付－6 Minutes of Meeting

MINUTES OF MEETING
FOR
THE STUDY
ON
THE SOLID WASTE MANAGEMENT SYSTEM IMPROVEMENT PROJECT
IN
JAKARTA CITY
OF
THE REPUBLIC OF INDONESIA

SEPTEMBER 26, 1985
JAKARTA, INDONESIA

For Japan International Cooperation Agency (JICA)

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MINUTES OF MEETING

The Japanese Preliminary Survey Team organized by the Japan International Cooperation Agency (hereinafter referred to as " JICA ") visited Jakarta and had a series of discussion with the authorities concerned of the Republic of Indonesia, in particular with the Directorate General of Human Settlements, Ministry of Public Works, hereinafter referred to as " CIPTA KARYA ".

As a result of the meetings, which were held in a most friendly atmosphere, both sides agreed upon the Scope of Work for the Study on the Solid Waste Management System Improvement in Jakarta City, hereinafter referred to as " THE STUDY ".

The record of the meetings is as follows :

I. The items agreed upon between the Japanese and Indonesian sides during the stay of the Japanese Preliminary Survey Team in the Republic of Indonesia are as follows :

1. It may be necessary to consider in the Study the use of regional landfill sites in Jabotabek Metropolitan Region adding to the sites within the Jakarta City area.

2. The Study shall be conducted covering the following solid wastes :

   a. Household waste
   b. Commercial waste
   c. Street sweeping waste
   d. Market waste

      - The waste from legal markets which is managed by PD Pasar Jaya shall be studied only about its final disposal.

- The waste 2/

- The waste from illegal markets which is managed by the Dinas Kebersihan of DKI Jakarta shall be studied including its collection, transportation and final disposal.

e. Industrial and hospital waste (only the general recommedations shall be given in the Conceptual Master Plan for the industrial and hospital wastes which are managed by Dinas Kebersihan of DKI Jakarta).

3. The target year of the Conceptual Master Plan shall be the year 2005 in accordance with Rencana Umum Tata Ruang Daerah DKI Jakarta 2005. The time span of the feasibility study shall be 5 - 10 years.

4. The assignment of Indonesian side counterpart personnel and their training in Japan shall be discussed and agreed at the time of the submission of Inception Report.

5. Executive summaries shall be prepared in English for Interim Reports (I & II), Draft Final Report and Final Report.

6. The Pilot Scheme for New Collection System (see Annex I) and the Basic Field Survey of Solid Waste Generation and Composition (see Annex II) were proposed by the Japanese Preliminary Survey Team and their basic content was approved by CIPTA KARYA and other organizations concerned.

   The details of both schemes shall be proposed by the Japanese Full Scale Study Team at the time of the submission of Inception Report and Progress Report (I) and discussed with the Indonesian side.

7. CIPTA KARYA 3/

7. CIPTA KARYA shall organize and preside the Steering Committee and the Technical Team which would consist of the representatives of the Directorate of Planning and Programming, the Directorate of Environmental Sanitation of CIPTA KARYA and other organizations concerned in order to guarantee the efficient and effective implementation of the Study.

8. Dinas Kebersihan of DKI Jakarta shall put into practice if necessary and convenient, the interim results of the Study by its own resources even before the end of the Study.

II. The Japanese Preliminary Survey Team proposed the following approach to the Master Plan Study and CIPTA KARYA took note of it :

The Master Plan shall be prepared as a conceptual framework of long-term solid waste management avoiding rather baseless and meaningless compilation of hypothetical figures because the appropriate pace of mechanization of the solid waste management which is actually very labour - intensive in Jakarta will be affected sensitively by the wage increase rate making difficult a long - term quantitative and meaningful planning, and because in the case of solid waste management, the investment cost portion of the total cost is low ranging approximately 10 - 20 % and the optimization of the investment can be done covering only relatively short period like 5 - 10 years since the economic life the main facilities and equipment (vehicles) is short.

III. CIPTA KARYA suggested to JICA the following things and Japanese Preliminary Survey Team took note of them :

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1. It is desirable to carry out the Pilot Study for New Collection System covering 30,000 inhabitants (one whole Kelurahan) instead of 5,000 inhabitants (see the item 5 of Annex II). The Japanese Preliminary Survey Team indicated that it will be necessary at least to omit the wet season Pilot Study and get a sufficient resource input from Indonesian side to cover 30,000 inhabitants, and CIPTA KARYA took note this indication.
   At the time of the submission of Progress Report (I) the necessary resource input from Indonesian side to cover 30,000 inhabitants shall be proposed by the Japanese Full Scale Study Team.

2. It is desirable to include in the Master Plan some recommendations about the cleansing of floating refuse in canals. The Japanese Preliminary Survey Team indicated that in the Master Plan Study and the Feasibility Study some systems which could reduce the refuse throwing into canals from neighbouring communities shall be analysed and proposed but the cleansing methodology of floating refuse itself shall not be included in the Study.

3. It is desirable to study both positive and negative experiences in other Indonesian Cities which could be useful for the improvements of Jakarta's solid waste management system.

4. It is desirable for the Japanese Full Scale Study Team to review and utilize if convenient, as the minimum public cleansing service level in the Master Plan, the target set by Jabotabek Metropolitan Development Plan (80% of population service coverage by 1990) in order to make the Study consistent with the existing plans.

Annex I

PILOT STUDY SCHEME FOR NEW COLLECTION SYSTEM

September 1985

JICA Preliminary Survey Team

1. General Objective

To study the feasibility of new refuse collection (and street sweeping) systems with improved efficiency and effectiveness. (The systems are to be specified by the Study Team.)

2. Special Objectives

(These are to be specified by the Study Team.)

3. Organization and Staff

1) Advisory Members
2) General Supervision and Advice
3) Collection and Street Sweeping Planning
4) Execution of Study and Control of Workers
5) Public Instruction and Campaign
6) Monitoring and Evaluation during the Study
7) Inspection and Patrol
8) Interview of Residents (Public Opinion Survey)
9) Photo Taking
10) Post Study Evaluation
11) Coordinators

4. Period

Preperation : From June 1, 1986 to June 30, 1986
(Phase I)
- site selection
- study schedule
- methodology
- working allotment

Execution : From August 1, 1986 to August 31, 1986
(Dry Season)
From January 15, 1987 to February 15, 1987 (Wet Season)

5. Site Selection

Pilot Study site will be selected in Phase I under close consultation with CIPTA KARYA and the Local Govern ment of DKI Jakarta and other organizations concerned. At least the following three types of sites will be included:

- residential area
- Kampung area (with and/or without KIP)
- commercial area

The approximate size of the residential area and Kampung - area to be studied will be that with 5,000 residents.

6. Collection (and Street Sweeping) System

New collection (and street sweeping) systems to be tested in the Pilot Study will be elaborated by the Study Team based on the diagnosis of the existing system in Jakarta.

7. Public Instruction and Campaign

Discharge instructions to the residents and shops and campaigning for the Pilot Study will be carried out to obtain public cooperation.

8. Inspection and Patrol

Throughout the Pilot Study period, inspection and patrols are to be done by the personnel of Dinas Kebersihan of DKI Jakarta Raya and the Study Team members in order to guide the residents and enforce the required discharge and collection system.

9. Evaluation of the Pilot Study

The efficiency and effectiveness of the new systems will be judged by comparing the situations before and after the Pilot Study utilizing the following methods:

- photographs
- interview survey
- collection efficiency
- cost analysis

10. Results of the Pilot Study

The results of the Pilot Study (dry season) will be presented in the Progress Report (II) and they will be utilized in the elaboration of the conceptual master plan in Phase III.

Note: The active participation of Indonesian Counterpart Personnel including those of DKI Jakarta Raya is indispensable for the smooth implementation of the Pilot Study. It will also be a very important opportunity for their on the job training on the pilot study planning and execution. It is desirable that there should be some resource mobilization by the Indonesian side by letting some collection workers, vehicles and drivers be available for the Study.

Necessary resource input from DKI Jakarta Raya is as follows (one month each in dry season and wet season):

- 3 collection vehicles
- 12 hand carts
- 3 supervisors
- 3 drivers
- 24 collection workers (and sweepers)

ANNEX II

BASIC FIELD SURVEY SCHEME OF SOLID WASTE GENERATION AND COMPOSITION

September 1985

JICA Preliminary Survey Team

1. Objective

To collect reliable data on household refuse generation rate, composition and density in Jakarta City as a basis for the elaboration of its solid waste management improvement plan.

2. Selection of Survey Areas

1) Twelve residential areas will be selected according to the income level (i.e. 4 areas in low, middle and high income areas respectively). The areas will be selected by the Indonesian Counterpart.

2) Each area will contain 25 household.

3) Each household will be numbered for recording purposes.

3. Survey Period

Dry season : 30 days in July and August, 1986

Wet season : 30 days in January and February, 1987

4. Vehicle, Workers and Materials Preparation

1) Two collection trucks, two drivers and two assistants are expected to be assigned by Dinas Kebersihan of DKI Jakarta Raya for this study for 30 days in each season to pick up the discharged refuse in survey areas.

2) A staff member and a collection worker are expected to be assigned by Dinas Kebersihan of DKI Jakarta Raya for each study area for collection of household refuse from the door for 30 days in each season.

3) Six workers are expected to be assigned by Dinas Kebersihan of DKI Jakarta Raya for 30 days in each season to measure weight and volume of garbage and separate the garbage into different components by hand.

4) A platform scale and a balance will be contracted and purchased respectively by the JICA Study Team and used for weighing garbage. The platform scale should have a weighing range from 2.5 kg to 100 kg and a

minimum value of not more than 50gr. The balance should have a weighing range from 100gr to 4kg and a minimum value of not more than 10gr.

5) Buckets with a known volume (approximately 50-100ℓ) will be purchased by the JICA Study Team and used to measure the volume of garbage.

6) Ten baskets will be purchased by JICA Study Team in order to put separated garbage in. Other items such as scoops, scissors, hatchets, gloves, etc. will be also purchased by the JICA Study Team.

7) It is expected that CIPTA KARYA coordinate the use of existing garbage dryers in Jakarta for drying sample garbage for composition study. If they are not available in Jakarta, the JICA Study Team will bring in necessary equipment.

8) Plastic bags (30 days x 25 households x 12 areas x 2 seasons = 18,000 bags) are expected to be purchased by CIPTA KARYA or Dinas Kebersihan of DKI Jakarta Raya. Each plastic bag will be coded according to the survey area and household number. For instance, the third household in the high income area B will be coded as H-B-3.

9) Leaflets (25 households x 12 areas x 2 seasons = 600 leaflets) calling for the residents' cooperation will be distributed to the households.

5. Household Visits

1) A few days before the survey begins, each household will be visited by the staff member and the collection worker responsible for the area.

2) A leaflet will be delivered to each household.

3) 30 plastic bags with a code to designate the area and household number will be delivered to each household. The code is necessary to distinguish between the plastic bags when measuring weight and volume. The code will be written on bags before delivery.

4) The number of people in each households will be ascertained and recorded.

6. Daily Time Schedule

1) 7:30 - 8:00 AM

Plastic bags will be collected from each household by the staff member and the collection worker and

placed at a location specified for each survey area. They will then wait for the truck and when it comes, they will load the plastic bags onto the truck.

2) 8:00 - 10:00 AM

Two trucks will collect the plastic bags from the twelve study areas and transport them to one of the nearest transfer stations to be designated by CIPTA KARYA and Dinas Kebersihan of DKI Jakarta Raya. The designated transfer station should have enough area of concrete floor for weighing and manual separation of collected garbage.

3) 10:00 - 11:00 AM

A part of the concrete floor will be allocated to each survey area. Plastic bags from a survey area will be placed on a corresponding part of concrete floor. Total weight of plastic bags will be measured for each survey area using the platform scale and a bucket as a receptacle. (Total weight of garbage for each survey area will be obtained subtracting the weight of the bucket and plastic bags). These plastic bags will then be opened, and the contents will be dumped into the bucket. When the bucket becomes full, it will be emptied and refilled again. By this procedure, the total volume of garbage from

each survey area will be estimated. The volume measured garbage will be dumped on the corresponding part of the concrete floor, and the garbage from the same income level areas will be combined together forming three heaps of garbage.

4)* 11:00-12:00 AM

The bulky items in each heap will be coarsely crushed to make the waste uniform. Then, the garbage will be mixed throughly by scoop on the dried, concrete floor. Next, the garbage will be reduced several times by conical quartering to samples of 5 to 10kg for each income level. The sample weight will be measured by the balance.

5)* The sample prepared according to item 4) will be dried at 90°C ± 5°C in a dryer for about 5 to 7 days until it reaches a steady state. After the weight of the sample reaches a steady level, it will be weighed, and the water content will be calculated.

6)* The dried sample will be separated into 10 categories (vegetable or putrefactive matter, paper, textiles, plastics, grass or wood, leather or rubber, metals, glass, bones, miscellaneous inerts) and each category will be placed in a basket. The basket will be weighed by the balance and the weight

will be recorded.

Note: Items marked with * will be carried out only for the 2nd, 9th, 16th, 23th and 30th day garbage due to the limited availability of dryers.

7. Computation

The sample from the first day collection will be discarded since this can indicate the generation of garbage of more than one day.

1) Generation rate will be computed daily for each survey area as follows:

Generation Rate (g/capita/day) = A/B

where A = Total weight of garbage for each area

B = The sum of all the number of family members for each area

The generation rate for each survey area will be determined by taking the average of daily generation rates from 2nd to 29th day.

2) Density will be computed as follows:

Density (kg/m^3) = C/D

where C = The sum of total weight from 2nd to 29th day

D = The sum of total volume from 2nd to 29th day

3) Composition will be computed for each survey area as follows:

Water content (%) = $\frac{Ww-Wd}{Ww} \times 100$

Composition for category i (dry base %) = $\frac{Wi}{Wd} \times 100$

where Ww = Total weight of sample before drying

Wd = Total weight of sample after drying

Wi = Total weight of category i

8. Additional Samples

Additional samples will be taken directly at transfer stations and final disposal sites for composition analysis.

9. Other Analyses

If it becomes necessary to carry out chemical analysis (C, N, etc) and/or calorific value analysis, they will be carried out by some Indonesian laboratories and the JICA Study Team will cover the necessary cost. If the laboratory service is not available in Indonesia, the analyses will be done in Japan.