

Even though the environmental conditions were improved since the start of the bell collection system, waste heaps cannot be eliminated due to the lack of consensus with dischargers and the irregular collection schedule. Many residents and small-scale business establishments placed their waste at former container installed place regardless of the collection schedule. In some cases, new open dumping places were created by residents. As a result, waste heaps were formulated throughout the project site, and this made it difficult for collection workers to load waste and caused further delay of the schedule. In addition, waste was scattered across the apartment areas when it was windy. In order to keep the area clean, TUK had to provide a collection service twice a day in many parts of the project site. Considering the financial conditions, it is almost impossible for MUB to continue to provide the collection service twice a day.

Situations under the previous container collection system (March, 2005)



Former discharge point

Current situations under the bell collection system (May, 2006)



Former container installed place



Former container installed place



Newly created discharge point by residents



Current situation of collection waste

Figure 6-20: Discharge points and Loading Work at the Project Site

In order to promote 3R in Ulaanbaatar, the team proposes in the M/P the separate collection system in the planned area. Under the collection system shown above, however, the collection schedule was not fixed and people discharged waste at any time they wanted and as they like. In order to introduce a separate collection system, it was necessary to realize a scheduled waste collection service and discharge rules. Therefore, the tam and MUB decided to introduce the separate collection system in two phases.

## b. Objectives

This section of the pilot project aimed at examining the applicability of separate collection system. As mentioned above, however, the project was proceeded in two phases and the objectives in each phase are shown below.

**First Phase**

- to improve the collection system (fix the collection schedule)
- to introduce discharge rules

**Second Phase**

- to examine the applicability of separate collection system

**c. Basic Approaches**

The basic approaches are summarized below.

**c.1 Framework**

As mentioned above, the project consists of two phases: (1) improvement of collection system and (2) introduction of separate collection system. The first phase, improvement of collection system, is also divided into two parts: (1) modification of the collection system and (2) introduction of discharge rules.

**First Phase**

- To modify a collection system so that discharge rules can be introduced
- To introduce discharge rules

**Second Phase**

- To introduce a separate collection system and examine its applicability

**c.2 Targets**

The target is a collection system for households.

As mentioned above, the project site is a mixed area of commercial and resident buildings. The target buildings of the project are apartment buildings, and office buildings and large-scale shopping complexes, which receive a collection service separated from apartment buildings, are excluded from the targets.

In addition, apartment buildings with dust chute were also excluded from the target buildings, even though in the longer term, the study team thinks that it is preferable to do away with this system.

**c.3 Roles and Responsibilities of Stakeholders**

Since various stakeholders are involved in solid waste management system and each stakeholder is expected to play her/his own role in order to implement the project smoothly, the roles and responsibilities are summarized below.

MUB and JICA Study Team

- ✓ To formulate the draft of discharge rules (the rules is finalized through discussion with the Khoroo governments and housing associations)
- ✓ To prepare for educational materials in order to raise public awareness and make newly introduces discharge rules known widely

Khoroo Government

- ✓ To take an initiative to remove waste heaps from the Khoroo
- ✓ To encourage housing associations to implement discharge rules
- ✓ To raise public awareness
- ✓ To give punishment with fine, if someone or some business continue to dump

waste at illegal dumping places

TUK

- ✓ To improve a collection service: fixing the collection time, not leaving any waste after the collection work, to do loading work quickly, and so on
- ✓ To make a consensus with business establishments (renegotiate its contract with each business establishment, if necessary)
- ✓ To monitor the discharge manner of business establishments and to give an instruction to them, if necessary

Housing Associations

- ✓ To decide discharge points
- ✓ To distribute education materials
- ✓ To give information on discharge rules to households and small shops
- ✓ To maintain discharge points clean
- ✓ To monitor the discharge manners of local residents and to give an instruction to them, if necessary

Local Residents and Business Establishments

- ✓ To support housing associations in order to keep their areas clean
- ✓ To follow rules

#### **c.4 Procedure of Collection System Improvement**

The procedures are summarized according to the phases.

##### **c.4.1. First Phase: Improvement of collection system**

##### **(1) Modification of Collection System**

Some modifications were necessary in order to introduce discharge rules. The modifications are shown below.

##### **Entrance Collection System**

Before the pilot project, a collection truck stopped at communal waste collection points, where containers were used to be placed. Under the new collection system, the collection truck stops at each entrance of apartment buildings (Entrance Collection System). In other word, the truck will stop more often to collect waste in the new system.

##### **Frequency of Collection Service**

Before the pilot project, the Chingeltei TUK provided a collection service to the apartment area twice a day every day. Under the pilot project, the frequency of collection service for households decreased to three times per week, while keeping the frequency for business establishments every day.

The project site was divided into two parts: Area A and Area B, and the collection days in these two areas are shown in the table below.

Table 6-16: Collection Days by Area

	Area A	Area B
Khoroo	Khoroo 2 & 3	Khoroo 1 & 4
Collection Day	Monday, Wednesday, Friday	Tuesday, Thursday, Saturday

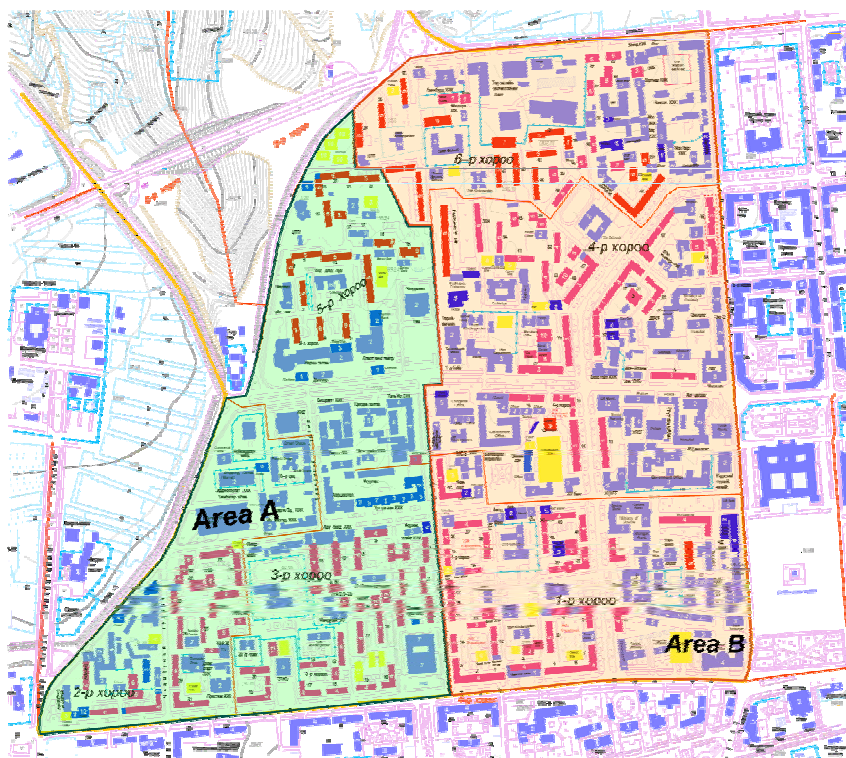


Figure 6-21: Collection Days by Area

#### Fixed Collection Schedule

The schedule of the collection service is fixed. Collection vehicles usually start their collection service at 9:00 am.

#### Separation of Small Scale Business Waste from Household Waste

Before the pilot project, the waste from both households and small scale business establishments was collected together, and this waste one of main reasons for the low efficiency of the collection service. Under the project, the waste from households is collected separately from business.

#### Adoption of Playing Melodies During the Waste Collection Work

Under the modified collection system, local residents are requested to bring their waste at a designated place (it depends on the structure of the apartment building), while they can bring waste to the collection vehicle directly.

In addition, another collection service for recyclables is applied in a part of the target area. In the project, the five sets of a amplifier and a speaker which were purchased in Japan were installed on the trucks used for the project. This equipment can play two kinds of Japanese melodies, “Oumano Oyako” and “Akatonbo” in Japanese name. In addition, it can use a microphone as well.

Two kinds of melodies are planned to be used depending on the type of waste sources as follows.



Amplifier and speaker system for bell collection

Source	Type of waste	Melody
Residential waste	Non-recyclable waste	2 "Oumano Oyako"
	Recyclable waste	1 "Akatombo"
Business waste	Non-recyclable waste	2 "Oumano Oyako"
	Recyclable waste	1 "Akatombo"

The important points of using melodies are as follows.

- Please play the melody only during the waste collection work.
- Not to play the melody when the truck is traveling.
- The volume should not be too loud not to disturb people's life and the recommended volume is 3.

The following effects can be expected by playing melodies.

- It informs people its arrival.
- It proves that the waste collection crew collected your waste.
- It informs people that they should not discharge waste after this until the next collection day.
- The friendly melody improves the dirty image of the waste collection work. It encourages people to cooperate the collection work.

## (2) Introduction of Discharge Rules

Since the population density at the project site is high and there are many business establishments, it was almost impossible to implement discharge rules at the whole project site at one time.

The discharge rules was tried to be introduced first in a small area, the northern part of Khoroo 3, and the east part of Khoroo 1. The trial was expanded to the rest of Khoroo 1 & 3 next and then further expanded to Khoroo 2 and 4.

The procedures to introduce discharge rules in each part are summarized below.

### Preparation Work

#### 1) Baseline survey in the target area

- To conduct an interview survey with households, housing associations and business establishment
- To examine the current collection system
- To collect data on such items as the number of households and business establishments, building structure, number of keepers and cleaning person in each housing association
- To update the building map

#### 2) Consensus building with housing associations and the Khoroo government

The support and active involvement of the Khoroo government is critical for the smooth implementation of discharge rules. This makes it possible for housing associations to urge residents to follow rules.

- To have meetings with the Khoroo governor in order to discuss about waste heap problems and possible solutions and to get her/his agreement about the project, in particular the introduction of the discharge rules
- To visit all the associations in the target areas in order to explain the project and to discuss about current problems caused by waste in their associations and possible solutions

- To examine the applicability of discharge rules and ask them for cooperation to the project
- 3) Formulation of draft of discharge rules
- To formulate the draft of discharge rules based on the results of the baseline surveys and discussion with Khoroo and housing associations
  - To discuss with MUB, Khoros and housing associations
- 4) Modification of collection system
- To modify the collection system for implementing discharge rules in cooperation with TUK
- 5) Preparation of educational materials
- Signboard (only for households)
  - Leaflets for households and business establishments
    - 1<sup>st</sup>: notice leaflet before the discharge rules started
    - 2<sup>nd</sup>: about detailed rules just before the start of discharge rules
- 6) Selection of monitoring person
- The monitoring work at former dumping places is critical in order to enforce the rules. Someone with authority is preferable as monitoring person.
- To ask the Khoroo governor to select suitable monitoring person (Khoroo inspector, Heseg leader, and so on)
- 7) Kick-off meeting
- To organize the first meetings (kick-off meeting) inviting Khoroo governor and housing association executive members
  - To explain the draft of discharge rules and discuss about them
  - To modify the rules, according to the conditions of each housing association (the core of rules such as collection days should be fixed, but some items such as discharge points were decided by each association.)
- 8) Meeting with cleaners and keepers
- After the start of the discharge rules, apartment cleaners played a very important role. If some residents discharge waste at a wrong place and at a wrong time, the waste should be removed and kept at another place, so that it is possible to prevent other residents from dumping waste at the same place. Without active support from cleaners it is very difficult to introduce discharge rule smoothly. Therefore, they should know the discharge rules and new collection system well before the discharge rules were introduced.
- To organize a meeting inviting all the cleaners and keepers (plural housing associations can organize one meeting.)
- 9) Distribution and installation of educational materials
- To distribute the notice leaflet to all the households by housing associations and to all the business by TUK
  - To install signboards at all the doors of the apartment buildings
- 10) Community meeting or visiting households

- To organize community meeting inviting local residents besides their apartment buildings or visit all the households (Khoroo governor and housing association are in charge)
- To explain and discuss about the discharge rules
- To discuss about proposed discharge rules
- To examine the modification of rules, if necessary

### **Implementation of Discharge Rules**

#### **1) Monitoring work**

For around one week after the discharge rules are introduced, monitoring activity was conducted at the project site, in particular at former illegal dumping places

- To monitor how residents discharge waste
- To monitor how business establishments discharge waste
- To monitor how the collection vehicle collect waste
- To monitor former dumping places and if there are still waste heaps, to investigate who discharge waste

#### **2) Continuous educational activities**

Since some residents misunderstood rules or did not understand them well, additional leaflets were prepared and distributed. In addition, a small number of residents did not pay respect to rules and continued to discharge waste in a wrong manner. In order to make them change their behaviors, a caution leaflet was also prepared. In some cases, additional meetings were organized by housing associations and Khoroo governors.

- Preparation of additional leaflets  
3rd and others: according to the progress of the project, other leaflets are prepared if unexpected problems happened  
caution leaflet: for the person who did not stop dumping waste, a caution leaflet was prepared and distributed
- Organizing additional meetings

#### **3) Law enforcement**

Some residents did not follow new rules and continued to discharge waste at the former dumping places or left waste inside the apartment building at a wrong time. Due to the lack of the sense of community, it was very difficult for housing associations to control these people.

The active involvement of the Khoroo government, which is sole authority to punish violators with fine at the community level, could make the situations different. The strong will and leadership of the Khoroo governor to make the clean the areas gradually improved the situations in some areas.

### **c.4.2. Second Phase: Introduction of Separate Collection System**

#### **Target Households**

The separate collection was introduced only in the four apartment buildings at the north side of the state department store in Khoroo 3 in Chingeltei district. The reasons why the project site was narrowed down are as follows.

- The residents, housing association and cleaning workers in these four apartment buildings are very cooperative to the project and very well behaved.