0 kg	0.0%	0.0 kg	0.0%
7. Plastic Bag	10.9 kg	1.8 kg	0.3%	1.8 kg	0.4%
8. Metal	12.7 kg	2.1 kg	0.3%	2.1 kg	0.5%
9. Cardboard (CB)	1,665.0 kg	277.5 kg	38.4%	0.0 kg	0.0%
10. RPF plastic	571.3 kg	95.2 kg	13.2%	95.2 kg	21.4%
11. RPF paper	675.0 kg	112.5 kg	15.6%	112.5 kg	25.3%
12. Residue	938.0 kg	156.3 kg	21.6%	156.3 kg	35.1%
Total (summed up)	4,337.8 kg	723.0 kg	100.0%	445.5 kg	100.0%

Recyclables: 1-9, RPF: 10 & 11

Result of Separate Collection Pilot Project (PP) in 2011 (2)

Recyclables: From item 1 to 9

RPF: 10 & 11

With Cardboard

unit: kg/target area/week		Without Cardboard	
Recyclables	358.9 kg	Recyclables	81.4 kg
RPF	207.7 kg	RPF	207.7 kg
Residues	156.3 kg	Residues	156.3 kg
Total	723.0 kg	Total	445.5 kg

Result of Separate Collection Pilot Project (PP) in 2011 (3)

unit: kg/target area/week	A. Planned	B. PP Results (with CB)	C. Cooperation Rate (B/A)	D. PP Results (without CB)	E. Cooperation Rate (D/A)
Recyclables	4,299 kg	359 kg	8.3%	81 kg	1.9%
RPF	1,734 kg	208 kg	12.0%	208 kg	12.0%
Residue	0.0 kg	156 kg		156 kg	
Total	6,032 kg	723 kg	12.0%	445 kg	7.4%

Operation Plan for RPF Facility and Separate Collection (1)

☐ Targets

1. Population for separate collection area: Increase from 6,000 in 2011 to 160,000 in 2016
2. Cooperation rate of people: Increase 12% (Pilot project results) to 60% in 2016
3. Separate collection amount: Increase 0.1 ton/day in 2011 to 13.79 ton/day in 2016
4. RPF production: Increase 0.03 ton/day in 2011 to 3.96 ton/day in 2016

25

Operation Plan for RPF Facility and Separate Collection (2)

	2011	2013	2014	2015	2016
Population for Separate Collection	6,000	20,000	40,000	80,000	160,000
Ideal Separated Amount (t/d)	0.86	2.87	5.75	11.49	22.98
Cooperation Rate (%)	12%	24%	36%	48%	60%
Actual Separated Amount (t/d)	0.10	0.69	2.07	5.52	13.79
RPF Production (t/d)	0.03	0.20	0.59	1.58	3.96
Recyclables with CB (t/d)	0.05	0.34	1.03	2.74	6.85
Recyclables without CB (t/d)	0.01	0.08	0.23	0.62	1.55
Residue (t/d)	0.02	0.15	0.45	1.19	2.98

Volume Calculation

- ☐ Unit Weight of Waste for RPF (Plastic 75% & Paper 25%): 0.1 ton/m3
- ☐ Unit Weight of RPF (Plastic 75% & Paper 25%): 0.41 - 0.43 ton/m3
- ☐ Day: 40m3 (4ton) of Waste for RDF becomes 9.5m3
- ☐ Month: 1,200 m3 (120ton) of Waste for RDF becomes 285m3
- ☐ Year: 14,600 m3 (1,460ton) of Waste for RDF becomes 3,468m3
- ☐ For Skhubataar Square (39,000m2): 38cm of Waste for RDF becomes 9cm

f. Achievement of M/P for Institutional System by March 2012

Achievement of M/P for Institutional System by March 2012 (1)

1. M/P: Improvement of SWM Administration System => ○

Achievement:

- ☐ Improvement of SWM Administration System of MUB => EPWMD (Plan & Control) & CMPUA (Operation)
- ☐ Improvement of SWM Administration System of District => District/PSD (Plan & Control) & TUK, etc. (Operation)

29

Achievement of M/P for Institutional System by March 2012 (2)

2. M/P: Capacity Development (CD) of Organization responsible for SWM => ○

Achievement:

- ☐ CD of EPWMD
- ☐ CD of CMPUA
- ☐ CD of PSDs

30

Achievement of M/P for Institutional System by March 2012 (3)

3. M/P: Promotion of Private Company Entry into SWM Services=> ○

Achievement:

- ☐ Entry of Private Companies into Waste Collection Service => TUK, TsY, etc.
- ☐ Entry of Private Companies into Hazardous/ Infectious Healthcare Waste Management Service => Element Co. Ltd.

31

Achievement of M/P for Institutional System by March 2012 (4)

4. M/P: Establishment of Systematic Monitoring and Information Management System for SWM => ○

Achievement:

- ☐ Guideline on Estimation of Waste Collection Fee for Contractor
- ☐ Management of Weighbridge Data of NEDS
- ☐ Environment Monitoring of Disposal Site

32

Achievement of M/P for Institutional System by March 2012 (5)

5. M/P: Development of Personnel Capacity Development Program => ○

Achievement:

- ☐ Collection System Planning
- ☐ Management of CMPUA Central Workshop
- ☐ Final Disposal Site Management
- ☐ Environmental Education

33

Achievement of M/P for Institutional System by March 2012 (6)

6. M/P: Improvement of Legal Systems => ○

Achievement:

- ☐ National Level
- ☐ City Level

34

Achievement of M/P for Institutional System by March 2012 (7)

7. M/P: Improvement of Collection and Management of Waste Collection Fee => △

Achievement:

- ☐ Improvement of Waste Collection Fee Management
- ☐ Improvement of Waste Fee Collection System in Ger Area
- ☐ Improvement of Financial Management System on Waste Collection Service

35

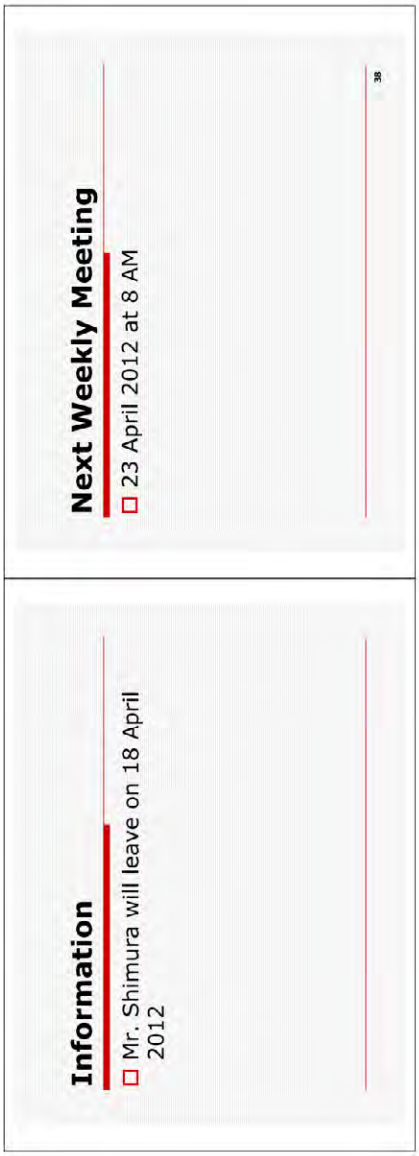
Achievement of M/P for Institutional System by March 2012 (8)

1. M/P: Establishment of Hazardous Waste Management => ○

Achievement:

- ☐ Establishment of Hazardous/Infectious Healthcare Waste Management
- ☐ Improvement of Hazardous Industrial Waste Management
- ☐ Improvement of Hazardous Household Waste Management

36


Next Weekly Meeting
23 April 2012 at 8 AM
38
Information
Mr. Shimura will leave on 18 April 2012