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Apéndice 1

Miembros del Equipo del Estudios de JICA y Comité Asesor

Apéndice 1: Miembros del Equipo del Estudios de JICA y Comité Asesor

1. Equipo de Estudios

Nombre	Cargo
Sr. Masatoshi AKAGAWA	Jefe del Equipo
Sr. Shigeru KANAYA	Vice Jefe del Equipo/Planificación del Manejo de Residuos Sólidos
Sr. L. Costa Leite	Organización/ Institución
Sr. Satoshi SHIBAZAKI	Recogida y Transportación
Sr. Takahiro KAMISHITA	Sistema de Reciclaje/ Análisis de la Cantidad y Composición de los Residuos
Sr. Tetsuo IZAWA	Planificación de los Sitios de Disposición Final
Srta. Alesandra Tiribocchi	Consideraciones Sociales/Sensibilización (hasta Febrero 2004)
Sr. Michiel Aorne Meijer	Consideraciones Sociales/Sensibilización (desde Marzo 2004)
Sr. Mitsuhiro DOYA	Economía/Análisis Financieros
Sr. Tetsuo KUYAMA	Consideraciones Medioambientales
Sr. Koichi IWAMOTO	Diseño de Instalaciones/ Estimado de Costos
Sr. Satoshi HIGASHINAKAGAWA	Coordinador

2. Comité Asesor

Nombre	Posición
Dr. Mitsuo YOSHIDA	Presidente
Sr. Michihiro SAKAI	Miembro
Dr. Haruo MATSUMURA	Miembro

Apéndice 2

Alcance de los Trabajos

y

Actas de la Reunión

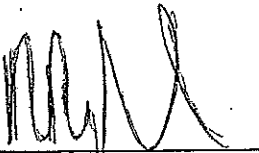
2. S/W

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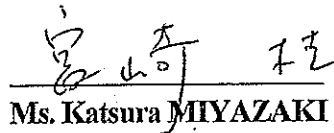
SCOPE OF WORK
FOR
THE STUDY
ON
INTEGRATED MANAGEMENT PLAN
OF
MUNICIPAL SOLID WASTE
IN
HAVANA CITY

AGREED UPON BETWEEN
THE HAVANA CITY
AND
JAPAN INTERNATIONAL COOPERATION AGENCY

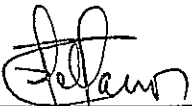
Havana City, August 7th, 2003



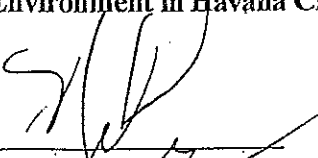
Mr. Ramón Ripoll Díaz
Vice President,
Ministry for Foreign Investment and
Economic Cooperation (MINVEC)



Ms. Katsura MIYAZAKI
Leader,
Preparatory Study Team
Japan International Cooperation Agency
(JICA)



Dr. Roberto Castellanos Pérez
Delegate for the Minister
Ministry of Science, Technology and
Environment in Havana City (CITMA-Havana)



Mr. Nelson Lara Horta
Director
Provincial Direction of Communal Services
(DPSC)

I INTRODUCTION

In response to the request of the Government of the Republic of Cuba, the Government of Japan decided to conduct the Study on Integrated management of municipal solid waste in Havana city in the Republic of Cuba (hereinafter referred to as "the Study") in accordance with the relevant laws and regulations in force in Japan.

Accordingly, the Japan International Cooperation Agency (hereinafter referred to as "JICA"), the official agency responsible for the implementation of the technical cooperation programs of the Government of Japan, will undertake the Study in close cooperation with the authorities concerned of the Republic of Cuba.

The present document sets forth the scope of work for the Study.

II OBJECTIVES OF THE STUDY

The objectives of the Study are:

1. To formulate a master plan for integrated management of municipal solid waste for the Havana city
2. To conduct feasibility study on priority project(s) which will be selected from the master plan including implementation of pilot project(s)
3. To pursue technology transfer to the counterpart personnel in the course of the Study

III STUDY AREA

The Study shall cover the Havana city shown in the attached sheet of Appendix 1.

IV SCOPE OF THE STUDY

Phase I : Review of the existing (current) municipal solid waste management

A. Review of the existing (current) municipal solid waste management

1. Data collection and analyses
2. Survey and investigation
 - (1) The amount of solid waste and its composition
 - (2) Time and motion of collection works
 - (3) Collection office (Workshop)
 - (4) Intermediate processing plants (Recycling centre, Composting plant)
 - (5) Existing landfill sites and facilities
 - (6) Completed landfill sites
 - (7) Proposed landfill sites
 - (8) Proposed transfer station sites

- (9) Environmental testing institution
 - (10) Any other related facilities
 - (11) Environmental conditions (soil, water, air)
 - (12) Public hygiene and awareness
 - (13) Awareness of enterprises and medical services
 - (14) Water quality analysis around the existing landfill sites
 - (15) Recycling
 - (16) Reuse
- 3. Survey of the present situations
 - (1) Social and economic analysis
 - (2) Legislation
 - (3) Institutional structures
 - (4) Financial conditions
 - (5) Environmental control and waste management
 - (6) Resources
 - (7) Public participation
 - 4. Assessment and problem analyses
- B. Formulation of pilot project(s)
 - C. Seminar(s) for technical transfer

Phase II: Formulation of a master plan for solid waste management, feasibility study on priority project(s) and Implementation of pilot project(s)

- A. Implementation of pilot project(s)
- B. Seminar(s) for technical transfer
- C. Formulation of a master plan
 - 1. Establishment of scope, goals and strategies for solid waste management
 - 2. Forecast of planning framework
 - (1) population growth and urbanization
 - (2) social and economic growth
 - (3) amount of solid waste disposal
 - 3. Formulation of specific plans
 - (1) Legislation
 - (2) Institutional structures and duties
 - (3) Flow of waste management
 - (4) Finance
 - (5) Facility, operation and maintenance
 - (6) Safety closure of landfill sites
 - (7) Environmental monitoring
 - (8) Public participation
 - 4. Initial environmental examination (IEE) and holding of workshop(s)
 - 5. Preliminary cost estimation and financial plan
 - 6. Evaluation of the master plan
 - 7. Selection of priority project(s)
- D. Feasibility Study on priority project(s)
 - 1. Supplemental survey
 - 2. Confirmation of the framework of the plan
 - 3. Preliminary facility design

4. Operation, management, and maintenance plan
5. Financial management plan
6. Cost estimation
7. Environmental impact assessment (EIA) and holding workshop(s)
8. Implementation plan
9. Project evaluation

The capacity of concerned agencies that have jurisdiction over solid waste management will be improved through the following work.

V STUDY SCHEDULE

The Study will be carried out in accordance with the attached tentative work schedule.
(Appendix 2)

VI REPORTS

JICA shall prepare and submit the following reports to the Government of the Republic of Cuba:

1. Inception Report:
Twenty-five (25) copies at the commencement of the Study. This report will describe such as study schedule, methodology, and manning schedule.
2. Progress Report
Twenty-five (25) copies at the first work period in the Republic of Cuba.
3. Interim Report:
Twenty-five (25) copies at the beginning of Phase II
- 4 Draft Final Report:
Twenty-five (25) copies at the end of the Study in the Republic of Cuba.
The Government of the Republic of Cuba shall submit their comments within one(1) month after the receipt of the Draft Final Report.
5. Final Report:
Fifty (50) copies

VII UNDERTAKING OF THE GOVERNMENT OF THE REPUBLIC OF CUBA

1. To facilitate the smooth conduct of the Study, The Government of the Republic of Cuba will take the following necessary measures:



- (1) to permit the members of the JICA Study Team (hereinafter referred to as "the Team") to enter, leave and sojourn in the Republic of Cuba for the duration of their assignment therein, and exempt them from foreign registration requirements and consular fees according to the Cuban regulation;
- (2) to exempt the members of the Team from taxes, duties, fees and any other charges on equipment, vehicles, machinery and other materials brought into and out of the Republic of Cuba for the conduct of the Study;
- (3) to exempt the members of the Team from income tax and charges of any kind imposed on or in connection with any emoluments or allowances paid to the members of the Team for their services in connection with the implementation of the Study, and
- (4) To provide necessary facilities to the Team for remittance as well as utilisation of the funds introduced into the Republic of Cuba from Japan in connection with the implementation of the Study;

2. The Government of the Republic of Cuba shall bear claims arise due to damages that don't mean any criminal liability, if any arises, against the members of the Team resulting from, occurring in the course of, or otherwise connected with the discharge of their duties in the implementation of the Study, except when such claims arise from gross negligence or wilful misconduct on the part of the members of the Team. Examples of claims that Cuba will bear are listed in Appendix 3, both sides will define each responsibility case by case.

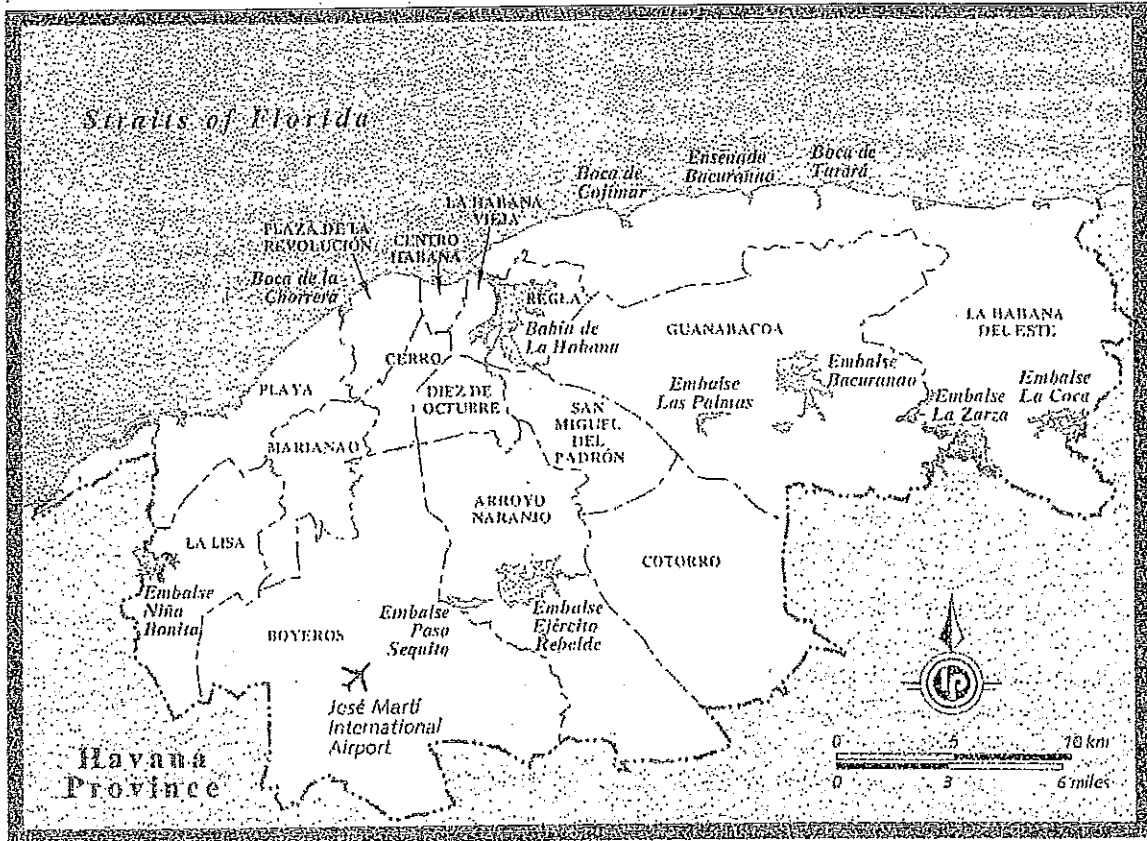
3. Ministry of Science, Technology and Environment in Havana City (hereinafter referred to as "CITMA-Havana") and Provincial Direction of Communal Services (hereinafter referred to as "DPSC") shall act as a counterpart agency to the Team and also as a coordinating body in relation with other governmental and non-governmental organizations concerned for the smooth implementation of the Study.

4. CITMA-Havana and DPSC shall, at its own expense, provide the Team with the following, in cooperation with other organizations concerned:

- (1) security-related information on as well as measures to ensure the safety of the Japanese study team
- (2) information on as well as support in obtaining medical services
- (3) available data and information related to the Study
- (4) counterpart personnel
- (5) suitable office space with necessary equipment in Havana city, and
- (6) credentials or identification cards

VI CONSULTATION

JICA, CITMA and DPSC will consult with each other in respect of any matter that may arise from or in connection with the Study.



Study Area

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Appendix 2

TENTATIVE SCHEDULE

Month		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Schedule		[Empty Cell]															
		△ IC/R			△ P/R					△ IT/R				△ DF/R			△ F/R

Remarks: IC/R :Inception Report
P/R :Progress Report
IT/R :Interim Report
DF/R :Draft Final Report
F/R :Final Report

Examples of the claims that the Government of the Republic of Cuba will bear.

1. Claims against any works or study conducted on the course of the Study(noise, vibration and etc)
2. Claims to the contract concerning the Study (non-fulfilment of any contract, etc)
3. Claims due to damage caused to C/P personnel and/or third person during the fulfilment of the study works(e.g. falling down into the hole made by the study work, etc)
4. Damage to the public and/or private facilities during study works (e.g. underground pipe and structure, electrical and telephone lines, etc)



Apéndice 3

Memorandum

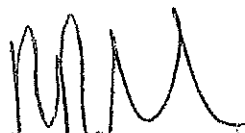
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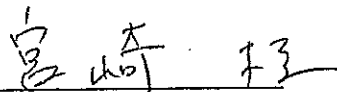
MINUTES OF MEETING
ON
SCOPE OF WORK
FOR
THE STUDY
ON
INTEGRATED MANAGEMENT PLAN
OF
MUNICIPAL SOLID WASTE
IN
HAVANA CITY

AGREED UPON BETWEEN
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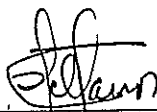
Havana City, August 7th, 2003



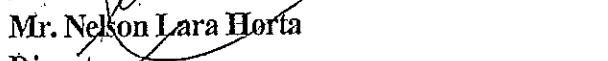
Mr. Ramón Ripoll Díaz
Vice President,
Ministry for Foreign Investment and
Economic Cooperation (MINVEC)



Ms. Katsura MIYAZAKI
Leader,
Preparatory Study Team
Japan International Cooperation Agency
(JICA)



Dr. Roberto Castellanos Pérez
Delegate for the Minister
Ministry of Science, Technology and
Environment in Havana City (CIITMA-Havana)



Mr. Nelson Lara Horta
Director
Provincial Direction of Communal Services
(DPSC)

In response to the official request of the Government of the Republic of Cuba, the Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched the Preparatory Mission, headed by Ms. MIYAZAKI Katsura (hereinafter referred to as "the Mission"), to Cuba from July 29th to August 8th, 2003 to discuss the Scope of Work (hereinafter referred to as "S/W") for the Development Study on the integrated management of municipal solid waste in Havana City.

During its stay in Cuba, the Mission carried out field surveys in the study area, and held a series of discussion with Ministry for Foreign Investment and Economic Cooperation (hereinafter referred to as "MINVEC"), Ministry of Science, Technology and Environment in Havana City (hereinafter referred to as "CITMA Havana City"), Provincial Direction of Communal Services (hereinafter referred to as "DPSC"), and other authorities concerned of the Government of Cuba. The list of those who attended the wrap up meeting from July 31st to August 6th is shown in Appendix 1.

The minutes of Meeting have been prepared for the better understanding of the S/W agreed upon between Cuban side and the Mission on August 7th, 2003.

The main items that were discussed and agreed by both sides are summarized as follows.

1 The title of the study

Both the Cuban side and the Mission agreed that the title of the study would be "Study on Integrated management plan of municipal solid waste in Havana City" (hereinafter referred to as "the Study").

2 Capacity building

Both sides emphasized the importance of technology transfer through on-the-job training in the Study for capacity building and human resources development for Cuban side, by means of formulating the master plan (M/P) for the improvement of the solid waste management in Havana City.

3 Target year

The long term target year for the M/P is tentatively set as 2015. The long term vision of the solid waste management shall be prepared for 2025.

4 Type of solid waste to be studied

Both sides agreed that the type of solid waste to be studied is municipal solid waste. However the Study would cover merely problem identification and making recommendations for industrial waste and medical waste management if needed.

5 Steering Committee

The Study will be guided and supervised by the Steering Committee. The Mission explained the function of Steering Committee to the Cuban side, and the Cuban side understood it. The Cuban side agreed that the Steering Committee will be organized by commencement of the Study, chaired by CITMA Havana City and DPSC with the

participation of MINVEC, CAP, MEP, MINSAP and all other relevant organizations. The member organization list of the Steering Committee is shown in Appendix 2. And the name list of the Steering Committee members will be informed through Embassy of Japan to JICA Headquarters in writing. The Japanese Study Team and Embassy of Japan in Cuba will attend the Steering Committee as observers.

6 Counterpart personnel

The Cuban side agreed to appoint full-time counterpart personnel(C/P) who understand English to have good communication with Japanese Study Team. The C/P of the Study in CITMA Havana City and DPSC, in principal, is listed in Appendix 3.

7 Counterpart training

The Cuban side requested to hold C/P training course to building capacity of Cuban C/P. The Mission promised to convey this request to JICA Headquarters.

8 Pilot Project(s)

Cuban side requested the Mission to implement the pilot project(s). And the Mission proposed the following contents as examples;

- (1) Improvement of the existing dumping sites,
- (2) Public health and Environment Education, and
- (3) Participatory source separation of solid waste.

However the Mission explained that the contents of the pilot project(s) would be selected definitely, within the capacity of the Study, over the discussion between Cuban side and Japanese side.

9 Feasibility Study

Cuban side strongly requested the Mission to carry out a feasibility study selected based on the results of the M/P Study. Both sides agreed to do so.

10 Awareness Study

The Mission explained the importance of Awareness Study for public, enterprises and medical services to formulate the M/P for solid waste management. Cuban side agreed to do it after full examination of the contents of the awareness study. The contents of the study are shown in Appendix 4.

11 Secretary, interpreters and drivers

The Cuban side agreed to employ for the Japanese Study Team;

- (1) One secretary,
- (2) At least one interpreter (English-Spanish) and,
- (3) Two drivers who understand English.



12 Transportation

The Cuban side requested the Mission to provide, in principal, transportation for the Japanese Study Team at JICA's own expense. The Mission promised to convey this request to JICA Headquarters for the positive consideration.

13 Office and parking space

The Cuban side agreed that office space with equipment such as desks, chairs, bookshelves, air-conditioners, two telephone lines and electricity, and parking spaces for two vehicles shall be provided for the use of the Japanese Study Team and Cuban C/P.

14 Workshop

The workshop concerned the Study will be held by the Cuban side and the Team at commencement of the Study and at the end of the each phase of the Study.

The Cuban side requested the JICA to bear some cost such as conference room fee and the cost of publishing documents. The Mission promised to convey this request to JICA Headquarters. Both sides agreed that the contents of workshop would be discussed.

15 Reports

The Cuban side requested that all reports should be presented in Spanish (Thirty (30) copies for Final Report (not supporting report and data-book but main report and summary report) and twenty (20) copies for others) as well as English (Twenty (20) copies for Final Report and five (5) copies for others) to promote effective explanations for relevant authorities. The Mission promised to convey this request to JICA Headquarters. Both side agreed that if any doubt arise English version shall prevail.

16 Public release of the Study results

Both sides agreed that the results of the Study would be open to the public, in principal, in order to achieve maximum use of the Study results.

17 Preparation for the Study

Both side agreed that in order to achieve effective implementation of the Study, Cuban side would undertake to survey, collect and analyze in advance such existing data and information as shown below;

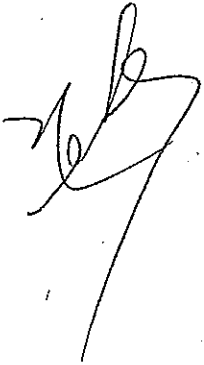
- (1) Topographical maps,
- (2) Existing data on solid waste management.

18 Cooperation with international organization and bilateral aid agencies

For smooth implementation of the Study, MINVEC, CITMA Havana City, and DPSC will coordinate with other donors to achieve maximum cooperation from them as well as to avoid any duplicated works.

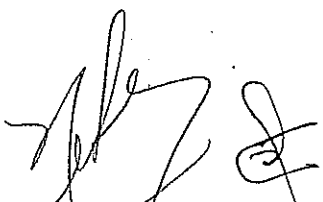
19 The study equipment

The Cuban side requested to the Mission to donate the equipment used for the Study by the Japanese Study Team to the Cuban counterparts at the end of the Study for sustainability of the transferred technology. The Mission promised to convey this request to JICA Headquarters.



MEMBER LIST OF the discussion on S/W

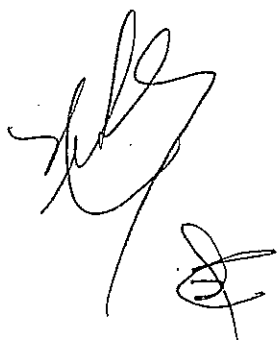
- (1) Ministry for Foreign Investment and Economic Cooperation (MINVEC)
Ms. Inalvis Bonachea González Duty officer, Dept. Asia, Middle East
 and Oceania, MINVEC
- (2) Ministry of Science, Technology and Environment (CITMA)
Ms. Bárbara Cordoyés Rodríguez Specialist of Environment, CITMA
- (3) Ministry of Science, Technology and Environment in Havana City (CITMA-Havana)
Dr. Roberto Castellanos Pérez Director, CITMA-Havana
Ms. Odalys Goicochea Cardoso Manager, Execution Project Office,
 CITMA-Havana
Mr. Juan N. Herrera Cruz Manager, Unit of Environment,
 CITMA-Havana
- (4) Provincial Direction of Communal Services (DPSC)
Mr. Nelson Lara Horta Director, DPSC
Mr. Manuel Risco González Technical Vice Director, DPSC
Ms. Odalys García Fonseca Manager, Development Group, DPSC
Ms. Teresa Recio Specialist, Economics, DPSC
Ms. Aymara Infante Sigler Specialist, Development Group, DPSC
- (5) Group for the Integral Development for the Capital (GDIC)
Ms. Eneyde Ponce de León Triana Specialist of Territory and Environment,
 GDIC
- (6) Provincial Unit of Hygiene (UPPH)
Mr. Vladimir Fraguera Almeida Deputy chief, UPPH
Mr. Andrés Ruiz Yanes Chief specialist, UPPH
Ms. Marilyn Díaz Ruiz Specialist, UPPH
Mr. Alejandro Fernandez C. Officials, solid waste treatment /
 analysis, UPPH
- (7) Center of Engineering and Environmental Management of Bays and Coasts (CIMAB)
Mr. Félix Palacios Pérez Manager, CIMAB
Mr. Orleans García Fuentes Specialist, CIMAB
- (8) Office for Physical Planning of Havana City (DPPF)
Ms. Néida Pérez Clavero Specialist, DPPF




**STUDY ON INTEGRATED MANAGEMENT PLAN
OF MUNICIPAL SOLID WASTE IN HAVANA CITY**

STEERING COMMITTEE FOR THIS DEVELOPMENT STUDY

1. Provincial Administration Council (CAP)
2. Delegation of the Ministry of Science, Technology and Environment in Havana City (CITMA-HC)
3. Provincial Direction of Communal Services (DPSC)
4. Ministry for Foreign Investment and Economic Cooperation (MINVEC)
5. Ministry of Economy and Planning (MEP)
6. Ministry of Finance and Prices
7. Ministry of Public Health (MINSAP)
8. Ministry of Science, Technology and Environment in Havana City (CITMA)
9. Enterprise of Recovery of Raw Material (ERMP)
10. Provincial Direction of Physics Planning (DPPF)
11. Delegation of the National Institute of Hydraulics Resources in Havana City (INRH-HC)
12. Delegation of Agriculture in Havana City (MINAGRI-HC)
13. Provincial Direction of Economy and Planning in Havana City (DEP-HC)
14. Provincial Direction of Public Health in Havana City (DPSP-HC)
15. Provincial Centre of Hygiene y Epidemiology in Havana City (CPHE-HC)



**STUDY ON INTEGRATED MANAGEMENT PLAN
OF MUNICIPAL SOLID WASTE IN HAVANA CITY**

COUNTERPART PERSONNEL FOR THIS DEVELOPMENT STUDY

Leader CITMA-HC	• Lic. Juan N. Herrera Cruz (CITMA-HC)
Leader DPSC-HC	• Arq. Odalys García Fonseca (DPSC)
Collection and Transportation Planning	• Lic. Vladimir Fraguela Almeida (UPPH)
Treatment and Final Disposal/Environment consideration	• Ing. Bárbara Cordoyés Rodríguez (CITMA-HC) • Ing. Aymara Infante Sigler (DPSC)
Recycling	• Ing. Andrés Ruiz Yanes (UPPH) • Lic. Odalys Goicochea Cardoso (CITMA-HC)
Social Consideration / Public Participation	• Lic. Elida Romero Labañino (CITMA-HC)
Waste amount and Composition	• M.Cs. Félix Palacios (CIMAB) • Dr. Ma. del Carmen Sardu (UPPH) • Ing. Alejandro Fernández Colomina (UPPH)
Economic and Financial Analysis	• Ing. Marilyn Díaz Ruiz (UPPH) • Lic. Teresita Recio García (DPSC)
Facilities Planning	• Lic. Néida Pérez (DPPF)

Purpose and Contents of People's Awareness Survey

Purpose

The purpose of an awareness survey of the People in Havana is to reflect the current awareness of the People concerning solid wastes, which shall include their behavior, into the Study for the better Master Plan formulation in the following aspects:

1. To formulate appropriate education programs for enhancing the people's awareness of environmental impact by the solid waste and for changing their lifestyle towards one with lower solid waste discharge aiming the reduction of solid waste volume discharged by households,
2. To formulate appropriate activities, organizations if necessary, and education programs for the re-cycle and re-use promotion which is harmonious with the people's awareness, preference and behavior, and
3. To formulate practical programs to promote public participation in solid waste collecting activities for improving efficiency and efficacy of the collection such as a segregated collection and a longer interval collection.

Survey Contents

Since detailed contents shall be prepared by the Study Team to be dispatched for the Master Plan formulation, the following items for the survey are tentative and possible ones:

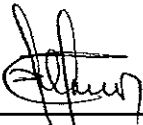
1. People's grasping level of their own discharging solid waste volume and contents,
2. People's knowledge concerning social impact of re-cycle and re-use,
3. People's knowledge concerning materials which are able to be re-cycled and their will to contribute to the re-cycling activities,
4. People's preference and interest in re-use and their will for the participation in re-use activities,
5. People's knowledge concerning solid wastes' impacts to the their surrounding hygiene condition,
6. People's knowledge concerning the solid waste collection, processing, and final disposal,
7. People's knowledge concerning social and environmental impacts of the disposed solid wastes, and
8. People's interest and will for cooperating to the efficiency improvement of the solid waste collection and disposal.



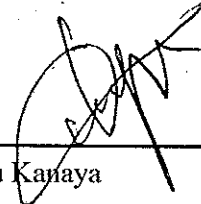
ORIGINAL: ENGLISH

MEMORANDUM No.7
ON
EXPLANATION OF THE SUMMARY OF DRAFT FINAL REPORT
FOR
THE STUDY ON INTEGRATED MANAGEMENT PLAN OF
MUNICIPAL SOLID WASTE IN HAVANA CITY

Havana City, January 19, 2006

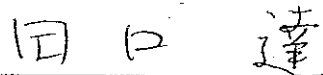


Dr. Roberto Castellanos Pérez
Delegate for the Minister
Ministry of Science, Technology and
Environment in Havana City
(CITMA-Havana)



Mr. Shigeru Kanaya
Deputy Team Leader
JICA Study Team

WITNESS:



Mr. Toru Taguchi
Global Environment Dept.
Japan International Cooperation Agency
(JICA)



Introduction

During January 16 to 19, 2006, a series of meetings chaired by the Chief Counterpart, Ms. Odalys Garcia, were held. They were attended by the other counterparts, the JICA Study Team, and other related personnel to discuss the contents of the Summary of the Draft Final Report. The Summary was being revised based on the comments from the Cuban side and from JICA following submission of the original Summary in September 2005. A list of attendants at the meetings is given in Appendix A.

The major objective of the meetings was to achieve a consensus on the basic point of view for finalizing the report. The Cuban side and the Japanese side have either agreed or confirmed the following.

Agreements and Confirmation

1. Receipt of Summary of Draft Final Report

A revised Summary of the Draft Final Report (DF/R) in Spanish was submitted by the Study Team to the Cuban Side on January 16, 2006. The Study Team explained the major points changed from the September 2005 draft and also mentioned that the revised DF/R had already been reviewed by JICA and its advisory committee prior to this visit of the Study Team. It was explained that JICA's main comment was that the report should be more realistic in considering the situation in Havana and the intentions of the Cuban Side. In addition to those modifications, the Study Team expressed that the comments from the Cuban side and the results of discussion during this visit would also be reflected in the preparation of the Final Report.

2. Main Items Discussed, Agreed or Confirmed

2.1 Main Points of the Study

The Study Team submitted and explained the "Main Points of the Study" to be presented at the front of the Main Report. The "Main Points" presents the key points of:

- the Master Plan (M/P),
- lessons learned in the Pilot Project (PLP),
- the results of the Feasibility Study for the priority project,
- outcomes of Capacity Development, and
- the proposed schedule for implementation of the M/P.

Discussions between the Cuban Side and the Study Team were mainly based on this "Main Points of the Study" and the longer Summary of the DF/R.

Both sides agreed that the activities proposed in the Master Plan shown in the "Main Points of the Study" will retain the ambitious goal of being achieved by the target year of 2015, with

the understanding that the existing shortage of resources may hamper the attainment of such goal.

As a prerequisite to finalizing the DF/R, the following issues were discussed in detail to identify what must be done to give the prepared M/P any chance of being properly implemented.

2.2 Reduction of Municipal Solid Waste

(1) Recovery of Recyclable Resources from MSW

The Study Team explained that the M/P proposes the introduction of segregated collection and provision of recycling plants to enable recovery of recyclables for sale and to reduce the amount of waste to be disposed of at landfill. It was pointed out that the proposed system risks failure unless a definite market is established for the recovered recyclables considering the current low market prices and large incremental cost by introducing the segregated collection.

The Cuban side understood this risk but expressed that the introduction of municipal recycling activities proposed in the M/P is necessary for waste reduction from an environmental viewpoint.

Both sides agreed that the recovery of recyclable materials by segregated collection should be a component of the M/P and that the pre-conditions to commence this activity will be mentioned in the Final Report.

(2) Community Composting

None of the compost produced in the PLP was able to meet the required quality and sale price, so the Study Team proposed that the commencement year for community composting be delayed for three years from 2007 to 2010 so that the Cuban side can verify the feasibility of community composting together with segregated collection through further pilot scale projects between now and 2010. The Cuban side explained that one Pilot Project to be conducted by UNIDO includes community composting at Calle 100 by using segregated kitchen waste collected from a target area in Playa Municipality.

Both sides agreed that community composting should be an activity to be included in the M/P in the Final Report, and that the viability of community composting together with segregated collection, including quality control, would be verified through the UNIDO project in order to decide whether Havana city will proceed with full-scale community composting or not.

In addition, both sides also agreed that a sensitivity analysis of a few alternative compost prices could be mentioned in the Final Report to indicate the effect of zero or lower prices.

2.3 Collection and Transportation

(1) Lesson learned from the Pilot Project for Segregated Collection

The Cuban side pointed out some lessons learned from the Pilot Project for segregated collection as follows:

- A good understanding of the importance of awareness raising on the part of the decision maker is essential to promote active public participation at the community level.
- Provision of enough equipment such as collection trucks and waste bins is essential to enable regular, stable segregated collection.
- Opening a market for collected recyclables is imperative so that there is sufficient incentive for inhabitants and implementation bodies for solid waste management to carry out segregated collection.

Both sides agreed that these lessons, in addition to those already mentioned in the DF/R, should be reflected in the system for segregated collection proposed in the M/P.

(2) Other Pilot Projects for Segregated Collection by UNIDO

The previously mentioned pilot project being undertaken by UNIDO was presented by DPSC. The contents of the pilot project are 1) Capacity Development, 2) Improvement of Laboratory, 3) Segregated collection, 4) Composting and Bio-gas generation, and 5) Environmental monitoring at Calle 100 Landfill. It was also mentioned that this project referred to the JICA Study during its planning.

Both sides agreed that outcomes of this Pilot Project could be critical for judging the feasibility of the activities proposed in the M/P, especially segregated collection and composting.

(3) Segregated Collection Plan

The JICA Study Team pointed out that the proposed segregated collection for three types of waste (kitchen waste, recyclable materials and other waste), involves high initial and operation/maintenance cost and that both sides will consider the possible solutions. The Cuban side explained that, as a result of the PLP, segregated collection should be a component of the M/P but that two types of waste would be adopted in the initial stage, kitchen waste and others. Additional segregation could then be adopted only when segregation of these two types of waste is achieved successfully.

Both sides have agreed that the Cuban side will attempt to introduce segregated waste collection for two categories of waste through the UNIDO project until 2010, and that a relevant strategy will be considered.

The Cuban side will determine whether additional segregation of recyclable waste can be established or not and will also determine the commencement year of those activities.

(4) Alternatives for Horse-driven Cart Collection

The Cuban side explained that the current system of collection by horse-driven cart is still a temporary system even though it has been carried out since 1992. The horse-driven cart is, in principle, a method only compatible with the existence of the special period landfills (SPLs), but the Cuban side strongly stated that these SPLs must be closed as soon as possible for environmental and sanitary reasons. The Cuban side mentioned that compactor trucks are the most suitable method of waste collection for the urban area in Havana City based on past experience, but they also understand the financial difficulty of procuring and operating the compactor trucks.

Both sides agreed that the introduction of mechanical collection using compactor trucks can be the main option in the M/P for future collection, but that other alternative collection methods, such as to utilize horse-driven carts in areas close to landfills, can be mentioned in the Final Report.

2.4 Final Disposal

It was again confirmed that the intention of the Cuban side is to adopt Level 4 type landfills, meaning the use of cover soil and installation of a leachate re-circulation and treatment system.

Besides the Study Team understood this intention, it was pointed out that the total cost of Level 4 type landfill might be too high to be implemented in the circumstances of the financial difficulty as Cuba is facing at the moment. The Study Team showed that Level 1 and Level 2 type landfill, involving appropriate daily covering of waste with cover soil, can eliminate most of the environmental problem complained about by the people, such as smoke, flies, and odor, and at considerably lower cost than Level 4.

Both sides agreed that the M/P will recommend Level 4 type landfills at the New Guanabacoa and New site X, but the effectiveness of lower level types can also be mentioned in the Final Report in case the Cuban side fails to arrange the budget for the new landfill sites.

2.5 Implementation Schedule of Master Plan

The Implementation Schedule for the M/P shown in the "Main Points of the Study" was explained by the Study Team, especially focusing on the commencement year for segregated collection together with community composting and recycling plant. The Study Team also explained that the interval before that commencement year, 2010 for the first phase, could be effectively utilized by the Cuban side by undertaking various practical preparatory activities. For example, implementing the UNIDO project until 2008 can be such activity.

Both sides agreed that this implementation schedule will be adopted in the M/P.

2.6 Financial Plan for Master Plan

(1) Overall Financial Plan

The Study Team explained that the financial Plan for the M/P is based on projected revenues from the sale of compost products and recovered recyclables, but that the values mentioned in the Summary DF/R are indicative only and not fixed or definite.

In order to avoid any misunderstanding by those who read the report, both sides agreed that the expected revenues mentioned above can be considered in the financial plan, but that some sensitivity analysis alternatives would be included in the Final Report.

(2) Policy of Charging Tariff

The Cuban Side explained that the Cuban Government does not intend to charge a tariff to the inhabitants for collection of municipal solid waste. The reasons are as follows:

- This service has always been subsidized by the Government
- If a tariff were to be charged to the citizens it could never be in CUC as their earnings are in CUP. Further, since the CUP amount that might have been collected from them could not be used for buying what is really vital to the municipal solid waste management in the city, that is to say, heavy equipment for landfill operation, waste bins, leachate treatment facilities, etc., and the Government is committed to covering the cost of such objects from its own budget, there is no point in imposing such a tariff.
- The CUP portion necessary is secured by the Government.

Based on such strong intention mentioned above of tariff charging policy, the Study team expressed that this policy would be incorporated in the Final Report and that subsidy from the government would be adopted rather than charging tariffs to

inhabitants. However, the M/P will mention other tariffs could be adopted for charging service recipients that are earning CUC.

3. Coming Schedule for preparing the Final Report

The Study Team explained the schedule for preparing the Final Report that should be submitted to JICA in the middle of March 2006 and asked the Cuban side to check the quality of the report translated into Spanish.

The Cuban Side has agreed to check the draft of the translated Final Report as described in the attached schedule.

Concluded



ORIGINAL: ENGLISH

MEMORANDUM No.6
ON
RECEIPT OF THE DRAFT FINAL REPORT
FOR
THE STUDY ON INTEGRATED MANAGEMENT PLAN OF
MUNICIPAL SOLID WASTE IN HAVANA CITY

AGREED UPON BETWEEN
THE STEERING COMMITTEE
AND
THE JICA STUDY TEAM

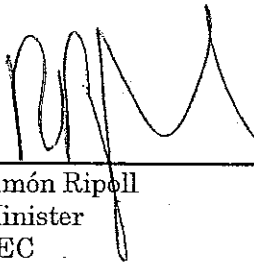
Havana City, September 23, 2005



Dr. Roberto Castellanos Pérez
Delegate for the Minister
Ministry of Science, Technology and
Environment in Havana City
(CITMA-Havana)

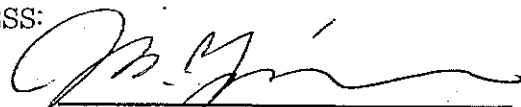


Mr. Masatoshi Akagawa
Team Leader
JICA Study Team



Mr. Ramón Ripoll
Vice Minister
MINVEC

WITNESS:



Dr. Mitsuo Yoshida
Chairman
JICA Advisory Committee



Mr. Rolando Carrillo
Director
DPSC

Memorandum No.6 (Receipt of Draft Final Report)

On September 21, 2005, the sixth Steering Committee meeting was held by the chairmanship of Dr. Roberto Castellanos Perez with the attendance of the JICA Advisory Committee headed by Dr. Mitsuo Yoshida, to present the Draft Final Report which contains all the outputs of the Study, including the municipal solid waste master plan, feasibility study on the priority project, achievements of the pilot project and capacity building of the Cuban counterparts. Attendant list of the meeting is given in Appendix A. Presentation for the Steering Committee was made jointly by the Study Team and counterparts (C/P) and questions of the Steering Committee (SC) were answered by the same, considering that the Study should be carried out by the collaboration of the Study Team and C/P. Comments of the Steering Committee made in the SC meeting are given in Appendix B.

The Cuban side and the Japanese side have either agreed or confirmed the followings.

Agreements and Confirmation

1. Receipt of Draft Final Report

Draft Final Report (DF/R) was submitted by the Study Team to the Cuban side on September 16, 2005. Contents of DF/R were presented to the Steering Committee on September 21 and accepted by the Cuban side with some comments. Comments given by the Cuban side will be considered by the Study Team and reflected to the Final Report (F/R).

2. Comments for the Preparation of the Final Report

It has been agreed upon by the Cuban side and Japanese side (both sides) that all the comments (in English) on DF/R be received by the Study Team by October 15, 2005.

3. Status of the Final Report

Both sides have agreed upon that after the submission of F/R to the Cuban side, F/R should be made available to those who are interested in or concerned with the solid waste management.

4. Acknowledgement

The Cuban side expressed its gratitude to the Japanese Government, JICA and the Study Team for extending kind cooperation for the Study. The Cuban side also expressed its wish that JICA continue to extend its cooperation in the field of the municipal solid waste management. The Study Team replied that the wish of the Cuban side would be conveyed to JICA Headquarters.

Concluded



Appendix A ATTENDANT LIST

No.	Name	Position/ Organization
Cuban Side		
1	Mr. Ramón Ripol Díaz	Vice Minister, MINVEC
2	Dr. Roberto Castellanos	S/C Chairman, CITMA
3	Ms. Zoe Hernández	S/C Member, MINVEC
4	Mr. Jesús Delgado	S/C Member, MEP
5	Ms. Martha Serrano	S/C Member, Economy and Planning Div., City Gov.
6	Ms. Iliana Saborit	S/C Member, CITMA
7	Ms. María Elena Ibarra	Invitee, NGO Chairman
8	Mr. Florentino Chacón	Invitee, UNIDO
9	Ms. Odalys García	Chief C/P, DPSC
10	Mr. Juan Herrera	Vice Chief C/P, CITMA
11	Ms. Bárbara Cordovés	C/P, CITMA
12	Ms. Odalys Goicochea	C/P, CITMA
13	Ms. Aymara Infante	C/P, DPSC
14	Mr. Vladimir Fraguela	C/P, DPSC
15	Ms. Elida Romero	C/P, CITMA
16	Ms. Nélide Pérez	C/P, DPPF
17	Mr. Alejandro Fernández	C/P, LARE
Japanese Side		
1	Mr. Iwata	Ambassador of Japan
2	Mr. Nakajima	Second Secretary, Embassy of Japan
3	Dr. Yoshida	ADV Chairman, JICA
4	Mr. Matsumura	ADV Member, JICA
5	Mr. Sakai	ADV Member, JICA
6	Mr. Yamamoto	JICA
7	Mr. Taguchi	JICA
8	Mr. Tagami	JICA (MINVEC)
9	Mr. Akagawa	S/T Team Leader
10	Mr. Kanaya	S/T Vice Team Leader
11	Mr. Hosono	S/T

Appendix B Record of the Steering Committee Meeting held on September 21, 2005

Comment: Ms. Marta Serrano, Economy and Planning Division, Havana city

- I could not afford enough time to go through the DF/R since I received it on last Friday. However, after listening to the presentation by C/P and the Team, I now have clear understanding of the study results. Today's presentation is very useful.
- Top management of the city highly appreciates the achievements of the Study and the assistance by Japanese ADV. In particular, we appreciate the achievements of the capacity building including the technology transfer with regard to 3 R and environment-friendly landfill and financial matters.
- The proposal by the Study will be submitted first to the city administration, and then to the Ministry of Economy and Planning.
- With regard to the composting, we consider that the quality is very important, which will affect the level of its price. Involvement of a laboratory may be helpful for studying its quality.
- Intangible benefits including protection of the health of the citizens and contribution to the prevention of some kinds of diseases should be stressed in F/R.
- Considering the rather large volume of compost production, agricultural demand and possibility of export should be considered.
- Proposal has been submitted by DPSC for the construction of the New Guanabacoa and expansion of Calle 100. We consider that feasibility study should be carried out for these landfills.
- If the proposed master plan is realized, impression of the Havana city would be much upgraded for the foreigners.

Comment: Dr. Castellanos, SC Chairman

- I understand that all the attendants to SC/Seminar appreciate today's presentation.
- With regard to the finance of the cost required for the master plan implementation, we don't feel any difficulty for CUP portion including the personnel cost.
- With regard to the finance of the cost required for the priority project implementation, the finance of the CUP portion by the Cuban Government is not difficult. However, we consider that the finance of CUC portion is very difficult and we need international assistance.

Comment: Ms. Nelida Perez, Physical Planning Institute



- This JICA Study is very important for Havana city as well as for DPSC and the Physical Planning Institute.
- In that context, I would like to confirm whether the outputs of the Study have been submitted to the top management of DPSC for consideration.

Comment: Dr.Castellanos, SC Chairman

- Top management of DPSC attended the DMSC workshop held last week where the Study outputs were presented by C/P. Accordingly, they are well aware of the Study outputs.
- Today, they intended to attend this meeting but unfortunately they could not make it because of the works which arose due to the aftermath of the cyclone which hit Havana city yesterday.

Comment: Ms. Maria Elena Ibarra, Chairman of PRONATURALEZA, NGO

- We consider that the proposal for achieving the environment-friendly solid waste management for the Havana city is very important.
- We are ready to cooperate for the awareness raising activities proposed by the Study.

Comment: Ms. Iriana Saborit, SC member, CITMA

- In the Spanish version of DF/R, it is written that the authority of selling the recyclables to the market should be given only to the Solid Waste Aurora which is a mistranslation of English report and should be corrected.
- Legal recommendations are very important and we appreciate the efforts of the Study Team and C/P.

Comment: Dr.Castellanos, SC Chairman

- I confirmed Ms. Goicochea, CITMA about the volume of compost referred to by the comment made by the Economy and Planning Division, Havana city. The volume is correct and the production facility is properly designed.
- The proposal for the solid waste collection charge on the citizens should be dropped from the master plan. Because it is a very difficult issue and should be left to the top management of the Government. People are living under very difficult economic conditions due to the economic blockade. Under the situation, welfare and social services are provided to the people free of charge. Besides, the collection of CUP would not be helpful to the finance of solid waste management.

- Finance of the cost required for the master plan implementation should not be dependent on the tariff revenue.

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ORIGINAL: ENGLISH


MEMORANDUM No. 5

**AGREED UPON BETWEEN
THE STEERING COMMITTEE
AND
THE JICA STUDY TEAM**

Havana City, July 12, 2005



Dr. Roberto Castellanos Pérez
Delegate for the Minister
Ministry of Science, Technology and
Environment in Havana City
(CITMA-Havana)



Mr. Masatoshi Akagawa
Team Leader
JICA Study Team

Memorandum No.5 (Confirmations and Agreements for the Study)

On July 8, 2005, the fifth meeting of Steering Committee (SC) was held by the chairmanship of Dr. Roberto Castellanos Perez. Attendant list is given in Attachment A. During the meeting, presentation of the study outputs during the period of May 4 through July 13, 2005 was made by the Cuban counterparts (C/P) and the Study Team, which included the achievements of the Pilot Project (PLP), cost estimation of the master plan projects and priority project and tariff proposal. After the presentation, appreciation of the efforts of the Study Team and C/P was expressed by several SC members.

SC Chairman requested to SC members to provide the Study Team with comments on the presentation later if any before their departure on July 14, 2005. To the Study Team, SC Chairman requested that the Draft Final Report (DF/R) be sent to the Cuban side before the arrival of the Study Team at Havana in September, 2005.

The followings are either confirmed or agreed upon by the Cuban side and the Study Team (both sides).

1. Schedule of the Next Study in Cuba

Both sides have agreed that the presentation of DF/R should be made in the 6th and last SC meeting during the last Study in Cuba scheduled in September, 2005. Seminar should also be held during that time, which should comprise 2 parts: presentation of the outputs of the Study and the achievements of the capacity building of C/P.

2. Verification of the Pilot Project and Feedback to the Master Plan

Based on the results of the monitoring of the operation of the Pilot Project (PLP) as well as those of the discussion during Post Implementation Workshop held on June 11, 2005 as well as those of the Post Awareness Survey, both sides have agreed that all the components of PLP have been verified as effective, comprising the segregated discharge/collection, community composting, home composting, landfill operation including dike and cell formation and soil covering, waste weight measuring and awareness raising. Accordingly, both sides have agreed that these measures should be recommended in the master plan for full-scale implementation. Feedback to be made to the finalization of the master plan is as given in the Attachment B.

Based on the above-mentioned successful verification of PLP, Cuban side expressed that the operation carried out in PLP should be continued in Penas Altas and Campo Florido communities as long as possible and that the required costs would be borne by the Cuban side. The Study Team expressed its full appreciation for the continuation.

3. Issues for the Master Plan Formulation

With regard to the formulation of the master plan, both sides have agreed with the followings.

1) Timing of the operation start of the New Guanabacoa landfill

New Guanabacoa landfill should be completed by 2007 so that it should start receiving the solid wastes at the beginning of 2007.

2) Timing of the closure of the nine (9) Special Period landfills except Campo Florido landfill

All of the nine (9) Special Period landfills except Campo Florido landfill should be closed by the end of 2006.

3) Role of the Campo Florido landfill

Campo Florido landfill should continue its operation to receive and disposed of the municipal solid waste in the surrounding council area.

4) Schedule and place of composting yards and recycling plants

Composting yards for producing the compost by means of the segregated kitchen waste should be constructed in the New Guanabacoa landfill and Calle 100 landfill, which should start operation from 2007 when segregated collection should start in Playa and Havana del Este municipalities. Recycling plants should be established in the same locations and should start operation in the same year.

5) Three (3) category and municipality-wise development of segregated collection

- Categories for segregation should be the same as that for PLP, i.e., 3 categories of Kitchen, Recyclables and Others.
- Segregated collection should be developed in the seven (7) urban municipalities currently under the service provision by DPSC/UPPH. It should be developed firstly in Playa and Havana del Este municipalities considering the volume of generated recyclables, availability of space for placing the increased number of waste bins as well as the floating population and awareness level of the residents in 2007, considering the time required for awareness raising of the residents. Based on the experience in the spearheading 2 municipalities, it should be developed in the remaining five (5) urban municipalities of Havana Vieja, Centro Havana, Plaza de Revolution, 10 de Octubre and Cerro.

6) Estimated capacity of the extended part of Calle 100 landfill

As agreed in the Memorandum No.4, estimation of the capacity of the extended part of Calle 100 landfill should be made in compliance with the methodology adopted by the Study Team as given in the Interim Report.

7) Location of the new landfill to replace the existing Calle100

As agreed in the Memorandum No.4, location of the new landfill which should replace the existing Calle100 (landfill 1) should be assumed at southwestern part of the Havana city as given in the Interim Report.

8) Levels of Environment-friendly landfills

As agreed in the Memorandum No.4, level 4 landfill structure which should be installed with liner and leachate treatment facility as well as recirculation facility should be adopted for landfill 1 while for Calle 100 expansion, level 3 should be adopted which should be installed with liner and leachate recirculation facility, considering its rather short remaining life.

9) Leachate treatment method for landfill 1

As agreed in the Memorandum No.4, of the 6 options given in the Interim Report, Option 6 which consists of anaerobic pond, aerated lagoon and maturation pond be adopted for the landfill 1 which would require the least cost as well as the least land among the options.

4. Details of the Priority Project for Feasibility Study

As agreed in the Memorandum No.4, the priority project comprises i) collection vehicles for DPSC/UPPH, ii) machinery and equipment required for landfill operation at the extension part of the Calle 100 landfill and at the new Guanabacoa landfill, and iii) maintenance and repair equipment of the central maintenance workshop of DPSC/UPPH. Of the three, it has been agreed between both sides that collection vehicles should be those required for the segregated collection operation to be started in 2007.

Concluded

Attachment A Attendance List of the 5th Steering Committee Meeting

Full Name	Position/Organization
Cuban Side	
Dr. Roberto Castellanos	SC Chairman
Ms. Zoe Hernández	SC member, MINVEC
Mr. Jesús Delgado	SC, Ministry of Economy and Planning
Ms. Zuramy López	SC member
Ms. Marta Serrano	SC member
Ms. Elsa Machado	SC member
Mr. Angel Ramírez	SC member
Ms. Odalys García	Chief C/P
Mr. Juan Herrera	Vice Chief C/P
Ms. Bárbara Cordovés	C/P
Ms. Odalys Goicochea	C/P
Ms. Aymara Infante	C/P
Mr. Vladimir Fraguera	C/P
Ms. Elida Romero	C/P
Ms. Nélica Pérez	C/P
Mr. Andrés Ruiz	C/P
Mr. Carlos Tarafa	Coordinator
Japanese Side	
Mr. Tagami	JICA (MINVEC)
Mr. Akagawa	Leader, JICA Study Team
Mr. Kanaya	Vice Leader, JICA Study Team
Mr. Izawa	Member, JICA Study Team
Mr. Iwamoto	Member, JICA Study Team
Mr. Hosono	Coordinator, JICA Study Team




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Attachment B Feedback from the Pilot Project Implementation to the Finalization of the Master Plan

Component	Verification		Feedback to M/P
	Method	Verification	
1. Segregated collection	<ul style="list-style-type: none"> ● Achievement surveys ● Questionnaire (Pre and Post) 	Effective with conditions	<ul style="list-style-type: none"> ● Segregated collection with 3 categories: Kitchen, Recyclables, Other wastes, should be recommended in the Master Plan which can contribute much to the reduction of the loads on environment as well as on the final disposal sites. ● Soundness of the segregated collection together with composting and recycling should be checked in monetary terms as well as its contribution to the environmental improvement. ● Considering the smell generated from the kitchen waste bins, kitchen waste should be collected more frequently.
1-1 Segregated discharge	<ul style="list-style-type: none"> ● Achievement surveys ● Questionnaire (Pre and Post) 	Effective with conditions	<ul style="list-style-type: none"> ● Simple classification should be recommended, to which the residents can be adapted. ● Classification under each category should clearly be shown on the waste bins with drawings. ● Adopting different colors for the covers of the waste bins for each category may be recommended. ● Considering that no visible benefit is generated to the residents, intensive and continuous awareness raising activity should be carried out to inform the residents with the benefit of the segregated collection. ● Equipment and materials for storing the wastes of 3 categories should be recommended in the master plan.
1-2 Segregated collection	<ul style="list-style-type: none"> ● Achievement 	Effective with conditions	<ul style="list-style-type: none"> ● Frequency of the collection should be studied for each area considering the volume of the waste under each category at the beginning of the full-scale introduction of segregated collection. ● Collection vehicle operation should carefully be studied to minimize the increase of vehicles due to the introduction of segregated collection. ● Training of the collection workers should be recommended so that segregated collection be properly done.

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2. Community composting	<ul style="list-style-type: none">● Achievement● Questionnaire surveys (Pre and Post)	Effective with conditions	<ul style="list-style-type: none">● Community composting with the segregated kitchen waste as raw material, should be recommended in the master plan.● Final segregation should be recommended at the composting site.● Proper composting facility with roof structure should be recommended.● Demand for the compost should be identified in the master plan including the parks, green areas and farm lands.● Necessity of setting up the quality standards of compost should be recommended in the master plan.● Volume of the compost produced by community compost should be estimated and included in the master plan.
3. Home composting	<ul style="list-style-type: none">● Achievement● Questionnaire surveys(Pre and Post)	Effective	<ul style="list-style-type: none">● Home composting should be recommended in the master plan for the households in the sub-urban municipalities who afford adequate space of garden with plants and trees to which compost can be applied.● Consideration should be made for feeding of domestic animals in the households in selecting the households for home which would affect the availability of kitchen waste for home composting.● Volume of the home compost should be estimated and included in the master plan.
4. Recycling	<ul style="list-style-type: none">● Achievement● Monitoring of alternative recycling achievement	Effective	<ul style="list-style-type: none">● Recycling by means of segregated collection is complimentary with other recycling activities including group collection and should be recommended in the master plan.● Classification of recycling materials should be simple so that the residents can follow.● Volume of the recyclable materials recovered through the segregated collection should be estimated and included in the master plan.
5. Landfill operation (Cell formation, soil covering)	<ul style="list-style-type: none">● Achievement	Effective	<ul style="list-style-type: none">● Landfill operation including dike and cell formation and daily soil covering which is the first stage of the environment-friendly landfill, should be recommended in the master plan.● Further detailed survey and study should be recommended to find out the availability and location of the cover soil material for the planned landfills.
6. Waste weight	<ul style="list-style-type: none">● Achievement	Effective	<ul style="list-style-type: none">● Truck scales should be installed at all the landfill and recycling plant as well as

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measurement			composting yards. <ul style="list-style-type: none">● Measuring and recording of the waste weight and sharing the data among the relevant departments/units should be recommended for efficient management and future planning of SWM.
7. Awareness raising	<ul style="list-style-type: none">● Achievement● Questionnaire surveys(Pre and Post)	Effective	<ul style="list-style-type: none">● 3 specific awareness raising programs should be recommended in the master plan, which aim at the introduction of the environment-friendly SWM for the city, comprising segregated collection, environment-friendly landfill and home composting.● Two-step approach utilizing the community organization including CDRs, Women's Union and Youth Union, should be recommended.
8. PLP as a whole	<ul style="list-style-type: none">● Achievement● Questionnaire surveys(Pre and Post)● Monitoring of alternative recycling achievement	Effective with conditions	Components and methodologies adopted in the implementation of PLP should basically be reflected in the master plan with additional recommendations.

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**CONFIRMATION MADE IN THE MEETING BETWEEN MR. LUIS RODRIGUEZ VELIZ, OF
DPSC, COUNTERPARTS AND STUDY TEAM ON MAY 11, 2005**

Through the discussion made during the meeting on May 11, 2005, the followings have been agreed for the purpose of the JICA Study, between the Study Team, counterparts and Mr. Luis, Vice Director of DPSC.

1. Timing of the operation start of New Guanabacoa landfill

At the beginning of 2007

2. Timing of the closure of 6 Special Period landfills, which does not include Campo Florido landfill

By the end of 2006

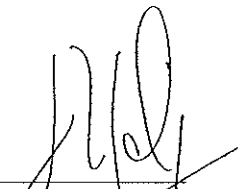
3. Estimation of the capacity of the extended part of Calle 100 landfill

Estimation of the capacity of the extended part of Calle 100 landfill should be made in compliance with the methodology adopted by the Study Team as given in the Interim Report.


4. Location of the new landfill to replace the existing Calle100

The location of the new landfill which should replace the existing Calle100 should be assumed at southwestern part of the Havana city as given in the Interim Report.

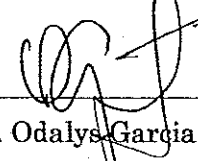
Havana City May 11, 2005



Mr. Luis Rodríguez Veliz
Vice Director of DPSC



Mr. Masatoshi Akagawa
Leader of the JICA Study Team

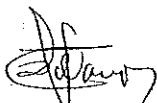


Ms. Odalys Garcia
Chief Counterpart
of the JICA Study

**MEMORANDUM No.4
ON
RECEIPT OF PROGRESS REPORT (2)
FOR
THE STUDY ON INTEGRATED MANAGEMENT PLAN OF
MUNICIPAL SOLID WASTE IN HAVANA CITY**

**AGREED UPON BETWEEN
THE STEERING COMMITTEE
AND
THE JICA STUDY TEAM**

Havana City, March 18, 2005



Dr. Roberto Castellanos Pérez
Delegate for the Minister
Ministry of Science, Technology and
Environment in Havana City
(CITMA-Havana)



Mr. Masatoshi Akagawa
Team Leader
JICA Study Team

Memorandum No.4 (Receipt of Progress Report (2))

On March 8, 2004, the fourth Steering Committee meeting was held by the chairmanship of Dr. Roberto Castellanos Perez with the attendance of the JICA Advisory Committee headed by Dr. Mitsuo Yoshida, to present the Progress Report (2) which contains the major outputs of the study in Cuba from Feb.1 through Mar.12, 2005, including the revised solid waste master plan, selection of the priority project for the feasibility study, progress of the pilot project implementation and capacity building activities. Attendant list of the meeting is given in Appendix A. Presentation for the Steering Committee was made jointly by the Study Team and counterparts (C/P) and questions of the Steering Committee (SC) were answered by the same, considering that the Study should be carried out by the collaboration of the Study Team and C/P. Comments of the Steering Committee made in the SC meeting are given in Appendix B.

During the third study in Cuba, besides those made in the above-mentioned SC meeting, discussions were made and agreements have been reached by both sides as given hereunder.

Agreements

1. Receipt of Progress Report (2)

Progress Report (2) was submitted to the Cuban side on March.8, 2005 and accepted. Comments by the Cuban side on Progress Report (2) will be considered by the Study Team and reflected to the subsequent study if deemed appropriate.

2. Confirmation of the Major Planning Issues for the Master Plan of the Study

2.1 Levels of Environment-friendly Landfills to be recommended in the Master Plan

The Study Team and the Cuban side held meetings several times during the 3rd Study in Cuba on the levels of environment-friendly landfills to be recommended in the Master Plan in the Study. A lecture was also held to explain in detail the environmental effects and costs of the environment-friendly landfills of different levels showing 4 levels.

The Study Team expressed its view that cost aspect should duly be considered in selecting the level, considering the current and expected financial constraint in the future.

The Cuban side expressed that the differences of the costs as well as those of effects were clearly understood. However, prevention of the environmental pollution caused by the existing as well as those to be constructed in the coming years, is the priority policy of the Cuban Government and therefore level 4 which is installed with liner and leachate treatment facility should be selected for environment-friendly landfills to be constructed in the future. For Calle 100 expansion, level 3 which is installed with liner and leachate recirculation facility should be selected, considering its rather

short remaining life.

The Study Team expressed its view that to this end, surrounding environment of the landfills including habitation and water use as well as the soil condition should firstly be studied with geological survey. In case that habitation is limited and water is not in use and there exists clay stratum with adequate thickness and low permeability, adopting level 2 or level 1 should be considered.

The Cuban side has agreed with the Study Team's view.

2.2 Leachate Treatment Methods for Level 4 Landfill

The Study Team expressed its view that the establishment of the standards for leachate treatment should be considered. In the master plan of the Study, both sides have agreed that total BOD-5 (60 ppm) and SS (70 ppm) be adopted in the Study as the indices of leachate treatment for level 4 landfill which should be considered as a guideline until standards are set up.

Referring to the above-mentioned indices, both sides have agreed that the option 6 given in the Interim Report, which consists of anaerobic pond, aerated lagoon and maturation pond be adopted for the master plan, which would require the least cost as well as the least land among the options.

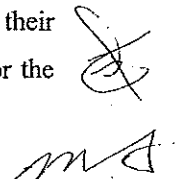
2.3 Schedule for the Closure of the Existing Guanabacoa and Commencement of the Operation of the New Guanabacoa

Though the implementation schedule is quite tight, the Cuban side expressed its firm determination for the closure of the existing Guanabacoa by 2006 due to the serious environmental pollution and public nuisance, which is the policy of the Government of the Havana City. Both sides have confirmed that the timing of the operation start of the new Guanabacoa landfill which should succeed to the role of the existing Guanabacoa landfill, should be decided at the beginning of the next study in Cuba.

2.4 Location of the new Landfill to succeed to the Calle 100 Landfill

The remaining life of the existing Calle 100 landfill has been estimated at only a few years and finding a new one to succeed to the Calle 100 landfill is an urgent issue. The Havana City Government has been making efforts for years to find a new site in the south-western part of the city near the city boundary. However to date, site is yet to be found due mainly to the difficulty of finding the suitable land and the disagreement of the residents and the municipal Government because of their environmental concern. Havana City Government is continuing its efforts and has identified a few candidate sites in the same area.

The Study Team expressed its view that awareness raising efforts should be strengthened to obtain the understanding of the residents for the environment-friendly landfills, in particular their environmental effects. The Study Team also expressed its view that the existing regulation for the

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final disposal should be amended and restriction should be eased for environment-friendly landfills. The Cuban side has agreed.

The Cuban side has proposed that location of the new landfill to succeed the role of the Calle 100 landfill should be the south-western part of the city near the city boundary. The Study Team has agreed to the Cuban proposal.

3. Selection of the Priority Project for Feasibility Study

The priority project, which has the highest priority for implementation for which a feasibility study (F/S) should be carried out, has been selected among the projects recommended in the Master Plan formulated in the Study. The priority project has been selected with the aim of improving of the public health condition of the Havana city, considering the i) urgency of implementation, ii) scale of impact, iii) priority order of the Cuban Government, iv) sustainability and v) needs for carrying out a F/S as well as vi) technical certainty, vii) possibility of financing and viii) conformity with the schedule and inputs set for the Study

Accordingly, a package project comprising 3 components has been selected as the priority project for which a feasibility study should be carried out.

Component A: Reinforcement of the machinery and equipment for DPSC/UPPH required for landfill operation at the extension part of the existing Calle 100 landfill and at the new Guanabacoa environment-friendly landfill to be constructed by 2007. Machinery and equipment comprise a) bulldozers for rolling and compaction, b) wheel loaders for excavating covering soil, and c) dump trucks for transporting the cover soil.

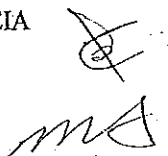
Component B: Reinforcement of the vehicles for DPSC/UPPH for the collection of the municipal solid waste generated in the urban area.

Component C: Reinforcement of the maintenance and repair equipment to be equipped at the central maintenance workshop of DPSC/UPPH.

Procurement of the above-mentioned machinery should be carried out in the year 2007, considering the urgency of the project implementation including meeting the needs for the environment-friendly landfill to be constructed before 2007 and the time required for the financing arrangement.

These projects would contribute to the same objectives of upgrading of the public health condition of the Havana city and to the prevention of the environmental problems and should together constitute the priority project for F/S.

It has also been confirmed between the Cuban side and the JICA Study Team that an EIA

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(environmental impact assessment) will not be required for F/S of the priority project considering the characteristics of the project.

4. Completion of Facility and Operation of the Pilot Project

4.1 Revision of the Location of the PLP Facility and Completion Schedule

Despite the efforts of DPSC, the date for the electricity line installation for PLP site where community composting yard and waste measuring site are planned to be located, is yet to be determined. Under the circumstances, both sides have agreed to the change of the location of waste measuring site which requires electricity supply for measuring and recording. The waste measuring site will be moved to the existing Guanabo DMSC office located about 6 km from PLP site. The office has adequate space of land and building which is installed with electricity and water supply facility.

Community composting yard is to be completed around mid April, 2005. Both sides have agreed that a temporary yard be constructed for composting and be operated until the completion of the formal composting yard.

It is confirmed by the Cuban side that the volume of municipal solid waste to be brought to PLP site will reach the planned volume of 150 m³ around mid April, 2005, after the closure of the existing Gunabacoa landfill. All the other facilities have been completed.

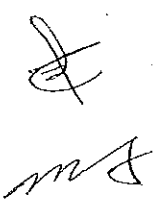
Details of the revision are given in Appendix C.

4.2 Responsibility with regard to PLP Operation

Operation of the Pilot Project (PLP) should be carried out by the cooperation of C/P, Study Team and DPSC/UPPH with the support of the local governments of the Havana del Este municipality and Campo Florido and Penas Altas communities as well as their residents. Responsibilities of the relevant organizations are given in Appendix D. It is noted that responsibility of safekeeping of the facility/equipment and materials for PLP should be assumed by DPSC/UPPH.

4.3 PLP Operation during the absence of the Study Team

PLP Operation during the absence of the Study Team should be carried out by the Cuban initiative with close communication with the Study Team. In order to monitor and improve the operation, weekly meeting by the responsible persons will be held. Weekly report which will incorporate the progress and problems arising in the operation will be prepared and sent to the Study Team in Tokyo. The Study Team will review the report and provide the advice to the Cuban side mainly by means of e-mail communication. One translator for translating the correspondence will be employed and will work in Havana.



5. Revision of the Work Schedule of the Subsequent Study

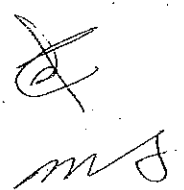
Study Team proposed possible revision of the schedule for the subsequent study to be started around late April/May, 2005, due to the following reasons.

- Extend Pilot Project period to secure the adequate time period for the cooperative operation by the Cuban side and the Study Team as well as for the evaluation, and
- Allow adequate time for reviewing the draft of DF/R by the JICA Headquarters in Tokyo

Proposed revision is given in Appendix E. The Study Team added that the proposal is of preliminary nature because it shall be approved by the JICA Headquarters.

The Cuban side has agreed to the proposal.

Concluded

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Appendix A List of Attendants

Date: March 8, 2005

Time: PM1:30 – PM4:20

Place: Hotel Ambos Mundos

Cuban Side

No	Full Name	Institution	Status	Phone/Fax/E-mail
1	Roberto Castellanos Pérez	CITMA	Chairman of SC	
2	Zoe Hernández	MINVEC	SC	209-2828
3	Alicia Rodríguez	MINSAP ¹	SC	alicia.rdguez@infomed.sld.cu
4	Maricela Álvarez	ERMP ²	SC	41-5263
5	Jesús Delgado	MEP ³	SC	
6	Ileana Saborit	CITMA	SC	
7	Zuramy López	Agriculture – Havana City's Branch	SC	
8	Odalys García	DPSC	C/P	206-6861
9	Juan Herrera	CITMA	C/P	202-3483/202-9344
10	Aymara Infante Sigler	DPSC	C/P	202-3482
11	Odalys Goicochea	CITMA	C/P	202-9344
12	Bárbara Cordovés Rodríguez	CITMA	C/P	barbara@delegcha.cu 204-9551/202-9344
13	Élida Romero Labañino	CITMA	C/P	elida@delagcha.cu 204-9551/202-9344
14	María del Carmen Sarduy	CITMA	C/P	202-9344
15	Vladimir Fraguela	UPPH	C/P	262-0582/262-0587
16	Andrés Ruiz Yanes	UPPH	C/P	262-0582
17	Marilyn Díaz Ruiz	UPPH	C/P	202-3482
18	Nélida Pérez Clavero	Physical Planning	C/P	nelidapc@planif.co.cu 832-1349
19	Elsa Machado	Physical Planning		
20	Rosario del Toro Oliva	UPPH		262-0582/262-0587
21	Adrianette Torres	CITMA		202-3483/202-9344

¹ Ministry of Public Health; ² Enterprise for Raw Materials Recovery; ³ Ministry of Economy and Planning

Japanese Side

No.	Full Name	Institution
1	Mitsuo Yoshida	JICA Advisory Committee
2	Haruo Matsumura	JICA Advisory Committee
3	Michihiro Sakai	JICA Advisory Committee
4	Tadaya Yamamoto	JICA Advisory Committee
5	Akihiko Suzuki	JICA Headquarters
6	Masatoshi Akagawa	JICA Study Team
7	Shigeru Kanaya	JICA Study Team

No.	Full Name	Institution
8	Tetsuo Izawa	JICA Study Team
9	Satoshi Shibasaki	JICA Study Team
10	Takahiro Kamishita	JICA Study Team
11	Tomoyuki Hosono	JICA Study Team
12	Masakazu Nakao	JICA Study Team
13	Yukiko Watanabe	JICA Study Team

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**Appendix B Comments and Answers during the Steering Committee
Meeting on March 8, 2005**

I. General Comments

1- Comment by Ms. Alicia Rodriguez, MINSAP.

Referring to the presentation of Mr. Juan Herrera about the Pilot Project (PLP), she made a comment as follows. Related to the awareness-raising and public participation activities, some mass organizations were mentioned. She added that there also exists an association of the Family Doctors that should be considered among them because they already have knowledge of the health condition in each community.

Referring to the monitoring activity, she mentioned that it is also important to monitor the atmospheric part in addition to the water and soil resource parts.

Answer by Mr. Juan Herrera, Vice Chief C/P

He agreed with her suggestion. Yesterday C/P talked with all actors involved in this process including the Family Doctors, which should provide the primary environmental attention. They are the coordinators of the environmental health and one of the main indicators of the MSWM. This is the most appropriate and closer staff to the people that has to be raised in awareness to the project. During the visit to the PLP site last Saturday, all representatives attended including the Doctors.

Also he agreed on the 4 fundamental aspects of the monitoring work: water, soil, bio-diversity and atmosphere.

There are two stages related to the landfill works:

1st stage: construction and maintenance; and

2nd stage: operation.

Both stages should be subject to monitoring works. Regarding the landfill operation within the PLP, the activity will be the soil covering in order to reduce the propagation of vectors and generation of offensive odor, which is the first step toward the environment-friendly landfill.

2- Comment by Ms. Ileana Saborit, CITMA specialist

She required a clarification regarding the sectorial strategies explained in Ms. Odalys presentation, which mentioned about the correction of the EIA methodology which was not clear to her.

Answer by Ms. Odalys Goicochea, C/P

Though Cuba has a strong legislation about EIA procedures, there is no established methodology for final disposal, landfill construction and landfill closure. In fact, a registered company carried out an EIA but it did not fulfill the expectations of the JICA Study Team.

The subject of the strategic environmental assessment is a new subject in Cuba. The message was not completely clear due to the translation of terms in three languages, Japanese-English-Spanish.

Mr. Juan Herrera, Vice Chief C/P added as follows;

There was a problem with the Spanish word used in the presentation, and instead of saying to correct the methodology, it is better to say to revise and improve the system of EIA.

He proposed to continue working on the standards of landfill. The Cuban experience is short in the field of environment-friendly landfills. Basically knowledge of environment-friendly landfill has been gained only by document and training in the Study. In order to discuss and understand the standards, they should be put in practice.

Ms. Ileana added as follows;

She would consult with the high level authority related to environmental laws on this matter.

3- Comment by Ms. Alicia Rodriguez, Specialist from MINSAP

She suggested the revision of the last paragraph on the section on goals in the presentation for policies and strategies for MSWM, as follows:

“Improvement of the collection system, in order to improve the quality of life of the people as well as the workers’ sanitary conditions”

Another suggestion is that the last paragraph of presentation for basic strategies is to be revised as follows:

“To reduce the volume of MSW for generation, treatment and final disposal”

No answer was made about these comments.

4- Comment by Dr. Castellanos, SC Chairman

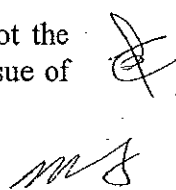
He was very satisfied with the presentation. Collection improvement to date was explained clearly and concept of environment-friendly disposal is also clearly presented. High level of preparation was shown and all the presentation was good.

They are forced to be more efficient in the total system of MSW. Regardless of the lack of funding, they could gain more knowledge, organizational strength and achieve higher efficiency and capacity building in order to find out how to do things in the best way.

The economic trend is positive. Cuba is getting out of an economic stagnation through some sectors such as tourism and nickel production. Cuba will have more resources, though Cuba should continue improving her work.

3R activities should be promoted and understood by the people in order to have a good overall operation. It is important to realize that the city has not enough area and whole waste should not be dumped in the landfills before separating the recyclable materials.

It should be clear to both Japanese and Cuban sides, that both sides are not the ones to propose the collection fee to be applied to the people. This is an issue of



national policy of Cuba. It is not a technical recommendation, it is a small issue but it could be a problem in the future.

He expected JICA to hold a small workshop attended by the officials and technicians of DPSC involved in the MSWM. In this workshop the same people who made the presentations today would explain to them the progress achieved in the course of the study, and listen to their opinions and learn from their experience. It should be considered to invite other government officials.

He specially liked Vladimir's presentation with enough details. It would be beneficial to share this information with other people in a workshop similar to the one held yesterday. It is important to raise the awareness of our own workers in order to have new collaborators.

Cuban side has been able to go deeper into the Study thanks to the efforts made by both the Study Team and C/P.

We are anxious about what lies ahead of us.

5- Comment by Mr. Akagwa, Leader of the JICA Study Team

He expressed his thanks for active opinions and discussions. As Ms. Garcia explained financial issue is an important one. However, we have just started the exchange of opinions and formulated just a kind of concept this time. Next time we would like to exchange opinions with more people including Dr. Castellanos, DPSC, Ministry of Economy and Planning on this issue including the sensitive points that require more discussion to make concrete proposal.

6- Comment by Dr. Castellanos, SC Chairman

He concluded that the attendants have spoken their opinions.

The reports are very good and have promoted understanding on waste management issues. He agreed with Mr. Akagawa about making a concrete proposal.

II. COMMENTS REGARDING THE PROPOSAL OF EXTENSION OF THE STUDY PERIOD MADE BY THE JICA STUDY TEAM

1- Comment by Dr. Castellans, SC Chairman

He said this was the first time to him to hear about the proposal. He proposed to hear comments from the attendants. The attendants have to find out if it is advisable or not to extend the period of PLP.

He does not have all the elements to judge this matter, so he would like to listen to the C/P opinions on this matter.

2- Comment by Mrs. Odalys Garcia, Chief C/P

It is clear that we are behind the original schedule for PLP implementation. We are thinking of extending the PLP period until the end of May, this issue has already been discussed with MINVEC about the possibility of extension by October, since the JICA Study Team will not be working in Cuba in April.

The F/S of the priority project has just begun, which is very important to define the cost of the project.

3- Comment by Mr. Juan Herrera, Vice Chief C/P

He agreed with the proposed extension of the PLP period.

It is the important stage of the PLP, since it will allow defining what to do in the short, medium and long terms.

The parts of waste bins are on the way to Havana City which are necessary to continue the PLP. This is one of the reasons for the delay of the PLP. He considered that the period could be extended as proposed. This would be positive approach. Otherwise we will be forced to propose something the effectiveness of which is uncertain.

He mentioned that one year ago he said that "we should assure to have a Cuban M/P, integrating the Japanese experience but appropriate for the specific characteristics of Cuba". Therefore, the PLP is a fundamental matter.

4- Comment by Dr. Castellanos, SC Chairman

It seems to be convenient to request the proposed extension. Everyone seems to agree with this proposal. The proposal seems to be reasonable.

5- Comment by Ms. Odalys Goicochea, C/P

She asked if the delay of the PLP is the reason of the extension of the Study in Cuba. Will the priority project for F/S be delayed too?

Answer by Mr. Akagawa, Leader of the JICA Study Team

The main reason and purpose of the extension is to have a proper feedback of the PLP. As for F/S, the priority project for F/S has already been selected and F/S works also have started this time. The JICA Study Team needs to discuss with the C/P how to continue the PLP implementation. Therefore the team is considering to extend the stay of 5 Team members this time for about 1 week.

About the delay, the JICA Study Team and C/P should share the responsibility because the Study should be carried out by joint efforts of C/P and the Study Team.

6- Comment by Dr. Castellanos, SC Chairman

He mentioned that the approval does not depend on us but depends on the decision by JICA.

7- Comment by Dr. Yoshida, Chairman of the JICA Advisory Committee

The PLP has just started, as observed at the site related to the segregated collection, the segregation by people were not sufficient. More time is needed to start the PLP. This is the reason why JICA Advisory Committee has proposed to the JICA Study Team to extend the PLP period. And the JICA Study Team has accepted to do it, though the PLP should be implemented by the C/P.

The period from the middle of March to the middle of April is very important. The PLP will be mainly implemented from March to May. Mid March through around the end of April, 2005, only C/P will be in charge. C/P should maintain a close communication with the JICA Study Team. C/P also should keep a record of the PLP execution to get feedback and get advice from the JICA Study Team in this regard.

Many difficulties will arise during the implementation of the PLP, segregation problem being an example. C/P should find out what is the reason and should solve the problem. This is a trial and error process. Based on this process an evaluation can be made. The PLP is a trial project, and some components may not be appropriate for Havana City, or some should be adjusted to the current problems and this evaluation will contribute to the M/P.

At the moment, the final M/P is not available yet. The recommended are only strategies for the M/P. The most important is the implementation and the evaluation. Hopefully JICA Tokyo will accept this proposal.

Therefore, Advisory Committee also agrees with this proposal.

Appendix C Revision of PLP and Completion Schedule

No.	Items of Work	Completion Date
1	PLP office and weight measuring site	<ul style="list-style-type: none"> - The existing DMSC office which has adequate space of land and building equipped with power and water supply will be utilized as PLP office. - Consent of DMSC has already been obtained.
2	Construction of waste measuring yard and installation of necessary equipment	<ul style="list-style-type: none"> - Waste measuring yard and truck scale connected with PC/printer which has already been set up for PLP within DMSC office will be utilized.
3	Installation of power supply for PLP site	<ul style="list-style-type: none"> - DPSC is currently negotiating with the power supply company. - DPSC will make best efforts to install it as early as possible.
4	Installation of water supply and simple sewerage system for the shed at PLP site	<ul style="list-style-type: none"> - Water will be supplied by tank lorry. - Simple sewerage facility for the toilet of the shed will be completed early April, 2005.
5	Construction of compost yard paved with concrete and installed with roof	<ul style="list-style-type: none"> - Scheduled to be completed around mid April, 2005. - Temporary composting yard will be constructed adjacent to the formal one with compacted soil floor and will be used until the formal yard is completed.
6	Repair of the existing dike with soils	<ul style="list-style-type: none"> - Completed on March 15, 2005.
7	Drainage channel	<ul style="list-style-type: none"> - Completed on March 12, 2005
8	Haulage of the planned waste volume(150m3/day)	<ul style="list-style-type: none"> - Upon the closure of the existing Guanabacoa landfill scheduled mid March, 2005, 150 m3 will be hauled to PLP site.

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Appendix D Responsibility for PLP Operation

Component /Responsibility	Segregated collection	Weighing, data recording	Soil covering operation	Community composting	Home composting	Awareness raising & Campaign
Operation						
Responsibility						
- Overall responsibility	- UPPH(Almeida)	- UPPH(Santiago)	- UPPH(Santiago)	- UPPH(Santiago)	- C/P(Goicochea)	- C/P(Goicochea)
-Supervisor	- UPPH(Almeida)	- DPSC (Aymara)	- DPSC(Andres)	- DPSC(Andres)	- DPSC(Andres)	- C/P(Elida)
Safekeeping/Place: Bulldozer, wheel loader, dump truck, compactor truck, etc.	- UPPH/Central -Maintenance WS	- DMSC	- UPPH/Central -Maintenance WS	- UPPH	—	- Elida
Provision of manpower: -Drivers/operators, -Workers	-Driver: UPPH -Worker: DMSC	-Recorder: DMSC	-Driver: DMSC -Worker: DMSC	-Driver: UPPH -Worker: UPPH	—	—
Placing/distribution: -Waste bins - Home compost bins	- UPPH	—	—	—	- UPPH	—
Daily operation:						

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-Driving, mechanical works for bulldozer, wheel loader, dump truck, compactor truck, etc.; - Manual works	- UPPH - UPPH	- UPPH - UPPH	- UPPH -UPPH	- UPPH -UPPH	— —	— —
Guidance, training, dissemination, campaign to the residents	- C/P & Team	- C/P & Team	- C/P & Team	- C/P & Team	- C/P & Team	- C/P & Team
Holding awareness raising workshop	—	—	—	—	—	C/P, Team members
Monitoring, evaluation & reporting	- C/P: Almeida - Elida - Team: Shibazaki	- C/P: Aymara - Andres - Team: Izawa	- C/P: Aymara - Andres - Team: Iwamoto	- C/P: Andres - Team: Kamishita (Kanaya)	- C/P: Andres - Goicochea - Team: Kamishita (Kanaya)	- C/P: Elida - Team: Akagawa

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Appendix E Proposed Revision of Work Schedule (Tentative)

Items	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	
Revised Schedule in Cuba	[Bar]			[Bar] (90days)				[Bar] (15days)	[Box: Final to Cuba]	
Proposed Pilot Project		X	[Shaded Bar]			X	X		X	
Evaluation of PLP				[Shaded Bar]						
Editing in Japan							[Shaded Bar]	[Shaded Bar]		
Original Schedule	[Shaded Bar]						[Arrow pointing right]			
Schedule of PLP	[Shaded Bar]		60days				X	Extension		

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Memorandum

Interim Report (IT/R) was prepared and submitted on December 2, 2004, incorporating the outputs of the study in Cuba from September 8 through December 1, 2004 (5 copies in Spanish and 5 copies in English). It has been agreed between Cuban side and the Study Team (both sides) that the Spanish version of IT/R be reviewed by the Cuban side and comments be given to the Study Team at the beginning of the next study in Cuba, tentatively scheduled at the middle of January, 2005.

1. Receipt of Interim Report

It has been agreed between both sides that the Spanish version of IT/R be reviewed by C/P and the contents be explained to the Steering Committee (SC) for comments before the next study in Cuba. The SC comments should be given to the Study Team at the beginning of the next study in Cuba.

2. Principal Features of the Selected Pilot Project and its Implementation

2.1 Principal Features

Both sides have agreed that the Pilot Project (PLP) should comprise the following three (3) components which are the most important types of projects/measures recommended in the master plan.

- i) Segregated collection
- ii) Composting of the organic materials
- iii) Environmental awareness raising of the residents

Details of the components are given below.

1) Segregated collection

Segregated collection is an important measure recommended in the master plan with a view to promoting the reduction of solid waste for disposal as well as the utilization of the resource materials for recycling and organic materials for composting. To verify its effectiveness, waste collection will be carried out in the Peñas Altas community with 2,075 households, segregating the wastes into three kinds: organic, recyclable and the others.

2) Composting

Composting of the municipal solid wastes is an important measure recommended in the master plan for reducing the waste volume for disposal as well as for obtaining soil conditioner for agriculture as well as for gardening. To prove the effectiveness of composting of municipal solid waste, organic materials collected through segregated collection will be composted in the composting area located in the

Campo Florido landfill site. Home composting will also be practiced in 40 households in the Campo Florido community in order to verify its effectiveness as a possible option in the sub-urban communities. Recyclable materials collected through segregated collection will be transported to the existing recycle center of DPSC for recycling.

3) Environmental awareness raising program and campaign

Environmental awareness raising is an important measure recommended in the master plan for improving the understanding of the residents for the necessity and usefulness of the solid waste management. To verify its effectiveness, environmental awareness raising activities will be carried out in the Peñas Altas and Campo Florido communities.

2.2 Tentative Schedule of the Pilot Project Implementation and Operation

Operation of PLP, in particular segregated collection and composting, is tentatively scheduled during February – April period in 2005.

2.3 Sharing of the Responsibilities for Pilot Project Implementation and Operation

(1) Responsibilities for PLP implementation and operation

Responsibilities for PLP implementation and operation should be assumed by both sides as follows.

Responsibility of Cuban Side

- Carrying out the segregated collection
- Carrying out the composting of the segregated organic materials
- Carrying out the home composting with the cooperation of the residents
- Carrying out the awareness raising campaign

Responsibility of Study Team

- Giving advice and full support to the Cuban side for carrying out the above-mentioned responsibilities.

Operation of PLP except for the awareness raising activities will be carried out by DPSC/UPPH with the cooperation of DMSC. DPSC/UPPH will assume the overall responsibility for operation of PLP. DMSC will assign workers for collection, soil covering operation, composting and security personnel. Awareness raising activities will be carried out by C/P in charge of social considerations. Study Team will cooperate for the operation and give necessary advice for the improvement of PLP operation.

2.5 Sharing of the Costs for Pilot Project Implementation

For the implementation and operation of PLP, Japanese side should bear the costs of some

of the equipment required for PLP which need to be imported. The items of the costs to be borne by the Japanese side are given in Appendix. All the costs except those given the appendix should be borne by the Cuban side. Operation and maintenance costs of PLP should also be borne by Cuban side including personnel and fuel costs and the cost for maintenance and repair.

3. Operation of Section Landfill with Soil Covering

It has been agreed between both sides that section landfill with soil covering should be carried out as a part of the Study activities. The machinery and vehicles required for the operation should be obtained by means of "Imported Parts and Repairing" method. DPSC/UPPH should be responsible for the operation in collaboration with C/P and the Study Team. DPSC/UPPH should assign the operators/drivers of the machinery and vehicles for operation comprising a bulldozer, a wheel loader and a dump truck. DPSC/UPPH should also be responsible for the upkeep and maintenance of the above-mentioned machinery and vehicles.

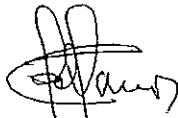
Appendix Items of the Costs to be Borne by the Japanese Side

Equipment/Materials	Quantity
<u>Soil Covering Operation</u>	
Engine of a bulldozer	1
Engine of a wheel loader	1
Engine of a dump truck	1
Portable truck scale	1 set
PC(Laptop including OS and application soft) , printer	1 set
<u>Segregated collection</u>	
Compactor truck (lease)	1 vehicle
Waste bins	160 sets
Polyethylene buckets for the households for segregated collection	2075 sets
<u>Composting</u>	
Container for home composting	40 sets
<u>Awareness raising</u>	
- Workshops for the residents	3 times
- Workshops for the primary school pupils/teachers	1 time
- Questionnaire surveys	2 times
<u>Awareness raising campaign</u>	

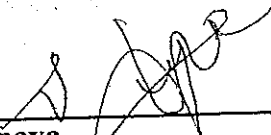
- Pamphlets, posters, stickers	1 set
- Promotion materials (T shirts, etc.)	1 set

4. Request by the Cuban Side

Cuban side requested that an environmentally-friendly landfill, due to its complexity, should be implemented separately from PLP within the next phase of the Development Study in Cuba with the full financial assistance of JICA. Study Team replied that the request would be conveyed to JICA.



Dr. Roberto Castellanos Pérez
 Delegate for the Minister
 Ministry of Science, Technology and
 Environment in Havana City
 (CITMA-Havana City)



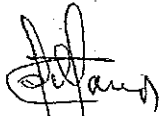
Mr. S. Kanaya
 Vice Team Leader
 JICA Study Team

ORIGINAL : ENGLISH

MEMORANDUM
ON
PROGRESS REPORT (1)
OF
THE STUDY
ON
INTEGRATED MANAGEMENT PLAN
ON
MUNICIPAL SOLID WASTE
IN
HAVANA CITY

AGREED UPON BETWEEN
THE STEERING COMMITTEE
AND
THE JICA STUDY TEAM

Havana City, July 9, 2004



Dr. Roberto Castellanos Perez
Delegate for the Minister
Ministry of Science, Technology and
Environment in Havana City
(CITMA-Havana)



Mr. Masatoshi Akagawa
Team Leader
JICA Study Team

Memorandum No.2 (Acceptance of the Progress Report (1))

Progress Report (1) (PR/R (1)) was prepared and 20 copies of Spanish version and 5 copies of English version were submitted to the Cuban side in due compliance with the set schedule. Steering Committee meeting was held on July 7, 2004 with the chairmanship of Dr. Roberto Castellanos Perez, Delegate for the Minister of CITMA-Havana attendant list of which is given in Appendix 1. During the meeting, presentation of the Progress Report (1) which compiles the results of the Study works during the first study in Cuba, was made, focusing on the principal features of the master plan and the selected Pilot Project as well as the capacity building.

According to the agreement between the Cuban and Japanese sides (both sides), the first study in Cuba of the Study on Integrated Management Plan of Municipal Solid Waste in Havana City (the Study) has been carried out as a joint work between both sides. Accordingly, presentation was made by the Team and the counterparts (C/P) utilizing the power point both in English and Spanish. In the same context, questions made by the Steering Committee members were answered by the Team members and C/P.

Through the discussions during the course of the first study in Cuba and the Steering Committee meeting, the following agreements were reached between the Cuban side and the Study Team.

Agreements

1. Acceptance of PR/R(1)

Contents of PR/R (1) has been explained by the Study Team together with C/P and discussed in the Steering Committee meeting held on July 7, 2004. Contents of PR/R (1) have basically been agreed. Comments given by SC will be considered in the second Study in Cuba (Appendix 2).

2. Selection and Formulation of the Pilot Project Package

Both sides have preliminarily agreed with the selection and formulation of the Pilot Project as well as sharing the responsibilities and bearing the required cost as shown below. Principal features of the Pilot Project package preliminarily agreed upon between both sides are given in Appendix 3.

2.1 Project Package

The following project components should be integrated together to form a project package for the Pilot Project implementation.

- 1) Segregated collection for 2,075 households in the Penas Altas community, dividing the municipal wastes into 3: organic, recyclable and the others, with a view to verifying the capacity of the residents for segregated discharge as well as the efficient collection system for segregated collection.
- 2) Sanitary landfill having the area of about 6,400 m² with compacted clay liner and leachate treatment facility, to be constructed in the existing Campo Florido landfill site with a view to verifying the effectiveness of the sanitary landfill system for environmental protection as well as the capacity of the Cuban side for the design, construction and operation of the system with the support of the Study Team.
- 3) Composting of the collected organic waste in an area to be allocated in the Campo Florido landfill site with a view to verifying its effectiveness.
- 4) Home composting to be practiced in 50 households within the Campo Florido community in order to verify its effectiveness as a possible option for composting in sub-urban communities.
- 5) Recycling of the recyclable materials by transporting them to the existing recycle center of DPSC.
- 6) Environmental awareness raising program with a view to raising the environmental awareness of the residents in the communities of Campo Florido and Penas Altas and securing their active cooperation for the Pilot Project implementation.

2.2 Site Selection

The existing Campo Florido landfill site should be utilized for the implementation of the sanitary landfill component. Penas Altas community neighboring the Campo Florido community where the existing landfill is located, should be the community to practice the segregated collection.

2.3 Implementation and Operation Organization

- 1) Implementation by collaboration

Pilot Project will be carried out by the collaboration of the C/P and the Team.

- 2) Pilot Project Implementation Unit

A Pilot Project Implementation Unit will be set up comprising C/P and Team members concerned with the Pilot Project components as follows.

Position in the Unit	C/P	Name	Team	Name
Leader	Vice Chief C/P	Juan Herrera	Team Leader	M. Akagawa
Sub-leader	Chief C/P	Odalys Garcia	Vice Team Leader	S. Kanaya
Collection/transportation	C/P	Wladimir Fraguela	Team member	S. Sibazaki
Recycling and composting	C/P	Odalys Goicochea	Team member	T. Kamishita
Landfill	C/P	Aymara Infante	Team member	T. Izawa
Facility design and cost estimation	C/P	Marilyn Diaz	Team member	K. Iwamoto
Coordination	Coordinator	Carlos Tarafa	Coordinator of the Team	S. Higashinakagawa

3) Cuban side will complete the detailed design of the Pilot Project by the beginning of the second study in Cuba, based on the plan which has been prepared by the Study Team during the first study in Cuba. Study Team will review the design and revise it if considered necessary for finalization. Cuban side will carry out construction works based on the final detailed design. Operation will be carried out by the Cuban side in cooperation with the Study Team.

2.4 Responsibility and Cost Bearing of the Japanese Side and Cuban Side

The following principles have been agreed between both sides for the implementation of the Pilot Project.

- 1) In principle, foreign currency component should be borne by the Japanese side while local currency component should be borne by the Cuban side. Manpower required for the implementation should be provided by the Cuban side.
- 2) More specifically, heavy equipment and a vehicle for landfill operation including a bulldozer, a power shovel, a dump truck should be obtained by means of "Imported Parts and Repairing" method. Japanese side should bear the cost for the imported parts while the Cuban side should take the responsibility and bear the cost for repairing and assembling of the equipment. A compactor truck for segregated collection should be procured, the cost of

which should be borne by the Japanese side. For the vehicles and equipment above, procurement arrangement should be the responsibility of the Cuban side.

The cost items/numbers to be borne by the Japanese side are given in Appendix 4. All the costs except those given in the appendix should be borne by the Cuban side.

2.5 Extension of the Implementation Period for the Pilot Project

Considering the number of the project components and sizable scale of the Pilot Project package agreed upon by both sides, in particular the sanitary landfill and segregated collection components, as well as time required for the importation of the equipment/machinery parts, it has been basically agreed that the time schedule given in the Inception Report should be extended. Tentatively, it has been agreed that the implementation schedule should be revised so that the operation period should be delayed for about 4 months from the schedule given in the Inception Report.

3. Preparation of the Spanish Version of PR/R (1)

Firstly PR/R (1) was prepared in English and Spanish version then prepared by translating the English version into Spanish. Translation work for the Study reports should firstly be carried out by the translators employed by the Study Team. Considering some differences between the Cuban Spanish and those in other Latin American countries, however, final checking of the translation should be done by the Cuban side.

4. Undertakings of Both Sides

It has been agreed that both sides would make their best efforts to fulfill the undertakings as agreed at the beginning of the Study.

5. Coordination between the JICA Study and the Relevant Studies/Projects by Other Donors

It has been confirmed by both sides that the Cuban side should assume the full responsibility for the coordination between this JICA Study and the studies/projects concerned with the solid waste management for the Havana city, to be implemented by other donors.

Requests of the Cuban Side

Cuban side expressed their deep appreciation to the achievements made in the first study in Cuba. In order to continue the effective implementation of the Study, Cuban side made the following requests. Study Team replied that they would be conveyed to JICA.

1. Team's Input for the Study and Pilot Project Implementation

JICA Team members are requested to work continuously during the subsequent studies in Cuba, in particular Team Leader and Vice Team Leader including the Pilot Project period. Team members responsible for the Pilot Project components should work continuously during the Pilot Project period.

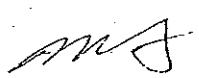
2. Capacity Building

2.1 Step-by-step approach should be adopted and the work schedule should be modified to allow this approach.

2.2 More workshops for capacity building should be carried out besides the on-the-job training.

2.3 Overseas Training

Besides the training in Japan to be provided for 2 counterparts in July-August, 2004, overseas training for other counterparts is requested in the subsequent study stages.



Appendix 1 Attendant List for the Second Steering Committee Meeting

Date:2004/7/7

Place:NATIONAL HOTEL

No	Name	Ministry/Organization	Position
1	Roberto Castellanos Perez	CITMA-HC	Director Prov. Delegacion CITMA
2	Eduardo Leon	CAP	Vice President
3	Rolando Carrilo	DPSC	Director Prov. Serv. Comunales
4	Jesús Angel Delgado Reinoso	Ministry of Economy	Vice President
5	Alicia Rodríguez Gomez	MINSAP	Expert
6	Elsa Machado Rodríguez	DPPF	Expert
7	Yolanda Díaz León	CITMA	Expert
8	Ileana savorit Izaguirre	CITMA	Expert
9	Margarita Niebla	MMHE	Environmental Education
10	Rogelio Castro Rey	DPPF	Vice Director
11	Zuromy López León	Ministry of Agriculture	Expert of Soil
12	Zoe Hernández Portales	MINVEC	Expert of International Cooperation
13	Ada LLanes Marrero	CAP	Expert of Cooperation
14	Rubén Benavides Díaz	CITMA	-
15	Aymara Infante Sigler	DPSC	CP
16	Marilyn Díaz Ruiz	DPSC	CP
17	Elida Romero Labañino	CITMA	CP
18	M ^a del Carmen Sarduy Faulén	CITMA	CP
19	Nélida Pérez Clavero	DPPF	CP
20	Barbara Cordoucé Rodríguez	CITMA	CP
21	Juan Herrera Cruz	CITMA	CP
22	Odalys García Fonseca	DPSC	CP
23	Andrés Ruiz Yanes	UPPH	CP
24	Vladimir Fraguela	UPPH	CP
25	Teresita Recio García	DPSC	CP
26	Odalys Goicochea Cardoso	CITMA	CP
27	Hirohisa Matsumoto	JICA	Project Formulation Adviser of JICA
28	Minoru Tagami	JICA	Expert of JICA
29	Carlos Iglesias Celestino	The Yomiuri Shimbun	-
30	Masatoshi Akagawa	JICA Study Team	Team Leader
31	Shigeru Kanaya	JICA Study Team	Vice Team Leader
32	Satoshi Shibazaki	JICA Study Team	Expert of Collection and Transportation
33	Meijer, Michiel Anne	JICA Study Team	Expert of Social Considerations/Awareness Raising
34	Tetsuo Kuyama	JICA Study Team	Expert of Environmental Considerations

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Appendix 2 STEERING COMMITTEE MEMBER'S COMMENTS

Date: 7 July 2004

Time: 10:30 am~1:30 pm

Venue: Taganana Room – Hotel National

1. Comment by Cooperation Secretariat

The project presented is indeed very interesting and important for the city and the presentations made were quite enlightening. A number of projects have been carried out in Havana City with similar characteristics as this Development Study and, therefore, it will be very helpful if those concerned with such projects get together with the C/P and the Team members to exchange experiences so that mistakes committed in the past can be prevented in the Pilot Project to be carried out at Peñas Altas and Campo Florido.

Commenter suggested all related activities should be discussed with the community representatives to ensure a more active participation of the citizens and offered the assistance of Cooperation Secretariat to promote the projects.

2. Comment by Mr. Jesús Delgado: Steering Committee Deputy Chairman

He proposes to set up one or more working groups in order to address certain issues, and to exchange ideas with the C/P.

On behalf of all S/C members, he requested some time to go through the Progress Report (1) and then meet to discuss the document.

Reply by Dr. Roberto Castellanos

Dr. Castellanos asked the SC members to provide the comments on fundamental issues to him, while comments on misspellings and other minor mistakes should be provided to Ms. Odalys García.

He also requested that absent S/C members should get their copies of Progress Report (1) so that they can make their comments, too.

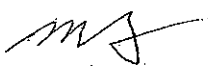
3. Comment by Mr. Jesús Delgado: Steering Committee Deputy Chairman.

He suggested meeting in the last week of August before the return of JICA Team members.

Mr. Akgawa: JICA Study Team Leader

Mr. Akagawa explains that with regard to the implementation of the Pilot Project, C/P and the Team had many discussion meetings and therefore all the questions can be answered by the C/P, in particular Ms. Odalys García and Mr. Juan Herrera.

4. Comment by Ms. Zoe Hernández: MINVEC



She asked about the issue of the procurement of the equipment required for the Pilot Project which is contained in the Report.

Reply by Juan Herrera and Odalys García

They replied that the issue of the equipment required for the Pilot Project is mentioned in the Report and recommended that the Repair Option to be adopted.

Reply by Mr. Akagawa

The best option would be the repair of the existing equipment and not the rental option considering that the Cuban side would continue the operation practiced for the Pilot Project to the ordinary operation of the Campo Florido landfill. We hope financing issue can be discussed with JICA during the stay of the two key counterparts in Japan as trainees, July - August, 2004.

5. Comment by Mr. Rogelio Castro: Provincial Division of Finance and Prices (DPFP)

He asked if an estimate has already been made of the local currency component for the Project as there are a number of items to be considered such as staff salaries, fuel, etc. Such estimate must be made available to the Ministry of Finance and Prices before 30 September 2004.

Reply by Odalys García

The amount of the foreign currency component has already been informed to the relevant department in DPSC, and the information is supposed to have reached DPFP by now. There is also a foreign currency component to be covered by JICA.

6. Comment by Dr. Roberto Castellanos

We have completed a lot of works during these 5 months and I would like to appreciate the works carried by the Team members, particularly Mr. Akagawa's efforts and dedication, to the Counterpart and the Steering Committee as well.



Appendix 3 Principal Features of the Pilot Project (Preliminary)

1. Semi-aerobic Landfill

- Type of landfill: Section landfill
- Location: In the existing Campo Florido landfill
- Area: 6,400 m² (80 m x 80 m)
- Height: 2 m
- Liner: Compacted clay liner
- Leachate pipe/ Gas extraction pipe: 500 m/ 20 m
- Soil covering: Daily (20 cm)
- Leachate treatment: To be determined

2. Segregate Collection

- Location: Penas Altas community
- Kinds of segregation: Resource materials, organic materials, others
- Size of collection: 2,075 households
- Number of waste bins: 200 sets

3. Composting (Community)

- Location: Existing Campo Florido landfill (300 m²)
- Volume of raw materials: 3.3 ton/day

4. Composting (Home)

- Location: Campo Florido community
- Number of households: 50
- Composting bins: 50

5. Environmental Awareness Raising

- Workshops for residents: 3 times
- Workshop for primary school children/teachers: 1 time

6. Awareness Raising Campaign

- Pamphlets, posters, stickers

Appendix 4 Costs to be Borne by the Japanese Side (Preliminary)

Equipment/Materials	Quantity
<u>Landfill</u>	
Bulldozer	1 vehicle
Powershovel	1 vehicle
Dump truck	1 vehicle
Pipes (leachate pipes, gas extraction pipes)	500 m for leachate pipes & 20 m for gas pipes
Portable truck scale	1 set
PC(Laptop including OS and application soft) , printer	1 set
Foreign currency component of design cost for the landfill	1 set
Foreign currency component of civil/architectural costs for the landfill	1 set
<u>Segregated collection</u>	
Compactor truck	1 vehicle
Waste bins	200 sets
<u>Composting</u>	
- Polyethylene buckets for the households for segregated collection	2,075 sets
- Container for home composting	50 sets
<u>Awareness raising</u>	
- Workshops for the residents	3 times
- Workshops for the primary school pupils/teachers	1 time
- Questionnaire surveys	2 times
<u>Awareness raising campaign</u>	
- Pamphlets, posters, stickers	1 set
- Promotion materials (T shirts, etc.)	1 set

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ORIGINAL : ENGLISH

**MINUTES OF MEETING
ON
INCEPTION REPORT
OF
THE STUDY
ON
INTEGRATED MANAGEMENT PLAN
ON
MUNICIPAL SOLID WASTE
IN
HAVANA CITY**

**AGREED UPON BETWEEN
THE HAVANA CITY
AND
JAPAN INTERNATIONAL COOPERATION AGENCY**

Havana City, February 13th, 2004

Dr. Roberto Castellanos Perez

Délegate for the Minister

**Ministry of Science, Technology and
Environment in Havana City**

(CITMA-Havana)

Mr. Masatoshi Akagawa

Team Leader

JICA Study Team

Witnessed by;

Mr. Ramón Ripoll Díaz

Vice-President

**Ministry for Foreign Investment and
Economic Cooperation (MINVEC)**

Dr. Mitsuo Yoshida

Chairman

JICA Advisory Committee

Mr. Rolando Carrillo Oliva

Director

Provincial Direction of Communal Services

(DPSC)

Minutes of Meeting No.1 (Acceptance of the Inception Report)

For the efficient conduct of the Study on Integrated Management Plan of Municipal Solid Waste in Havana City, the following agreement and confirmation have been made between the Cuban side and the JICA Study Team (the Study Team) based on the discussion on the Inception Report (IC/R) by Cuban and Japanese sides (both sides).

1. Agreement on the Contents of the Inception Report

Contents of IC/R has been explained by the Study Team and discussed by both sides in the Steering Committee meetings held on Feb.10 and Feb. 11, 2004, chaired by Dr. Roberto Castellanos Perez, Delegate for the Minister of CITMA-Havana with the attendance of Dr. Mitsuo Yoshida, Chairman of the JICA Advisory Committee (ADC). Attendant lists of the meetings are given in Appendix 1 and 2, respectively. Contents of IC/R have basically been agreed with some comments as given in Appendix 3. Followings are the major issues either requested or agreed upon by both sides based on the discussion during the meetings.

- The objective of the Study is to formulate an integrated management plan of municipal solid waste in Havana city. Namely, the type of the solid waste for the Study is the municipal solid waste. Regarding the industrial and medical solid wastes, "Study would cover merely problem identification and making recommendations if needed" as stipulated in the Minutes of Meeting on Scope of Work for the Study.
- Cuban side requested that chemical analysis for the samples of municipal solid waste should be made at the expense of Japanese side. Japanese side replied that the request would be conveyed to JICA Headquarters.
- It has been agreed by both sides that in order to assure the full agreement of the contents and wording of the English and Spanish versions of IC/R, Spanish version will be revised and submitted to the Cuban side in March, 2004. As a part of the revision, Chapter 7 and APPENDIX 1 of the IC/R will be deleted.

2. Undertaking of the Cuban Side

2.1 Establishment of the Steering Committee

It has been confirmed by the Cuban side that a Steering Committee (SC) has been set up with Dr. Roberto Castellanos Perez, Delegate for the Minister of CITMA-Havana, as its chairman for the efficient management of the Study activities.

Representatives of the Ministry of Economy and Planning (MEP) and the Provincial Administration Council (CAP) will assume vice chairmanship of SC. List of SC members is given in Appendix 4.

2.2 Appointment of the Counterpart Personnel

Fourteen (14) counterpart personnel (C/P) have been appointed from the various organizations which are the members of SC. For each of the 10 Study Team members, at least one C/P has been appointed. List of the C/P is given in Appendix 5.

It has been confirmed by the Cuban side that all of the C/P should be engaged in the Study at full-time basis throughout the Study period. It has also been confirmed that the Cuban side provide C/P with sufficient level of English command or C/P with adequate support for interpretation and translation, for the smooth communication with the Study Team. The C/P should form the Working Group for the Study with Ms. Odalys Garcia as Chief Counterpart and Mr. Juan Herrera as Vice Chief Counterpart. If deemed necessary, Leaders for the implementation of the pilot projects should be appointed from the Cuban side either among the C/P or from the staff of the SC member organizations in addition to the C/P.

Advisory Group comprising people of experience, might be set up in the Cuban side to extend advice to SC and make presentation in the workshops. Remuneration of the group will be borne by JICA.

2.3 Provision of the Office and Equipment for Study Team and the C/P

It has been agreed that for the efficient conduct of the Study works, all the C/P and Team members should work together in the same office in principle. Consequently, total number of people working in the office will be around 30 during the peak period, comprising the Study Team members, C/P, a secretary and interpreters.

During the initial stage of the Study period, an office with a working room and a meeting room has been provided within the DPSC office with the

equipment requested by the Japanese side. In the same office, another room will be provided which is under construction to be completed around late February, 2004. As the number of the Study Team members increases, an additional office space will be provided within CITMA-Havana office. One telephone line for domestic call has already been installed. Two (2) more telephone lines will be installed for the use of international call and Internet by the Cuban side. Installation cost as well as the communication costs will be borne by the Study Team.

2.4 Provision of the Office Personnel

Cuban side already employed a secretary for the Study Team. One interpreter (English-Spanish) will be employed by DPSC to work for the Study Team at the expense of the Cuban side. Cuban side will make best efforts to provide an additional interpreter for the Study work.

3. Formulation of the Master Plan and Capacity Building

Study works will be carried out through the joint works of the Study Team and the Cuban side. Namely, the long-term vision of the solid waste management for the Havana city, implementation of the field studies, formulation of a M/P and carrying out a F/S for the priority project as well as pilot projects will be done through the joint efforts of the both sides. For the implementation of the pilot projects, human resources will be provided by the Cuban side while necessary equipment for the pilot project implementation will be supplied by JICA.

Outputs and recommendations of the Study shall be taken into consideration for their implementation in the field of solid waste management.

In order to achieve the successful implementation of the joint works, high priority will be placed on the capacity building of the Cuban C/P by means of the technology transfer from the Study Team. As an integral part of the overall capacity building activities, capacity building program will be formulated at the initial stage of the Study with the cooperation of the Cuban side. In the program, targets for the capacity building will be set for each C/P and achievement will be evaluated in the middle and final stages of the Study. In this regard, Cuban side has made a request that training for the C/P should be provided by JICA. The request will be conveyed to JICA Headquarters.

4. Holding the Dissemination Workshops, Capacity Building Workshops and a Seminar

In order to disseminate the achievements and outputs of the Study as well as to carry out technology transfer, both sides have agreed that the dissemination workshops should be held for 3 times during the course of the Study. Capacity building workshops should be held twice, aiming at working out a capacity building program and assessing its interim achievement. At the final stage of the Study in Cuba, a Seminar comprising a dissemination workshop and a capacity building workshop will be held to present all the outputs of the Study and to make the final assessment of the capacity building of the C/P.

5. Early Selection of the Pilot Projects and Commencement of Necessary Procedure

It has been agreed by both sides that discussion on the selection of the appropriate pilot projects should be started at the early stage of the first study in Cuba so that the selection should be completed before the end of this study period. Necessary procedure required for the implementation of the pilot projects should be started upon the completion of the selection.

6. Coordination between the JICA Study and the Relevant Studies/Projects by Other Donors

It has been confirmed by both sides that the Cuban side should assume the full responsibility for the coordination between this JICA Study and the studies/projects concerned with the solid waste management for the Havana city, to be implemented by other donors.

Appendix 1

Attendant lists of the Steering Committee meetings (10 of Feb)

First Name	Last Name	Position	Institution
Maricela	Alvarez	Directora	Materias primas
Daniel	Alvarez	Presidente Comisión Permanente de Trabajo	Asamblea Provincial Ciudad Haban
Roberto	Castellanos	Delegado	
Rogelio	Castro	Vicedirector	Dirección Provincial de Finanzas
Milena	Chanquet Castro	Grupo de desarrollo	Dirección Provincial de Servicios Comunes
Bárbara	Cordovés	UMA	CITMA
Rosario	del Toro	Técnico en Higiene	Dirección Provincial de Servicios Comunes
Jesús	Delgado R.	Subdirector Vicerresidente	Ministerio de Economía y Planificación
Vladimir	Fraguela	Vicedirector Provincial de Higiene	Dirección Provincial de Servicios Comunes
Odalys	García	Grupo de desarrollo	Dirección Provincial de Servicios Comunes
Odalys	Goicochea	Especialista	CITMA
Juan N.	Herrera	Director UMA	CITMA
Carlos	Iglesias	Reportero	Periódico Yomuri
Aymara	Infante	Grupo de desarrollo	Dirección Provincial de Servicios Comunes
Jorge	Kalaf Maulf	Vicedelegado	Instituto Nacional Recursos Hidráulicos
Elsa	Machado Rodríguez	Comité supervisor	Dirección Provincial de Planificación Física
Félix	Palacios	Jefe de División de Ecología Industrial	CIMAB
Nélida	Perez	Contraparte	Dirección Provincial de Planificación Física
Teresita	Recio	Financista	Dirección Provincial de Servicios Comunes
Elida	Romero	UMA	CITMA
Iliana	Saborit	Comité Supervisor	CITMA
Ana	Tacoronte Morales	Vicedirector	Centro Provincial de Higiene y Epidemiología
Mitsuo	Yoshida	Chief of	JICA Advisory Committee
Tadaya	Yamamoto	Member	JICA Advisory Committee
Michihiro	Sakai	Member	JICA Advisory Committee
Akiko	Bushimata	JICA Staff	JICA Headquarter
Hirohisa	Matsumoto	JICA Expert of Project Formulation	Embassy of Japan
Masatoshi	Akagawa	Team Leader	Study Team
Shigeru	Kanaya	Vice Team Leader / Solid Waste Management	Study Team
Satoshi	Shibazaki	Collection and Transportation	Study Team
Satoshi	Higashinakagawa	Coordinator	Study Team

Appendix 2

Attendant lists of the Steering Committee meetings (11 of Feb)

First Name	Last Name	Position	Institution
Maricela	Alvarez	Directora	Materias primas
Daniel	Alvarez	Presidente Comisión Premanente de Trabajo	Asamblea Provincial Ciudad Haban
Roberto	Castellanos	Delegado	CITMA
Bárbara	Cordovés	UMA	CITMA
Jesús	Delgado R.	Subdirector Vicesidente	Ministerio de Economía y Planificación
Yolanda	Díaz de León	Especialista	CITMA
Marylin	Díaz Ruiz	Especialista en Higiene	Dirección Provincial de Servicios Comunes
Aljandro	Fernández	Jefe de laboratorio	Dirección Provincial de Servicios Comunes
Vladimir	Fraguela	Vicedirector Provincial de Higiene	Dirección Provincial de Servicios Comunes
Odalys	García	Grupo de desarrollo	Dirección Provincial de Servicios Comunes
Odalys	Goicochea	Especialista	CITMA
Zoe	Hernández	Especialista	MINVEC
Juan N.	Herrera	Director UMA	CITMA
Aymara	Infante	Grupo de desarrollo	Dirección Provincial de Servicios Comunes
Jorge	Kalaf Maulf	Vicedelegado	Instituto Nacional Recursos Hidráulicos
Zuramy	López León	Delegado Provincial Agricultura	MINAG Provincial
Elsa	Machado Rodríguez	Comité supervisor	Dirección Provincial de Planificación Física
Eduardo	Normand	Asesor del Vicepresidente Gobierno de la ciudad	DPPP Ciudad Habana
Félix	Palacios	Jefe de División de Ecología Industrial	CIMAB
Nélida	Perez	Contraparte	Dirección Provincial de Planificación Física
Teresita	Recio	Financista	Dirección Provincial de Servicios Comunes
Alicia	Rodríguez	Jefea Grupo Impacto Ambiental	MINSAP
Elida	Romero	UMA	CITMA
María del Carmen	Sarduy	Vicedirector	UPPH Comunes
Marta	Serrano	Dirección Economía y Planificación	Dirección de Economía y Planificación
Andrés	Ruiz Yanes	Especialista	Dirección Provincial de Servicios Comunes
Mitsuo	Yoshida	Chief of	JICA Advisory Committee
Tadaya	Yamamoto	Member	JICA Advisory Committee
Michihiro	Sakai	Member	JICA Advisory Committee
Akiko	Bushimata	JICA Staff	JICA Headquarter
Hirohisa	Matsumoto	JICA Expert of Project Formulation	Embassy of Japan
Masatoshi	Akagawa	Team Leader	Study Team
Shigeru	Kanaya	Vice Team Leader / Solid Waste Management	Study Team
Satoshi	Shibasaki	Collection and Transportation	Study Team
Satoshi	Higashinakagawa	Coordinator	Study Team

APPENDIX 3

COMMENTS ON THE INCEPTION REPORT

1. The Cuban side commented that there are some translation mistakes in the Spanish version of the Inception Report, such as the word "desechos" which should be replaced by the word "resíduos", and "Habana" replaced by "Ciudad de La Habana". The Cuban side also requested that Appendix 1 and Chapter 7 should be deleted because the undertaking of the Cuban side had already been agreed in the Scope of Work for the Study.

The Japanese side agreed. Study Team suggested and the Cuban side agreed that corrections would be suggested by the Cuban side in written form. After receiving it, Study Team will prepare a revised Spanish version of the Inception Report, incorporating the corrections and submit it to the Cuban side in March, 2004.

2. The Cuban side pointed out that the Feasibility Study is dropped from the Study scope due to translation error and should be included in the Spanish version as an objective of the Study.

The Japanese side agreed.

3. The Cuban side stated that they agreed that the pilot projects should be identified at the early stage because of the time required in completing the relevant formalities.

The Japanese side expressed its appreciation.

4. The Cuban side commented that technology transfer aspect should be included in the dissemination workshops.

The Japanese side agreed.

5. The Cuban side requested that a chemical analysis should be included in the waste quality study.

The Japanese side replied that the request would be conveyed to JICA Headquarters.

6. The Cuban side commented that the contents of the questionnaire for some field study must be submitted and checked by the Cuban side.

7. The Japanese side agreed.
8. The Cuban side requested that besides the printed copies, CD for the Final Report should be provided to the Cuban side.
9. The Japanese side agreed.
10. The Cuban side requested that training of the Cuban Counterparts should be done by JICA, as discussed by the JICA Mission that visited Cuba in August 2003.
11. The Japanese side replied that the request would be conveyed to JICA Headquarters for consideration.
12. The Cuban side requested that the capacity building aspect should be included in the Minutes of Meeting.
13. The Japanese side agreed.

Appendix 4

MEMBER LIST OF S/C LIST

Full name	Ministry/ Organization	Position	Expertise/Specialty	Telephone Number
Roberto Castellanos Pérez	CITMA – HC	Director Prov. Delegación CITMA	Médico	202-9344
Rolando Carrillo	DPSC	Director Prov. Serv. Comunes	Técnico Medio en Finanzas	833-7002 830-6622
Zoe Hernández	MINVEC	Especialista Colaboración Internacional	Ingeniera Química	209-5327
Jesús A. Delgado Reinoso	MEP	Sub Dtor. De Planificación Territorial y Serv. Comunes	Ingeniero Industrial c/Especialidad en Ing. Sanitaria	881-9813
Alicia Rodríguez	MINSAP	Especialista de Impacto Ambiental	Ingeniería Sanitaria Master en Salud Ambiental	55-3381
Yolanda Díaz	CITMA	Especialista de Asia en la Dir. De Colaboración Internacional	Licenciada en Relaciones Internacionales	860-3411 867-0606
Ileana Saborit	CITMA	Especialista de Ciencia y Técnica	Ingeniera Hidráulica	860-3411 867-0598
Maricela Álvarez	ERMP	Directora Prov. UPRMP	Ingeniera Industrial	862-8558
Jorge Kalaff Maluff	APRH	Sub Delegado Recursos Hidráulicos.	Licenciado Geografía Física	202-6467
Miguel Sánchez Padilla	DPFP	Director Provincial de Finanzas	Licenciado en Economía	
Zuramy López León	Dir. Prov. Agricultura	Especialista en Suelo	Ingeniera Agrónoma	45-2298
Ana Tacoronte Morales	CPHE C. Habana	Vice Directora: Unidad Salud Ambiental	Medicina General e Integral + Higiene y Epidemiología	260-5393
Ángel Ramírez Manzano	ONA	Especialista en Higiene Comunal	Master en Salud Ambiental	262-3811
Marta Serrano	Dirección Economía y Planificación	Especialista Grupo Desarrollo Analista en evaluación de inspección	Ingeniera Metalúrgica	866-1448
Juan N. Herrera	CITMA	Jefe Unidad de Medio Ambiente	Licenciado Bioquímica	202-9344
Eduardo León Hernández	CAP	Vice Presidente	Ingeniero Mecánico	867-0575 867-0566

Appendix 5

MEMBER LIST OF C/P

Full name	Ministry/ Organization	Position	Expertise/Specialty	Counterpart Team Member	Telephone Number
Arq. Odalys Garcia	DPSC-CH	Directora Desarrollo e Inversiones (Chief C/P)	Arquitecta	Team Leader	2023482
Lic. Juan Herrera Cruz	CITMA-CH	Director Unidad de Medio Ambiente (Vice Chief C/P)	Lic. en Bioquímica	Vice Team Leader	2029344
Lic. Vladimir Fraguela Almeida	UPPH	Vice Director Técnico	Lic. Química	Collection/Transportation	2620582
Ing. Bárbara Cordovés	CITMA-CH	Especialista	Ing. Química	Final Waste Disposal Site Planning	2029344
Ing. Aymara Infante Sigler	DPSC-CH	Especialista	Ingeniera Civil	Final Waste Disposal Site Planning	2023482
Ing. Andrés Ruiz Yáñez	UPPH	Especialista Principal	Ing. Agrónomo	Recycling System, Waste Quantity and Quality Analysis	
Lic. Elida Romero	CITMA-CH	Especialista Educación Ambiental	Lic. Biología	Social Consideration/Awareness Raising	2029344
Lic. Odalys Goicochea	CITMA-CH	Jefe de Gestión de Proyectos (Vice Chief C/P)	Lic. Biología	Vice Team Leader	2029344
MCs. Félix Palacios	CIMAB	Jefe Dpto. Ecología Industrial	Ing. Químico - MCs. Gestión Ambiental. Univ. Complutense Madrid.	Recycling System, Waste Quantity and Quality Analysis	8624387 8623051 ext. 260
Dr. Ma. del Carmen Sarduy	UPPH	Especialista	Dr. Veterinaria	Recycling System, Waste Quantity and Quality Analysis	2620582
Ing. Alejandro Fernández Colomia	LARE	Director Laboratorio	Ing. Agrónomo	Recycling System, Waste Quantity and Quality Analysis	2720694
Ing. Marilyn Díaz Ruiz	UPPH	Especialista	Ing. Industrial	Economic/Financial Analysis	2620582
Lic. Teresita Recio García	DPSC-CH	Especialista	Lic. Relaciones Económicas Internac.	Economic/Financial Analysis	8339623 8339964
Lic. Nélida Pérez	DPPF	Jefe Ordenamiento Territorial	Lic. Geografía	Economic/Financial Analysis	8309684

Apéndice 4

***Sugerencias acerca de la Futura
Recogida Selectiva y el Proyecto Piloto
de Compostaje a partir de las
Experiencias Adquiridas en el Estudio***

Apéndice 4 Propuesta para Futuro Proyecto Piloto de Recogida Selectiva y Compostaje a partir de las Experiencias Obtenidas en este Estudio

Aspecto		Experiencias Adquiridas en el PP del Estudio	Sugerencias a considerar en el Proyecto de la ONUDI
1. Descarga Selectiva	1) Método de Descarga	En la primera etapa no se realizó adecuadamente la descarga selectiva y se mezclaron residuos reciclables y no reciclables. Sin embargo, mediante la aplicación de un método sencillo consistente la separación de los residuos en tres categorías y la introducción de contenedores con información visual clara sobre cada tipo de residuo, así como la celebración de talleres de divulgación sobre descarga selectiva dirigidos a la población, se logró un gradual avance en esta actividad.	Sobre la base de los resultado del PP se recomiendan las siguientes medidas para facilitar la comprensión y cooperación de los residentes: <ul style="list-style-type: none"> - Indicar claramente con símbolos o imágenes en los contenedores para recogida selectiva - Entrega de panfletos explicativos en las áreas comprendidas en el proyecto (Playa) - Preparación de talleres de divulgación para los residentes y grupos de apoyo, como la FMC, los CDR, el MRF y los estudiantes. - Deberá explicarse a los residentes la necesidad del almacenamiento y descarga selectiva. Deberá informarse cómo almacenar residuos separados en las viviendas.
	2) Cooperación Ciudadana	A través del proceso de implementación, desde el inicio hasta el final del PP, fue imprescindible la cooperación ciudadana para garantizar la separación de los residuos orgánicos y reciclables.	El proyecto de la ONUDI sólo contempla la separación en dos categorías (residuos de cocina y otros), pero se necesita la cooperación de la población para garantizar la recogida selectiva. Por lo tanto, es necesario llevara cabo algunas actividades de sensibilización. Deberá resaltarse el propósito de la separación de residuos, para que los pobladores puedan contribuir al medioambiente y al manejo de los residuos sólidos.
	3) Grupo de residentes objetivo	En el PP se involucraron varios grupos de apoyo, principalmente en los talleres de divulgación. Esto contribuyó a crear un amplio respaldo de estos grupos	Es conveniente involucrar a varios grupos de apoyo, como la FMC, los CDR, el MRF y los estudiantes en las actividades de sensibilización de la población.
	3) Tiempo Necesario	En el PP se necesitaron meses para lograr la comprensión y cooperación de los residentes.	El proyecto de recogida selectiva deberá prepararse tomando en cuenta un plazo suficientemente largo para las actividades de concientización. No se esperan grandes logros en un corto plazo. Como mínimo se requieren 6 meses de concientización antes de implementar la recogida selectiva.

AP4-1

Aspecto	Experiencias Adquiridas en el PP del Estudio	Sugerencias a considerar en el Proyecto de la ONUDI
4) Implementación de encuestas de opinión	EN el PP se realizaron varias encuestas de opinión para captar el grado de concientización de los residentes sobre la recogida selectiva. Los resultados fueron utilizados para mejorar el sistema de recogida selectiva.	<p>El grado de concientización deberá estudiarse a través de encuestas de opinión para confirmar el nivel de conciencia ciudadana acerca del sistema de recogida selectiva de acuerdo a lo siguiente:</p> <ul style="list-style-type: none"> • Situación de los problemas ambientales • Situación de la conciencia pública • Disposición a participar en los programas de educación • Necesidad de realizar actividades de limpieza con la participación de la comunidad • Cooperación con las actividades de reciclaje, etc. <p>Los resultados de las encuestas deberán utilizarse en beneficio del conocimiento y comprensión del proyecto por parte de la población, lo que redundará en un cambio de comportamiento de la misma a largo plazo.</p>
5) Actividades de Relaciones Públicas	Durante el proyecto quedó demostrado que las actividades de relaciones públicas (RP) son necesarias para obtener la cooperación ciudadana. Estas actividades se dirigieron principalmente a divulgar el proyecto y sus efectos.	<p>Deberá reconocerse la necesidad del proyecto a varios niveles, incluyendo público en general, sobre los siguientes aspectos:</p> <ul style="list-style-type: none"> • Necesidad del proyecto • Significación social • Beneficios (análisis económico de ingresos y gastos) • Efectos sobre el mejoramiento ambiental y otros
6) Uso de Medios de Comunicación Masiva	Durante el PP se pensó que podría hacerse una concientización más efectiva si se utilizaran medios masivos de comunicación.	Se deberá considerar el empleo de los medios masivos de comunicación como la radio y la TV en vista de su costo razonable.

Aspecto		Experiencias Adquiridas en el PP del Estudio	Sugerencias a considerar en el Proyecto de la ONUDI
3. Recogida Selectiva	1) Aseguramiento de la Frecuencia de Recogida	Cuando uno de los contenedores de residuos separados ya esta lleno, los vecinos no tienen otra alternativa que arrojar esos residuos en cualquier otro contenedor. Esto provoca una disminución del índice de descarga selectiva.	La recogida y transportación deberá realizarse de manera confiable para que no permanezcan residuos sin recoger por los vehículos. Con vistas a obtener la cooperación de los residentes con el proyecto la organización ejecutora debe mejorar el nivel de servicio. La frecuencia de recogida debe discutirse con la DPSC/UPPH.
	2) Consideraciones sobre la Ubicación de los Contenedores	Se evidenció que la ubicación de los contenedores debe revisarse periódicamente sobre la base del volumen realmente descargado.	La frecuencia de recogida y la ubicación de los contenedores deberán cambiarse atendiendo al patrón de generación de los residuos.
	3) Revisión Periódica del Sistema de Recogida	Se sucedieron cambios graduales en el estado de la recogida y transportación durante el período del PP.	El sistema de recogida de residuos sólidos deberá revisarse y monitorearse periódicamente, incluida la cantidad de residuos.
4. Compostaje Comunitario	1) Método de Producción	Se evidenció a través del PP la necesidad de detectar y eliminar las impurezas contenidas en la materia prima (residuos de cocina), principalmente agujas hipodérmicas y otros residuos infecciosos, durante el proceso de descarga, recogida y tratamiento previo.	Para el control de la calidad del compost producido se recomienda la separación en la fuente de generación y durante su tratamiento previo para eliminar las impurezas. El equipo de proyecto debe, además, monitorear periódicamente el método de producción utilizado.
	2) Necesidad de Desarrollar el Mercado	A través del PP se evidenció la necesidad de desarrollar el mercado de compost en el futuro.	Antes de la implementación del proyecto de compost, se necesita realizar un estudio de mercado que incluya lo siguiente: <ul style="list-style-type: none"> • Mercado potencial (usuario y cantidad) • Información sobre el comprador • Método de venta • Precio de venta. • Calidad requerida Discutir con el MINAGRI las condiciones del estudio de Mercado y la calidad que se requiere del compost.